United Utilities

Final Water Resources Management Plan 2019: Water Framework Directive Assessment

Final Report

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Amec Foster Wheeler Environment
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Report for

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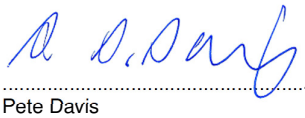

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Document revisions

No.	Details	Date
1	Draft for UU review	13/11/2017
2	Second draft for UU review	27/11/2017
3	Final report	30/11/2017
4	Final report – security update	26/02/2018
5	Published report	07/03/2018
6	Revised draft report	10/08/2018
7	Final revised report	20/08/2018
8	Final revised report – security update	28/08/2018
9	Update for issue with Final WRMP – draft for UU review	14/08/2019
10	Final for issue with Final WRMP	20/08/2019

Executive summary

Introduction

This report presents the Water Framework Directive (WFD) assessment for resource management and Manchester and Pennine Resilience options that have been considered for inclusion in United Utilities' Water Resources Management Plan (WRMP) 2019. The aim of the report is to demonstrate the potential level of WFD impact associated with each WRMP option and, if necessary, the level of further assessment that may be required in order to fully demonstrate WFD compliance. It also includes a review of United Utilities' (UU's) proposals for how it will operate its existing abstractions to determine whether they meet the criteria for sustainable catchments and comply with the WFD.

The WFD sets a default objective for all rivers, lakes, estuaries, groundwater and coastal water bodies to achieve good status or potential by 2027 at the latest. Where it is not possible to achieve this (e.g. through disproportionate costs), alternative water body objectives can be set. The current (baseline) status (2015 classification), and the measures required to achieve the 2027 status objective are set out for each water body in the relevant River Basin Management Plans (RBMPs), prepared by the Environment Agency (EA) every six years.

The final WRMP must be able to demonstrate that it would not cause a deterioration in respect of these baseline conditions. Furthermore, for those water bodies that are not currently attaining good status, the WRMP must be able to demonstrate that it would not preclude the delivery of measures to facilitate the improvements needed to attain good status.

Review of Existing Abstractions

The EA provided guidance that UU should consider the changes to current abstractions to avoid the risk of deterioration under the WFD. For this, UU worked closely with EA representatives to complete a Sustainable Catchments spreadsheet, submitted to the EA on 28 February 2017 which highlighted the abstractions that needed reviewing.

A review of how UU will operate its existing abstractions to determine whether they meet the criteria for sustainable catchments and comply with the WFD has been undertaken on 35 abstraction licences. The 35 abstraction licences have been assessed by the EA to fall within category 1, 2, or 3 as described below:

- Category 1: based on recent actual abstraction rates – causing serious damage now;
- Category 2: based on recent actual rates – deterioration likely by 2027;
- Category 3: based on full use of the abstraction licence – deterioration likely after 2027 and by 2040; and
- Category 4: based on full use of the abstraction licence – no likelihood of deterioration before 2040.

The aim of the review was to highlight where existing abstractions could impact on WFD objectives and would therefore need mitigation.

The review indicates that when accounting for recommended levels of abstraction licence reduction, confirmed or potential AMP6 (2015-2020 investment period) measures, and an assumption of continuation of current operational activities or abstraction levels, most licences are unlikely to have a significant impact on the WFD objectives of the relevant water bodies. One of UU's groundwater abstractions at Mouldsworth could potentially have a medium impact on a surface water, the Salters Brook. Further work may be required in this water body to either undertake further assessment to reduce the level of impact, or to establish what mitigation should be implemented.

Approach to the WFD Assessment of WRMP Feasible Options and Manchester and Pennine Resilience Options

The WFD assessment has considered the following key questions in respect of the construction and operational phase of each WRMP option:

- At the water body scale, would the option result in a deterioration of any of the WFD classification components from one status class to the next, (e.g. from good to moderate), irrespective of whether or not it results in the lowering of overall status?
- Would the option prevent any water bodies from achieving good overall status or, where relevant, an alternate objective?

Following the assessment of each WRMP option, an assessment was made of the following for each of the Preferred Plan options:

- Would the cumulative effects of multiple WRMP options impact on the objectives of individual WFD water bodies?
- Would the cumulative effects of multiple WRMP options impact on the objectives of multiple water bodies that are hydrologically linked (i.e. operational catchments)?
- Would the cumulative effects of multiple WRMP options affect protected areas and their associated objectives?

If the answer to all of the above five questions is 'no' then the option can be considered to be WFD compliant.

The possible future decommissioning of WRMP options is beyond the scope of this assessment, but impacts arising from decommissioning are likely to be similar to those associated with construction.

WFD Assessment Process

The WFD assessment has been undertaken on 115 confirmed options (81 supply-demand feasible options and 34 Manchester and Pennine resilience options). The assessment for each option was based on the engineering scope information provided by UU. The assessment for each option comprised two stages, a 'Level 1' screening, followed by a more detailed 'Level 2' assessment for those water bodies that may be subject to medium or high impacts. The results of both levels of assessment are then combined to create a final impact assessment for all options. Both levels of assessment use the definitions of impacts described in **Table 1**.

Table 1 Impact Classification Categories

Level of impact	Description of impact
No or minimal impacts	No measurable change in the quality of the water environment or the ability for target WFD objectives to be achieved.
Minor level of impact	Impacts from the option when taken on their own have the potential to lead to a minor localised, short-term and fully reversible effect on the quality of the water environment that would not result in the lowering of WFD status. Impacts would be very unlikely to prevent any target WFD objectives from being achieved.
Medium level of impact	Impacts when taken on their own have the potential to lead to a widespread or prolonged effect on the quality of the water environment that may result in the temporary lowering of WFD status. Impacts have the potential to prevent target WFD objectives from being achieved.
High level of impact	Impacts when taken on their own have the potential to lead to a significant effect and permanent deterioration of WFD status. Impacts have a high risk of preventing target WFD objectives from being achieved.

The assessments were based on available data and evidence as far as possible. However, due to the limited engineering and baseline information available, expert opinion and a number of assumptions have been employed in most cases (refer to **Section 3.3**). Where there was uncertainty over an option (e.g. the exact route of a pipeline is not known) a worst-case scenario approach has been used (e.g. the assessments have assumed that the pipeline has watercourse crossings rather than not).

A confidence rating has been given to the Level 2 assessments, according to the confidence categories in **Table 2**. The confidence rating assigned to each assessment is a reflection on the amount of uncertainty in the option design (e.g. uncertainty over the location and quantity of a new groundwater abstraction would lower the level of confidence in the assessment), and the amount and quality of evidence upon which the impact level has been based (e.g. existing investigations into the impacts of reservoirs by UU and the EA increase the confidence level in the assessment). All the assessments that have only been subject to a Level 1 assessment are assigned a high confidence by default.

Table 2 Confidence Level Categories

Confidence category	Description of confidence
Low	Very limited evidence, high risk activity or assessment solely based on expert judgement.
Medium	Reasonable levels of evidence for some aspects of the assessment. Some assumptions and expert opinion required.
High	Good level of evidence with minimal assumptions required or low risk activity.

Where two or more Preferred Plan options are located in the same water body or operational catchment, a high level cumulative assessment has been undertaken to determine the potential for combined effects on WFD objectives, should all the options be implemented. Assessments have also been undertaken on protected areas related to the protection of habitats and species that are identified in the EA's Catchment Data Explorer as being linked to a water body that may be impacted by a Preferred Plan option. The cumulative and protected area assessments followed the same approach as the Level 1 and Level 2 assessments for the individual options.

Results of the WFD Assessment of WRMP Supply-Demand Feasible Options

The Level 1 screening identified 328 WFD water bodies that may be impacted by the 81 supply-demand[1] feasible options. Many of these water bodies could be impacted by more than one option, resulting in a total number of 584 option-water body combinations.

The Level 1 screening exercise was undertaken for each option and its related water bodies. This identified 69 options that may have a medium or high level of impact on one or more water bodies and these were subjected to the more detailed Level 2 assessment.

The results of the Level 2 assessment were combined with the results of the Level 1 assessment to produce a combined assessment result which is summarised in **Table 3** and presented in full in **Appendix B**. The individual Level 2 assessment spreadsheets are presented in **Appendix C**.

[1] These are options to meet dry year supply-demand drivers, as opposed to improve water supply resilience to non-drought hazards

Table 3 Summary of Combined Assessment Results for Feasible Options

	No of option–water body combinations	No of water bodies	No of options
Total	584	328	81
High level of impact	4	4	4
Medium level of impact	53	39	35
Minor level of impact	336	198	68
No or minimal impact	191	134	38

Note that a water body may have varying levels of impact from different options, and an option may have differing levels of impact on different water bodies. This means that some water bodies and options are counted more than once in the values in this table.

Results of the WFD Assessment of WRMP Resilience Options and Solutions

The results of the assessment for the water supply resilience solutions[2] are presented for each individual resilience option, and then for each resilience solution. The results of the assessment for each solution are based on a consideration of the impacts for each of the individual options within that solution.

The results of the Level 1 and Level 2 assessments indicate that:

- 22 resilience options have a no or minimal level of potential impact;
- 7 resilience options have a minor level of potential impact; and
- 5 resilience options have a medium level of potential impact.

Further details on the results are summarised in **Table 6.1**, and described by solution in Sections 6.3 to 6.7. The assessments are presented in full in Appendices D and E.

The five resilience options that have been assigned a medium level of potential impact are:

- 37-38: Manchester and Pennine Aqueduct section T05 to T06;
- 37-42: Manchester and Pennine sections T01 to T06;
- 215: Alternative Supply: Raw water transfer and water treatment works (WTW) at Martholme bulk supply point (BSP);
- 296: T05 targeted repair 2025; and
- 297: T06 targeted repair 2025.

The five resilience options with a medium level of impact occur in four out of the five resilience solutions (**Table 3**) and pose a potential risk of widespread or prolonged impacts on the status of WFD water bodies.

[2] This relates to resilience to hazards other than drought

Table 3 Summary of Resilience Option and Solutions Assessment

		Number of options (and water bodies in brackets) at each impact level					
Solution	**Total No. of Options**	**No or Minimal**	**Minor**	**Medium**	**High**	**Overall Impact**	**Confidence**
A	6	3	1	2 (2)	0	Medium level of impact	Low
B	16	15	0	1 (8)	0	Medium level of impact	Low
C	8	4	4	0	0	Minor level of impact	High
D	2	1	0	1 (21)	0	Medium level of impact	Low
E	6	1	3	2 (22)	0	Medium level of impact	Low

Note:
Some resilience options are included in more than one resilience solution.
For options assigned a no or minimal or minor level of impact in the Level 1 screening, individual water bodies were not identified.

Results of the WFD Assessment of the Final WRMP 'Preferred Plan'

The Preferred Plan includes one resilience solution, Solution D, which comprises two resilience options. The Level 1 screening identified 21 WFD water bodies that may be impacted by the two options that are included in Solution D. It should be noted that the supply-demand preferred options that comprise the Preferred Plan do not include resource management measures (i.e. they comprise of demand management measures including leakage reduction and water efficiency only) and are therefore not expected to have impacts on WFD water bodies.

The Level 1 screening exercise was undertaken for each option and its related water bodies. This identified a single option that may have a medium level of impact on one or more water bodies, and this was subjected to the more detailed Level 2 assessment.

The results of the Level 2 assessment were combined with the results of the Level 1 assessment to produce a combined assessment result which is summarised in **Table 4** and presented in full in **Appendix J**. The individual Level 2 assessment spreadsheets are presented in **Appendix E**.

Table 4 Summary of Combined Assessment Results for Options that form the Preferred Plan

	No of option–water body combinations	**No of water bodies**	**No of options**
Total	21	21	2
High level of impact	0	0	0
Medium level of impact	21	21	1
Minor level of impact	0	0	0
No or minimal impact	0	0	0

Following the individual option assessments, the Preferred Plan options were subject to cumulative and protected area assessments. The combined results of all three assessments are summarised in **Table 5**.

Table 5 Summary of Assessment Results for the Preferred Plan Options

	Result of Individual assessment	Result of cumulative assessment	Result of Protected Area assessment	Overall result	Confidence level
Option 112: Manchester and Pennine Aqueduct Outage	No or minimal impact	n/a	n/a	No or minimal impact	High
Option 37 – 42 (Manchester and Pennine Aqueduct)	Medium level of impact	Medium level of impact	Medium level of impact	Medium level of impact	Low

One of the two resilience options has been assigned a medium level of potential impact on account of the risk to the quantitative and chemical status of groundwater bodies and changes to the hydrological regime (and therefore ecological status) of rivers.

In this case, further WFD assessment is required to be provide greater clarity and confidence in respect of requirements, if relevant, for bespoke mitigation in order to ensure that WFD objectives are not compromised. In reality, on consideration of further information and dialogue with the EA on proposed bespoke mitigation measures, this option is unlikely to result in significant or long-term potential impacts. Therefore, WFD compliance is unlikely to be an issue in respect of regulatory permitting once the further assessment provides the appropriate level of confidence for presentation to the regulator.

The assessments typically have a low level of confidence, which reflects the high-level nature of the WFD assessments undertaken at this time. The lack of detailed design or environmental baseline information has necessitated a precautionary approach to the assessments, which relies on assumptions (e.g. that changes to the groundwater flow regime will impact on surface water courses), and results in a worst-case level of impact. Further assessment and dialogue with the EA during the consultation and project stages would likely result in a reduction of the level of impact, and an increase in the level of confidence.

Further project-stage detailed WFD assessment should therefore be undertaken in respect of Option 37 – 42 as this option has been assigned a medium level of impact in the individual, cumulative and protected area assessments. Further assessment should include consideration of more detailed design information, investigation of the water environment associated with the option (in particular links between the groundwater and surface water environments), detailed impact assessments, and more detailed review of WFD objectives to ensure that the impacts highlighted in this report are appropriately accounted for.

Statement of Compliance with the WFD

The assessments of the data provided by the EA and UU regarding current abstraction licences indicate that although there is some residual risk, overall the operation of the licences, the reductions noted by the EA and the schemes identified for AMP6 should be enough to mitigate against any significant risks to the WFD water bodies and they are **therefore compliant with the requirements of the WFD**.

The assessments for the preferred options that comprise the Preferred Plan for WRMP19 indicate that one option (Option 37 – 42) could have a medium level of impact against WFD objectives. Further WFD assessment is therefore required at the project stage to be more conclusive in respect of requirements, or otherwise, for bespoke mitigation in order to ensure that WFD objectives are not compromised.

In reality, on consideration of further information and dialogue with the EA on proposed bespoke mitigation measures, this option is unlikely to result in significant or long-term potential impacts. Therefore, WFD compliance is unlikely to be an issue in respect of regulatory permitting once the further assessment provides the appropriate level of confidence for presentation to the regulator.

Based on the assessments in this report, **there is currently no requirement to implement Article 4.7 for either current abstractions or the preferred options**. However, this is based on the assumptions detailed in this report, the need to implement reductions on some of the current licences, and the assumption that additional investigations and mitigation will be implemented for the preferred options.

Contents

1. Introduction

1.1 Overview

1.1.1 United Utilities (UU) has finalised its Water Resources Management 2019 (WRMP19). The WRMP sets out the strategy for water resource and demand management to ensure supplies of safe, clean drinking water are maintained to customers throughout the company's region over the period 2020 to 2045 and beyond.

1.1.2 As part of the preparation of WRMP19, UU published its Draft Water Resources Management Plan (Draft WRMP) for consultation between 2nd March and 25th May 2018, following submission to Defra in December 2017. The Draft WRMP set out UU's Preferred Plan for WRMP19, including preferred resource and demand management options designed to enhance leakage reduction; improve levels of service for drought permits and orders; and to support water trading with other water companies. The Preferred Plan also sought to address resilience issues associated with the regional aqueduct system that supplies water from the Lake District to the Greater Manchester and Pennine areas including parts of Lancashire and south Cumbria (known as 'Manchester and Pennine Resilience' solution) by providing a number of options.

1.1.3 In developing the Preferred Plan for the Draft WRMP, UU undertook a comprehensive assessment of future available water supplies and the demand for water, extensive stakeholder engagement and a rigorous process of options identification and appraisal. In this context, Amec Foster Wheeler Environment and Infrastructure UK Ltd (Amec Foster Wheeler, now Wood) was commissioned by UU to undertake a Water Framework Directive (WFD) assessment of the Draft WRMP, the findings of which were presented in a report[3] that was published alongside the plan for consultation. A further report[4] presenting an assessment of potential Manchester and Pennine Resilience solutions was also prepared.

1.1.4 UU subsequently selected its preferred Manchester and Pennine Resilience Solution and modified the Preferred Plan for WRMP19, taking into account the consultation responses from regulators, stakeholders and the public on the Draft WRMP, as well as further engagement and environmental assessment. A 'Revised Draft WRMP' was subsequently prepared and, along with the Statement of Response to the consultation, was submitted to the Secretary of State for approval in August 2018. The Revised Draft WRMP included further increases to the leakage reductions contained within the Draft WRMP.

1.1.5 Following a review of the Statement of Response to the consultation and the changes made in the Revised Draft WRMP, Defra requested more information on the plan. United Utilities responded to this request in April 2019. Following the receipt of direction to publish the Final WRMP from the Secretary of State for Environment, Food and Rural Affairs, United Utilities has published the Final WRMP.

1.1.6 The Final WRMP is unchanged from the Revised Draft WRMP, except that the timing of some of the leakage options has altered, bringing forward the leakage savings in order to achieve a 20% leakage reduction by 2025 instead of 15% as set out in the Revised Draft WRMP. Water trading has not been included in the Final WRMP as potential importing companies did not selected imports from the north west in their preferred WRMPs during the core 25-year period of the planning horizon. However, whilst, water trading does not form part of UU's Final Plan, it remains the company's preference to continue to work with others on water trading beyond WRMP19 and into the WRMP24 planning round. The strategy to facilitate a potential future trade has therefore been retained within an adaptive pathway, which could form a future preferred plan if water trading was subsequently required in future.

[3] Amec Foster Wheeler (2017) Draft Water Resources Management Plan 2019: Water Framework Directive Assessment. Final Report.
[4] Amec Foster Wheeler (2018) *Water Framework Directive Assessment of the Draft Water Resources Management Plan 2019: Supplementary Information – Draft Resilience Options.*

1.1.7 To ensure that the Preferred Plan as proposed has been fully assessed in terms of its potential impacts on WFD water bodies, the WFD assessment of the Final WRMP has been reviewed and updated. This report presents the findings of this assessment.

1.2 Purpose of this Report

1.2.1 This report has been produced for the purpose of presenting the WFD assessment for resource management and Manchester and Pennine Resilience options that have been considered for inclusion in WRMP19. The aim of the report is to demonstrate the potential level of WFD impact associated with each WRMP option and, if necessary, the level of further assessment that may be required in order to fully demonstrate WFD compliance. It also includes a review of UU's proposals for how it will operate its existing abstractions to determine whether they meet the criteria for sustainable catchments and comply with the WFD.

1.2.2 In England and Wales, whilst the responsibility for ensuring that the WFD is implemented lies with the Secretary of State for Environment, Food and Rural Affairs, the Environment Agency (EA) and Natural Resources Wales (NRW), as well as other public bodies, have a duty to 'have regard' to the objectives of the WFD in exercising their functions.

1.2.3 Failure to take account of WFD requirements could provide grounds for a challenge to regulatory decisions on any options that progress into the final WRMP. Therefore, assessment of the relative levels of WFD compliance risk amongst the suite of potential options is a necessary part of WRMP optioneering that should facilitate effective and efficient regulatory decision making.

1.3 Development of the United Utilities' Water Resources Management Plan 2019

Draft Water Resources Management Plan 2019

1.3.1 In developing the Draft WRMP, UU forecast the future demand for water and available supply (the supply-demand balance) for the 25-year period from 2020 to 2045. The baseline demand forecast was calculated using the latest data, tools and methods including the current population and local authority growth forecasts, and accounted for the potential impacts of climate change. Taking into account this baseline demand forecast, alongside water availability, dry weather demand and target headroom, UU determined that there would be a surplus in all three of the company's water resource zones (WRZs) in a dry year over the planning horizon of WRMP19 (the Strategic Zone, North Eden Zone, and Carlisle Zone).

1.3.2 Whilst there was forecast to be enough water to meet demand over the period of WRMP19, following the Water Resources Planning Guideline[5], consideration was given to using the forecast surplus, with possible new source or demand management investment, to explore strategic choices for the WRMP.

1.3.3 UU's Preferred Plan for WRMP19 set out in the Draft WRMP incorporated four strategic choices, as follows:

- Enhance leakage reduction by a total of 80 megalitres per day (Ml/d) over the planning period;
- Improve levels of service for drought permits and orders from 1 in 20 years to 1 in 40 years (moving from 5% to 2.5% annual risk);
- Increase resilience, through the Manchester and Pennine Resilience solution; and
- Commitment to continue to explore national water trading.

[5] Environment Agency and Natural Resources Wales (2018) *Water Resources Planning Guideline*. Available at: https://cdn.naturalresources.wales/media/686174/interim-wrpg-update-july18-final-changes-highlighted.pdf [Accessed August 2018]

1.3.4 The Draft WRMP Preferred Plan comprised a combination of resource management and demand management options designed to achieve these four strategic choices and maintain and enhance the supply-demand balance. To identify these measures, UU first considered an unconstrained list of options. These options were deliberately selected to cover as wide a range of option types as possible and represented all of the ways in which UU could manage supply and demand. These unconstrained options were subject to preliminary (Primary) screening to identify a list of feasible options, i.e. options that could realistically be implemented in the next 25 years. The feasible options were then assessed in terms of their financial, environmental and social costs. These costs were compared using a standard water industry method that allows quantified information about environmental and social effects of options to be compared with financial data. The feasible options were then ranked based on their combined costs. Informed by this assessment, ongoing discussion with stakeholders, and the outcomes of the Strategic Environmental Assessment (SEA), Habitats Regulations Assessment (HRA) and WFD assessment, this list was refined through an additional round of (secondary) screening from which the Preferred Plan options that comprised the Draft WRMP were identified.

Revised Draft Water Resources Management Plan 2019

1.3.5 As set out in **Section 1.1**, following consultation on the Draft WRMP, UU has reviewed its Preferred Plan for WRMP19 and as a result, the Preferred Plan contained in the Draft WRMP has been modified. In particular, in response to consultation responses, additional customer research, further exploration of leakage options and innovations, and a tightening of the supply-demand balance (showing a very small deficit forecast in the Strategic Resources Zone at the end of the planning horizon), United Utilities has further enhanced its leakage reduction aspirations. United Utilities has also confirmed the proposed solution for water supply resilience to non-drought hazards. UU has also confirmed the proposed solution for water supply resilience.

1.3.6 The revised Preferred Plan includes the following strategic choices:

- Adopt an enhanced leakage reduction comprising a total of 190 Ml/d over the planning period, a reduction of just over 40% from the baseline position of 448Ml/d. By the end of 2024/25 UU plans to reduce leakage by at least 67 Ml/d, or 15%;
- Improve level of service for drought permits and orders to augment supply from 1 in 20 years to 1 in 40 years (moving from 5% to 2.5% annual average risk);
- Increase resilience to others hazards, specifically for the regional aqueduct system associated with Manchester and Pennines Resilience. This involves completing Solution D, which involves rebuilding all single line sections of the relevant aqueduct.

1.3.7 It should be noted that the revised Preferred Plan does not include a water trading component. This is because a water trade from the North West is not included in the preferred plans of other water companies at this stage. However, water trading remains UU's preference and the company will continue to work with others on water trading beyond WRMP19 towards the WRMP24 planning round.

1.3.8 This WFD assessment considers all the feasible resource management and Manchester and Pennine Resilience options. The demand management options identified for WRMP19 have not been assessed because either they do not directly impact on the water environment (demand management and network metering options) or are not possible to assess within the framework of the WFD (leakage reduction).

1.3.9 The options identification and appraisal process is described further in the Revised Draft WRMP and supporting documentation[6,7].

[6] United Utilities (2018) Revised *Draft Water Resources Management Plan 2019 Technical Report – Options identification*.
[7] United Utilities (2018) Revised *Draft Water Resources Management Plan 2019 Technical Report – Options appraisal*.

Final Water Resources Management Plan 2019

1.3.10 The Final WRMP is unchanged from the Revised Draft WRMP, except that the timing of some of the leakage options has altered, bringing forward the leakage savings in order to achieve a 20% leakage reduction by 2025 instead of 15% as set out in the Revised Draft WRMP. It contains the following strategic choices:

- Adopt an enhanced leakage reduction comprising a total of 190 Ml/d over the planning period, a reduction of just over 40% from the baseline position of 448Ml/d. By the end of 2024/25 UU plans to reduce leakage by at least 91 Ml/d, or 20%.
- Improve level of service for drought permits and orders to augment supply from 1 in 20 years to 1 in 40 years (moving from 5% to 2.5% annual average risk).
- Increase resilience to other hazards, specifically for the regional aqueduct system associated with Manchester and Pennines Resilience. This involves completing Solution D, which involves rebuilding all single line sections of the relevant aqueduct.

1.3.11 Whilst, water trading does not form part of UU's Final WRMP, it remains the company's preference to continue to work with others on water trading beyond WRMP19 and into the WRMP24 planning round. The strategy to facilitate a potential future trade has therefore been retained within an adaptive pathway, which could form a future preferred plan if water trading was subsequently required in future.

1.4 The Legislative Context – Water Framework Directive

1.4.1 The WFD[8] came into force in 2000 in the European Union (EU) and was transposed into UK law in 2003 with the principal aims of protecting and improving the water environment and promoting the sustainable use of water. Environmental Quality Standards (EQSs) for priority substances have been set by so-called 'daughter' directives to the WFD, in the form of the EQS Directive[9] and subsequent amendments (EQSD)[10] and the Groundwater Directive (GWD)[11]. The environmental objectives of the WFD and its daughter directives are to:

- Prevent deterioration of aquatic ecosystems;
- Protect, enhance and restore water bodies to good status; which is based on ecology (with its supporting hydromorphological and physico-chemical factors) and chemical factors for surface water, and water quantity and chemical status for groundwater;
- Comply with water related standards and objectives for environmentally protected areas established under other EU legislation, e.g. The Habitats Directive 92/43/EEC;
- Progressively reduce pollution from priority substances and cease or phase out discharges from priority hazardous substances; and
- Prevent or limit input of pollutants into groundwater and reverse any significant or sustained upward trends in the concentration of any groundwater pollutant.

1.4.2 The WFD sets a default objective for all rivers, lakes, estuaries, groundwater and coastal water bodies to achieve good status or potential by 2027 at the latest. Where it is not possible to achieve this (e.g. through disproportionate costs), alternative water body objectives can be set. The current (baseline) status (e.g. 2015 classification), and the measures required to achieve the 2027 status

[8] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (the Water Framework Directive).
[9] Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council (the Priority Substances Directive).
[10] Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy.
[11] Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration (the Groundwater Directive) including Commission Directive 2014/80/EU which amends Annex II of the original Directive 2006/118/EC

objective are set out for each water body in the relevant River Basin Management Plans (RBMPs), prepared by the EA every six years.

1.4.3 The WRMP options assessed in this report are primarily located within the RBMP for the North West River Basin District, but some options extend into the Solway Tweed, Northumbria, Humber, Severn and Dee River Basin Districts. The current RBMPs (known as the 'Cycle 2 plans') were published in February 2016 and they provide the baseline condition of the water environment for the assessment presented in this report.

1.4.4 The WRMP must be able to demonstrate that it would not cause a deterioration in respect of these baseline conditions. Furthermore, for those water bodies that are not currently attaining good status, the WRMP must be able to demonstrate that it would not preclude the delivery of measures to facilitate the improvements needed to attain good status.

1.5 Surface Waters

1.5.1 For surface waters (river, lake, transitional/estuarine and coastal water bodies), overall water body status has an ecological and a chemical component. Ecological status is measured on the scale of high, good, moderate, poor, and bad. Chemical status is measured as good or fail, based on the presence or absence of priority substances which present a risk to the environment.

1.5.2 Good ecological status is defined as a slight variation from undisturbed natural conditions, with minimal distortion arising from human activity. The ecological status of water bodies is determined by examining biological elements (e.g. fish, invertebrates, plants) and a number of supporting elements and conditions, including physico-chemical (e.g. metals and organic compounds), and hydromorphological (e.g. depth, width, flow, and 'structure') factors. These elements are summarised in Table 1.1.

Table 1.1 WFD Classification Elements for Rivers, Lakes, Transitional and Coastal WFD Water Bodies

Water body type	Biological	Physico-chemical and chemical	Hydromorphological
Rivers	Macrophytes Phytobenthos Benthic invertebrates Fish	Thermal conditions Dissolved oxygen Acidification Nutrients Salinity Organic pollutants Pollution by substances being discharged (e.g. phosphate or ammonia) Chemicals e.g. metals, pesticides	Hydrological regime - quantity and dynamics of water flow connection to groundwater bodies River continuity Morphological conditions - river depth and width variation structure and substrate of the river bed Structure of the riparian zone.
Lakes	Macrophytes Phytoplankton Benthic invertebrates Fish	Transparency Thermal conditions Dissolved oxygen Acidification Nutrients Salinity Pollution by substances being discharged Chemicals e.g. metals, pesticides	Hydrological regime - quantity and dynamics of inflows and outflows, residence time, connection to groundwater bodies Morphological conditions - lake depth variation, quantity, structure and substrate of the lake bed, structure of the lake shore.
Transitional waters	Phytoplankton Other aquatic flora Benthic invertebrates Fish	Transparency Thermal conditions Dissolved oxygen Nutrients Salinity Pollution by substances being discharged Chemicals e.g. metals, pesticides	Tidal regime - freshwater flow, wave exposure Morphological conditions - depth variation, quantity, structure and substrate of the bed, structure of the intertidal zone

Water body type	Biological	Physico-chemical and chemical	Hydromorphological
Coastal waters	Phytoplankton Other aquatic flora Benthic invertebrates	Transparency Thermal conditions Dissolved oxygen Nutrients Salinity Pollution by substances being discharged Chemicals e.g. metals, pesticides	Tidal regime - direction of dominant currents wave exposure Morphological conditions - depth variation, structure and substrate of the bed, structure of the intertidal zone

1.6 Groundwater

1.6.1 For groundwater bodies, good status has both quantitative and chemical components that are assessed via a series of 'tests'. Both components are assessed providing outcomes of good or poor for each test, and a confidence rating is assigned to the status assessment of high or low. Together, these provide a single overall classification of either good or poor status, reflecting the lowest outcome of these tests to be precautionary.

1.6.2 There is also a trend objective set for groundwater bodies where environmentally significant and sustained rising trends in pollutant concentrations need to be identified and, where necessary, reversed.

1.6.3 Both the WFD and the GWD also require the prevention of any input of priority substances and limiting (or control) of the input of all other substances to groundwater to prevent the deterioration of groundwater body status.

1.7 Protected Areas

1.7.1 Assessment against WFD objectives may include consideration of additional or more stringent standards applied to protected areas if these are present, including standards set by other relevant EU legislation. Protected areas are defined in Annex IV of the WFD as:

- Areas designated for the abstraction of water intended for human consumption;
- Areas designated for the protection of economically significant aquatic species;
- Bodies of water designated as recreational waters, including areas designated as bathing waters;
- Nutrient-sensitive areas, including areas designated as vulnerable zones and areas designated as sensitive areas; and
- Areas designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)).

1.7.2 A WRMP option would not be considered to be compliant with the WFD if it would have an adverse effect on the conservation objectives of a Natura 2000 protected area unless the tests for overriding public interest under Article 6.4 of the Habitats Directive are met.

1.8 Stages in the WFD Assessment and Structure of this Report

1.8.1 In late 2017/early 2018, Amec Foster Wheeler undertook the WFD assessment of 115 feasible options to inform the Draft WRMP. The assessment was undertaken in two stages as follows:

- **Stage 1**: assessment of 81 feasible options to support national water trading and reported on in the 'main' WFD assessment report[4]. This report also included a more detailed assessment of nine feasible options that had been identified at that time as preferred options.

- **Stage 2**: assessment of 34 feasible resilience options associated with the Manchester and Pennine Resilience solution and reported on in the WFD supplementary report[4]. At that time, none of the resilience options/solutions had been identified as a being preferred.

1.8.2 For the Revised Draft WRMP, the two assessments were combined into a single report[12]. The list of preferred options for the Revised Draft WRMP was different to that for the Draft WRMP and comprised just one resilience solution (with two composite options) and no resource management options. For context, the assessment of the Draft WRMP preferred options is included in Appendices F, G, H and I.

1.8.3 For the Final WRMP the WFD assessment report (this report) has been updated. The list of preferred options has not changed from the Revised Draft WRMP, and as a result the update comprises no material changes to the results of the WFD assessment, rather focuses on terminology and context.

1.8.4 The structure of the remainder of this report is as follows:

- **Section 2** describes the review of UU's proposals for how it will operate its existing abstractions to determine whether they meet the criteria for sustainable catchments and comply with the WFD;
- **Section 3** describes the methodology that has been adopted in order to undertake the WFD assessment of WRMP options;
- **Section 4** presents an overview of the WRMP feasible options, and outlines how each type of option has been treated in the assessment process;
- **Section 5** presents the results of the assessment of the supply-demand WRMP feasible options;
- **Section 6** presents the results of the assessment of the Manchester and Pennine Resilience WRMP feasible options and solutions;
- **Section 7** presents the results of the assessment of the Final WRMP Preferred Plan, including the cumulative and protected area assessments;
- **Section 8** provides a summary of the key outcomes, and the requirements for further work; and
- **Section 9** is the statement of compliance with the WFD.

[12] Amec Foster Wheeler (2018) Revised Draft Water Resources Management Plan 2019: Water Framework Directive Assessment. Final Report.

2. Review of Existing Abstractions

2.1 Introduction

2.1.1 This section presents the review of UU's proposals for how it will operate its existing abstractions to determine whether they meet the criteria for sustainable catchments and comply with the WFD.

2.1.2 As part of the preparation for WRMP19, and working towards sustainable catchments, the EA assessed WFD water bodies against four categories of risk from surface water and groundwater abstractions, as follows:

- **Category 1**: based on recent actual abstraction rates – causing serious damage now;
- **Category 2**: based on recent actual rates – deterioration likely by 2027;
- **Category 3**: based on full use of the abstraction licence – deterioration likely after 2027 and by 2040; and
- **Category 4**: based on full use of the abstraction licence – no likelihood of deterioration before 2040.

2.1.3 The aim of the assessment was to highlight where existing abstractions could impact on WFD objectives and would therefore need mitigation. The initial assessments for the existing abstractions as currently operated and operating at 'licence full' was undertaken by UU. This report provides a review of UU's assessment work in the light of compliance with the WFD.

2.2 Licences Under Review

2.2.1 An assessment by the EA and UU of all the abstraction licences against the categories above identified[13]:

- Five licences in Category 1. However, these are all being dealt with in AMP6 so they are not included in this WFD assessment;
- No licences in Category 2;
- Thirty licences impacting on surface waters and 18 licences impacting on groundwater were in Category 3.

2.2.2 For impacts on surface water bodies, the EA identified the "tipping point" (i.e. abstraction volume) below which UU abstractions would no longer cause a risk of deterioration. The tipping point assessment was used to establish five year abstraction limits for the associated licences in order to ensure that long-term abstraction does not cause deterioration. For impacts on groundwater bodies, not included in the EA's "tipping point" assessment, UU assessed the impact of constraining future abstraction to the recent actual as a worst-case.

2.2.3 This review includes a review of the water bodies highlighted by the EA and UU to be affected by a Category 1, 2, or 3 abstraction and takes a precautionary approach.

2.3 WFD Assessment of Licence Reviews

2.3.1 The assessment of licences against WFD water bodies has indicated that when accounting for recommended levels of reduction, confirmed or potential AMP6 measures (either sustainability reductions or new/increased prescribed flows), and an assumption of continuation of current operational activities or abstraction levels, most licences are unlikely to have a significant impact on

[13] Noted in United Utilities WRMP Methodology WFD no deterioration document – 2 August 2017 and Tipping Points spreadsheet – 2 August 2017.

WFD objectives of the relevant water bodies (e.g. impact levels are either no or minimal impact or minor impact).

2.3.2 This excludes the water bodies GB112074070010 (Ehen (upper including Liza)), GB31231398 (Ogden Reservoir Rochdale), and GB112068060300 (Salters Brook), where the relevant licences and activities could potentially lead to medium levels of impact. Further work may be required in these water bodies to either undertake further assessment to reduce the level of impact, or to establish what mitigation should be implemented.

2.3.3 The results of the WFD assessments are presented in **Table 2.1**.

Table 2.1 WFD Water Bodies Impacted by Current Abstraction

Water body ID	Water body name	Licences	WFD screening result	Comment
GB102076070690	Lowther (Upper)	NW/076/0005/003	Minor level of impact	The fully licensed assessment indicates impacts at Q30, Q50 and Q70. There is spare capacity in the licences that is greater than the reductions required. However, there is still some residual capacity that could impact on fish and invertebrates which are at high status.
GB112071065210	Colne Water (Laneshaw)	2671321024, 2671321040, 2671321023	Minor level of impact	The fully licensed assessment indicates impacts at Q50, Q70 and Q95. Additionally data is incorrect for Corn Close No.2 borehole. Therefore, even though the spare capacity in the licence is greater than the necessary reductions, there is the potential for an impact on WFD status and objectives.
GB112071065370	Langden Brook	2671315006, 2671315001, 2671315003, 2671315004, 2671315002, 2671315005,	Minor level of impact	The fully licensed assessment indicates impacts at all river flows. However, an assessment matching low flows calculations to flow protection indicates that four of the licences need reductions in order to protect river flows. If measures are implemented in AMP6, this will be mitigated and only minor impacts might be expected. However, if no measures are put in place, the risk would increase to medium.
GB112071065500	Ribble – conf Calder to tidal		No or minimal impact	The flows in this water body currently support good status.
GB112071065700	Duddel Brook	2671338012	No or minimal impact	The fully licensed assessment indicates impacts at Q50, Q70 and Q95. However, an assessment matching low flows calculations to flow protection indicates a potential issue with flow. If measures are implemented in AMP6 this will be mitigated and no impacts would be expected (particularly in light of abstraction being less than target). However, if no measures are put in place the risk would increase to medium.
GB112072066250	Wyre – conf R Brock to tidal	2672405006, 2672405010, 2672406022, 2672408015, 2672408020, 2672408021, 2672409004, 2672410001, 2672411002, 2672401001, 2672405009, 2672405015, 2672406012	Minor level of impact	The fully licensed assessment indicates impacts at Q50, Q70 and Q95. If measures are employed in AMP6 to implement the prescribed flows the impacts will be minor at most (particularly in light of abstraction being less than target). However, if no measures are put in place, the risk would increase to medium.

Water body ID	Water body name	Licences	WFD screening result	Comment
GB112072065770	Lords Brook		No or minimal impact	No impact is predicted for this water body based on the abstractions reviewed for GB112072066250.
GB112072066220	Calder (Wyre)	2672406022, 2672408021, 2672406012	Minor level of impact	The fully licensed assessment indicates impacts at all river flows and the abstraction data indicates that the deficit is greater than the spare capacity. However, if measures identified in AMP6 are implemented, this resolves the issue so there should be only a minor impact.
GB112072066240	Tarnbrook Wyre	2672401001	No or minimal impact	The fully licensed assessments indicates impacts at all river flows. However, the reductions required are lower than the target rate and additional measures are being implemented in AMP6.
GB112074070010	Ehen (upper including Liza)		No or minimal impact	Information provided by UU shows that this water body is impacted by the Ennerdale abstraction licence 2774003008, which will be revoked in 2022. As such the impact for this water body is set as no or minimal impact. If the licence is not revoked the impact would be medium.
GB112071065160	Trawden Brook	2671321022	No or minimal impact	The fully licensed assessment indicates impacts at Q50, Q70 and Q95. However, assessment indicates that deployable output is currently below the target abstraction to prevent deterioration. As such, no impact is expected.
GB112068060550	Crowton Brook	2568001159	No or minimal impact	The current abstraction is below the target set by the EA. Assuming abstraction does not increase and remains below target levels, particularly those relevant to Q70 and Q95 flows, no impact is expected.
GB112068060180	Dane (Clough Brook to Cow Brook)	2568002156, 2568002138	Minor level of impact	The spare capacity in the licence is greater than the necessary reductions and the hydrological regime supports good. Therefore, there should be no impact on WFD status as long as the abstraction stays at its current levels. However, assessments indicate a minor impact at Q95 so a minor impact is possible.
GB112068060300	Salters Brook	2568006082	Medium level of impact	Fully licenced scenarios indicate that the abstraction would have an impact at all river flows (i.e. Q30 to Q95). As the hydrological regime currently supports good, this could have an impact on WFD objectives.
GB112068060320	Ashton Brook	2568006082, 2568006088	No or minimal impact	Fully licenced scenarios indicate that the abstraction would have an impact at all river flows (i.e. Q30 to Q95). However, the abstraction is not used and therefore as long as this remains the case, no impact is expected. If the abstraction was to recommence a medium level of impact would be predicted.
GB112069064690	Beal	2569002206	Minor level of impact	The current abstraction is below the target. However, data indicates that at fully licenced quantities there could be impacts at Q50, Q70 and Q95. Therefore, there could be some minor impacts against WFD objectives.

Water body ID	Water body name	Licences	WFD screening result	Comment
GB31231398	Ogden Reservoir Rochdale	2569002206	No or minimal impact	Fully licenced scenarios indicate that the abstraction would have an impact at all river flows (i.e. Q30 to Q95). As the hydrological regime currently supports good ecological status, this could have an impact on WFD objectives. However, UU data indicates that current borehole DO constraint of 5.7 Ml/d is lower than the target abstraction volume of 13.6 Ml/d. Therefore the current system constraint protects against the risk of deterioration.
GB112069061210	Hardshaw (Windle) Brook	2569025037	No or minimal impact	Fully licenced scenarios indicate that the abstraction would have an impact at all river flows (i.e. Q30 to Q95). However, the abstraction is not used and therefore as long as this remains the case, no impact is expected. If the abstraction was to recommence, a medium level of impact would be predicted.
GB212069061524	Relief channel		No or minimal impact	This water body is not directly at risk therefore no impact is expected.
GB112068060330	Peckmill Brook, Hoolpool Gutter at Ince Marshes		No or minimal impact	This water body is not directly at risk therefore no impact is expected.
GB112068060350	Rivacre Brook	2568007014	No or minimal impact	Full licence scenarios indicates that the abstraction would have an impact at Q95. However, the abstraction is not used and therefore as long as this remains the case no impact is expected. If the abstraction was to recommence, a medium level of impact would be predicted.
GB112068060270	Dibbinsdale Brook and Clatter Brook	2568007014	No or minimal impact	Fully licenced scenarios indicate that the abstraction would have an impact at Q95. However, the abstraction is not used and therefore as long as this remains the case no impact is expected. If the abstraction was to recommence, a medium level of impact would be predicted.
GB112068060450	Darley Brook	256001158, 256001184, 256001153, 256001180, 256001155, 256001156	Minor level of impact	Fully licenced scenarios indicate that the abstraction would have an impact at Q70 and Q95. However, if the abstraction remains below targets then no or minimal impact would be expected.
GB112068060500	Weaver (Dane to Frodsham)	2568001154, 2568002138, 2568003124, 2568001158, 2568003091, 2568002156, 2568001159, 2568001184, 2568001153, 2568001180, 2568001155, 2568001156, 2568002146, 2568002138,	No or minimal impact	Fully licenced scenarios indicate that the abstraction would have an impact at Q95. However, several abstractions are limited and one is not used. So system restraints prevent a fully licensed scenario.

Water body ID	Water body name	Licences	WFD screening result	Comment
GB212069061523	Relief Channel		No or minimal impact	GW risk assessments indicates that there is no risk of deterioration.

2.3.4 In addition to the assessments above, further investigations have been identified as being required for the following groundwater licences:

- Thorncliffe Road (2674811009);
- Schneider Road (2674811008);
- Foxhill (2568005009);
- Manley Quarry (2568005011);
- Manley Common (2568006087);
- Newton Hollows (2568003076);
- Grizedale Dock reservoir (2672404001),
- Bearstone (18/54/04/0119);
- Dean Brook, Langden/Hareden system (2671338013); and
- Helsby (2568005008).

2.3.5 For all these licences, an assumption of medium level of impact has been assumed until the investigations have been completed. However, it is expected that in line with the assessments in **Table 2.1**, the risk levels will be reduced to minor impacts based on improved knowledge and through mitigation. As such, no options for this WRMP, specific to these licences, are expected to be required, although this will have to be reviewed upon completion of the investigations.

3. Approach to the WFD Assessment of WRMP Feasible Options

3.1 Overview

Approach to the Assessment

3.1.1 The WFD assessment has considered the following key questions in respect of the construction and operational phase of each feasible WRMP option:

- At the water body scale, would the option result in a deterioration of any of the WFD classification components from one status class to the next, (e.g. from good to moderate), irrespective of whether or not it results in the lowering of overall status?
- Would the option prevent any water bodies from achieving good overall status or, where relevant, an alternate objective?

3.1.2 Following the assessment of each feasible WRMP option, an assessment was made of the following for each of the preferred options:

- Would the cumulative effects of multiple WRMP options impact on the objectives of individual WFD water bodies?
- Would the cumulative effects of multiple WRMP options impact on the objectives of multiple water bodies that are hydrologically linked (i.e. operational catchments)?
- Would the cumulative effects of multiple WRMP options affect protected areas and their associated objectives?

3.1.3 If the answer to all of the above five questions is 'no' then the option can be considered to be WFD compliant.

3.1.4 Whilst some guidance is available to help answer the above questions, the overall assignment of WFD impact was based on expert judgement.

3.1.5 The possible future decommissioning of WRMP options is beyond the scope of this assessment, but impacts arising from decommissioning are likely to be similar to those arising from construction.

Available Guidance to Support Expert Judgement Decision Making

3.1.6 The principal source of relevant guidance on WFD Compliance Assessment in England is the EA. At present, the only publically available guidance is *Clearing the Waters for All*[14], which relates specifically to activities in estuarine and coastal water bodies up to one nautical mile out to sea. This guidance interprets the 'no deterioration criterion' as applying to each supporting WFD element as well as the overall status classification of the water body. So, for example, a deterioration in the quality of macrophytes in a river water body from good to moderate status would be classed as deterioration irrespective of whether this caused the overall water body status to be lowered. This approach was reinforced by a ruling from European Court of Justice[15] on the WFD assessment of dredging activities in Germany, and has been adopted as a general principal for the impact screening of WRMP options presented in this report.

3.1.7 Furthermore, the Cycle 2 RBMPs[16] indicate that within class deterioration of any constituent element (e.g. a lowering of the quality of macrophytes in a river water body that does not result in a lowering of the status of macrophytes e.g. from good to moderate) is permissible, but should be

[14] Environment Agency (2016) *Clearing the waters for All – available at: https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters*
[15] Court ruling available at curia.europa.eu
[16] 2015 River Basin Management Plans – available at https://www.gov.uk/government/collections/river-basin-management-plans-2015

limited as far as practicable. There are two exceptions to this: first, where the water body is at the lowest possible class (e.g. bad ecological status) where no within class deterioration is allowed; and, second, elements that are at high status (with the exception of morphology), which may be allowed to deteriorate to good status provided a number of additional conditions are met.

3.1.8 The EA has also made available their position statement on WFD assessment of new physical works in rivers (position 488_10[17]) which has been used, as appropriate, to guide the assessment of levels of impact to the construction and operation phase of each WRMP option.

3.1.9 The EA has not published any guidance on WFD compliance assessments of lake or groundwater bodies.

3.2 WFD Assessment Process

3.2.1 The WFD assessment has been undertaken on 115[18] confirmed feasible options (inclusive of the Manchester and Pennine Resilience options). The option reference numbers and names are listed in **Appendix A**. The assessment steps are listed below and then described in more detail in the following sections.

3.2.2 WFD assessment steps:

- Feasible Options
  - Step 1: Data collection;
  - Step 2: Level 1 screening of options;
  - Step 3: Level 2 detailed assessment of potential impacts.
- Preferred Options
  - Step 4: Cumulative assessment; and
  - Step 5: Protected areas assessment.

Step 1: Collation of Baseline WFD and Option Data

3.2.3 The WFD assessments for each option were based on the engineering scope information provided by UU. Information was provided on likely option 'activities' (e.g. new groundwater abstraction, new pumping stations etc.) as well as small scale maps of preferred routes for any new pipelines that would be required. The engineering scopes are typically high-level documents, to enable desk top assessment, and do not contain information on construction methods, or the exact locations or designs of the new infrastructure.

3.2.4 All relevant water bodies that the option could impact on were identified by comparing the engineering pro forma to the spatial extent of WFD water bodies obtained from the EA's Catchment Data Explorer website[19] and NRW Water Watch website[20]. These websites were also used to collate baseline WFD data for each water body for the Level 2 assessments. The Level 1 and Level 2 assessments were based on the 2015 classifications, in line with the 2015 Cycle 2 RBMPs.

Step 2: Level 1 Screening of Options

3.2.5 Each option was broken down into its main constituent parts ('activities') based on construction and operational phases. This included activities such as:

[17] Environment Agency (2015) Position 488_10 Protecting and improving the water environment: WFD compliance of physical works in rivers.
[18] This includes the enabling works for the trading option, given the option ID 'B2' for the purposes of this assessment, and 34 resilience options.
[19] EA Catchment data explorer, available at: http://environment.data.gov.uk/catchment-planning/
[20] NRW Water Watch website, available at: http://waterwatchwales.naturalresourceswales.gov.uk/en/

- **Construction phase**; trenching and laying of pipe lines, building new abstraction infrastructure (e.g. river intakes, pumping stations), refurbishment of current infrastructure; and
- **Operational phase**: abstractions, discharges, maintenance of pipe lines.

3.2.6 For the supply-demand options, each water body that the option intersects was considered against each activity which would occur in that water body. For the resilience options, the Level 1 screening was undertaken at the option level and individual water bodies were not identified until the Level 2 detailed assessment. The likely impact assigned based on the definitions of impacts described in **Table 3.1**.

Table 3.1 Impact Classification Categories

Level of impact	Description of impact
No or minimal impact	No measurable change in the quality of the water environment or the ability for target WFD objectives to be achieved.
Minor level of impact	Impacts from the option when taken on their own have the potential to lead to a minor localised, short-term and fully reversible effect on the quality of the water environment that would not result in the lowering of WFD status. Impacts would be very unlikely to prevent any target WFD objectives from being achieved.
Medium level of impact	Impacts when taken on their own have the potential to lead to a widespread or prolonged effect on the quality of the water environment that may result in the temporary lowering of WFD status. Impacts have the potential to prevent target WFD objectives from being achieved.
High level of impact	Impacts when taken on their own have the potential to lead to a significant effect and permanent deterioration of WFD status. Impacts have a high risk of preventing target WFD objectives from being achieved.

3.2.7 Some activities (e.g. pipe line construction) are highly unlikely to have more than a minor level of impact on a water body, no matter what the status of the water body is. This is because the activities are limited in spatial extent, will occur for a short duration in time, and/or have limited scope for interaction with the water environment. The Level 1 screening assessment assumed that all construction activities will be undertaken in line with best practice construction and pollution control measures, and that all relevant consents would be secured and complied with (refer to **Section 3.3**). For the supply-demand options, where the Level 1 screening identified that a water body would only be subjected to a minimal or minor level of impact from all activities arising from an option, the water body was screened out from the Level 2 detailed assessment and considered to be WFD compliant (note that the same water body may be screened in as a result of activities on other WRMP options). For the resilience options, those options that would only result in a minimal or minor level of impact, from one or more activities, was screened out from the Level 2 detailed assessment.

3.2.8 Other activities have the potential for a medium or high level of impact on a water body. These include activities that could have long term impact on water resources (e.g. a new surface water or groundwater abstraction, significant changes to the groundwater flow regime, or construction of a new reservoir), or involve large scale construction activities within a small water body (e.g. embankment raising of a reservoir which is a WFD water body in its own right). For the supply-demand options, where the Level 1 screening identified that a water body could be subject to a medium or high level of impact from one or more activities, the water body was screened in for Level 2 detailed assessment. For the resilience options, where the Level 1 screening identified an activity that has the potential for a medium of high level of impact, the resilience option was screened in for Level 2 detailed assessment.

3.2.9 Note that feasible options were initially assessed as though they will be the only option to be put in place within a water body.

3.2.10 **Table 3.2** summarises the Level 1 screening impacts from the activities that make up the options.

Table 3.2 Level 1 Screening Impacts from Option Activities

Level of impact	Construction activities	Operation activities	Level 1 screening result
No or minimal impact	▶ Trenching and laying of pipe lines within the interfluves of a catchment (no watercourse crossings); ▶ Modification of an existing water treatment works; ▶ Construction of a new water treatment (set back from a watercourse); ▶ Construction of new abstraction borehole headworks and associated surface infrastructure; ▶ Construction of a new storage reservoir (e.g. small or set back from watercourse).	▶ Maintenance of pipe lines; ▶ Maintenance and use of pumping stations and water treatment works; ▶ Maintenance and use of river intakes/outfalls; ▶ Maintenance and use of abstraction borehole headworks and surface infrastructure.	Screened out of Level 2 detailed assessment
Minor level of impact	▶ Trenching and laying of pipe lines involving watercourse crossings; ▶ Construction or modification of a new pumping station and/or river intake; ▶ Construction of new outfall structure to a watercourse or reservoir; ▶ Refurbishment of existing abstraction boreholes or drilling of new abstraction boreholes.	▶ Transfer of water via a river, canal or aqueduct; ▶ Use of existing surface water and groundwater abstraction licences, within existing licence conditions and recent actual abstraction patterns.	Screened out of Level 2 detailed assessment
Medium level of impact	▶ Construction/repair of new tunnels and conduits.	▶ New or increased surface water abstraction; ▶ New or increased groundwater abstraction; ▶ Cessation of an existing discharge to a watercourse; ▶ Change to reservoir compensation release; ▶ Presence of new underground structures such as tunnels and shafts.	Screened in for Level 2 detailed assessment
High level of impact	▶ Construction of new impounding reservoir (e.g. next to or in line with a watercourse or large compared to water body); ▶ Modification to existing reservoir (e.g. embankment raising).	▶ Presence of new reservoir or modified existing reservoir.	Screened in for Level 2 detailed assessment

3.2.11 For most of the feasible options, all the water bodies affected by an activity that may cause a medium or high level of impact were screened in. For example, due to connections between the surface water and groundwater environment, changes to one may affect the other (e.g. a new groundwater abstraction may reduce baseflow in a surface watercourse). Where new abstractions from a lake or canal that is a WFD water body in its own right are proposed, the river body in which it is situated was also included, as the abstraction may affect the wider water body.

3.2.12 The exception to this was for Options WR159 (Group 1 - Improved reservoir compensation release control) and WR160 (Group 2 - Improved reservoir compensation release control) which involve changes to compensation releases from reservoirs. In this case, only the downstream river water bodies were screened in, groundwater bodies and lake water bodies were screened out. This is because it was clear from the engineering scope for these options that there would be no significant construction or operational changes to the reservoirs themselves, and it was assumed that there would be no change in wetted area of downstream watercourses which may affect groundwater – surface water interactions.

3.2.13 In Steps 2 and 3, only the river water body in which the option is situated was considered; downstream river water bodies were not considered at this stage. There is the potential for an option such as a new surface water abstraction to impact on downstream water bodies, and this is considered in the Step 4 cumulative assessment, where impacts on both individual water bodies and operational catchments as a whole are considered.

Step 3: Level 2 Detailed Assessment of Potential Impacts

3.2.14 Where the Level 1 screening of options indicated that an activity may have a medium or high level of impact, further assessment of the potential impacts was undertaken. This was recorded in an impact assessment worksheet for each water body that may be subject to a medium or high level of impact.

3.2.15 Additional baseline data for the Level 2 assessments was collected from the EA's Abstraction Licensing Strategies (ALS)[21]. The ALS compare flow in rivers and water levels in aquifers to the recent actual abstraction patterns, the fully licensed abstraction quantity, and the resource allocation for the environment. All surface water catchments and groundwater management units are assigned a resource availability as follows:

- **Water available**: there is more water than required to meet the needs of the environment, therefore new abstraction may be possible without having an effect on the environment;
- **Restricted water available**: recent river flows or levels of groundwater are enough to meet the needs of the environment, but if all abstractions abstract at their licenced quantities, river flows or levels of groundwater would be lower than required to meet the needs of the environment;
- **Water not available**: recent river flows or levels of groundwater are below those needed to meet the needs of the environment. River flows or groundwater levels are below the requirements to help support WFD good ecological status.

3.2.16 The water availability was used to estimate the likely effects of new or changed abstractions and discharges. This was supported by aquifer designation data[22] and the location of the abstraction compared to surface water courses where required.

3.2.17 As for the Level 1 screening, each option was broken down into its main constituent activities. Each activity was considered separately against each WFD element and the WFD baseline that has been collated. However, where feasible, assessments against elements were grouped if the scale and level of impacts were expected to be similar.

3.2.18 The assessments were based on available data and evidence as far as possible. However, due to the limited engineering and baseline information available, expert opinion was employed in most cases. Where there was uncertainty over an option (e.g. the exact route of a pipe line is not known), a worst case scenario approach was used (e.g. the assessments have assumed that the pipe line has watercourse crossings rather than not).

[21] Abstraction Licencing Strategies, accessed October 2017: https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process
[22] Aquifer designation data, accessed October 2017: http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

3.2.19 The same level of impact categories were used as in the Level 1 screening (**Table 3.1**). The final impact category identified for each part of an option assumes that generic construction best practice and pollution prevention measures would be put in place (see **Section 3.3**).

3.2.20 A confidence rating was given to the Level 2 assessments, according to the confidence categories in **Table 3.3**. The confidence rating assigned to each assessment is a reflection on the amount of uncertainty in the option design (e.g. uncertainty over the location and quantity of a new groundwater abstraction would lower the level of confidence in the assessment), and the amount and quality of evidence upon which the impact level has been based (e.g. existing investigations into the impacts of reservoirs by UU and the EA increase the confidence level in the assessment). All the assessments that have only been subject to a Level 1 assessment are assigned a high confidence by default.

Table 3.3 Confidence Level Categories

Confidence category	Description of confidence
Low	Very limited evidence, high risk activity or assessment solely based on expert judgement.
Medium	Reasonable levels of evidence for some aspects of the assessment. Some assumptions and expert opinion required.
High	Good level of evidence with minimal assumptions required or low risk activity.

3.2.21 The overall WFD impact of the options was based on the 'one out, all out' methodology used for the WFD. For example, this would mean that if the construction phase of an option has a final level of impact of 'no or minimal' but the operational phase has a level of impact of 'medium', the overall impact to WFD objectives from the option would be identified as 'medium level of impact'.

Step 4: Cumulative Assessment

3.2.22 Where two or more Preferred Plan options are located in the same water body or operational catchment[23], a high level assessment has been undertaken to determine the potential for cumulative effects on WFD objectives, should all the options be implemented.

3.2.23 The cumulative impact reflects the greatest impact that could occur in either an individual water body within the operational catchment, or on the catchment as a whole. For example, if an operational catchment includes a single water body with a medium level of impact and several water bodies with a minor level of impact, the cumulative impact on the catchment will be at least medium impact. The cumulative impact may be increased to a high level of impact if the options could combine to create a greater impact than they would individually (e.g. the level of impact on the fish classification status could increase if two new abstractions started on the same river but in different water bodies). The same impact classification system has been used for the cumulative assessments as for the Level 1 and Level 2 assessments (**Table 3.1**).

Step 5: Protected Areas Assessment

3.2.24 Assessments have been undertaken on protected areas related to the protection of habitats and species that are identified in the EA's Catchment Data Explorer[24] as being linked to a water body that may be impacted by a Preferred Plan option. The habitats present in each protected area[25] have been reviewed, and only protected areas with habitats which may be water dependent (e.g.

[23] An operational catchment may comprise a number of river water bodies that combine to form a drainage catchment, or a regional groundwater body.
[24] Downloaded from the EA's Catchment Data Explorer website October 2017: http://environment.data.gov.uk/catchment-planning/RiverBasinDistrict/12
[25] Habitat data for protected areas downloaded from the Joint Nature Conservation Committee website October 2017: http://jncc.defra.gov.uk/page-4

inland water bodies, bogs, marshes, water fringed vegetation and fens) have been included in the assessment.

3.2.25 The assessment considers if a hydrological pathway is present between the protected area and the options. Options located downstream of a protected area are generally not considered to have an impact on a protected area unless the reason for designation could be impacted by new structures or reductions in stream flow (e.g. migratory fish). A single assessment has been undertaken for each protected area regardless of how many options could affect it.

3.2.26 The assessment has been informed by expert judgement and detailed evidence where it is available (e.g. hydrological assessments and EA investigations). The same impact classification system has been used for the cumulative assessments as for the screening assessments (Table **3.1**). However, an overall combined assessment of construction and operational phase impacts has been provided rather than separate assessments.

3.2.27 Other protected areas (e.g. nutrient sensitive areas, bathing waters, shellfish waters and drinking water protection areas) have been assessed as being at low risk of being impacted by the WRMP options (e.g. shellfish waters and bathing waters are related to transitional and coastal waters and so the link between an WRMP is limited). As such, these protected areas are not part of the scope of this WFD assessment.

3.3 Assumptions

3.3.1 The WFD assessment is based on available data, primarily spatial data on the EA's Catchment Data Explorer website and NRW Water Watch website, and the engineering scopes provided for each option. However, in all cases the information had insufficient detail and so the use of assumptions in the assessment of construction and operational impact was required. The assumptions used were as follows:

- Construction best practice will be used at all construction sites. As no detailed plans or construction methods were available for the assessments, they are based on the assumption that measures will be implemented that are consistent with the suite of Guidance for Pollution Prevention[26], and that all relevant consents would be secured and complied with. This is especially crucial in respect of in-channel works and works that take place in proximity to river channels (e.g. within 8 metres);
- All new transfer pipe line river watercourse crossings would be installed via trenchless techniques or via a trench and cover technique within a dry working area. Trench and cover techniques would require temporary over pumping of water or temporary diversion of the river channel, and a reinstatement of bed and bank material, and flow, once works are complete. Such works would require consent from the EA or Lead Local Flood Authority, which would ensure WFD compliance;
- All new transfer pipe line crossings of estuaries or coastal waters would be installed via horizontal directional drilling or an alternative technique that would minimise disturbance of the bed. Works would be undertaken in line with Marine Management Organisation licence requirements, ensuring WFD compliance;
- Ground investigations would be undertaken prior to construction activities. These will identify any contaminated land and mitigation that may be required;
- Extensions, modifications, or new pumping stations, water treatment works, etc. would be consented either via permitted development rights, or via planning consent from the Local Planning Authority. Construction of these would involve a relatively small footprint in the context of any WFD water body catchment, would not be laterally extensive (compared to, for example, a new transfer main), and would not involve the requirement for in-channel works.

[26] http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/

Where planning consent is required, such developments would need to demonstrate that they are compliant with the objectives of the WFD in order to gain planning consent;

- Dewatering of excavations would not require a permit from the EA/NRW. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. However it is assumed that the dewatering permit would limit any impacts to a minor level (localised and temporary). Dewatering would be of uncontaminated water, and water would be discharged within the same water body. This assumption does not include dewatering activities associated with the new tunnel and tunnel refurbishment Manchester and Pennine resilience options, which would require further detailed assessment to establish the risks posed by dewatering;
- The relatively shallow and localised excavations associated with laying new transfer pipe lines, and constructing new pumping stations, water treatment works etc. would not present a risk to overall WFD status of groundwater bodies;
- Construction, refurbishment, and testing of groundwater abstraction boreholes would be undertaken under consent from the EA/NRW. Boreholes would be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.
- WRMP options that involve a new transfer of water into the water environment (e.g. new outfalls into rivers, canals or reservoirs) would be consented by an appropriate discharge activity permit that stipulates an appropriate standard for water quality in line with the requirements of the WFD standards;
- For WRMP options that involve the transfer of water via canals, it is assumed this would be undertaken with due consideration to WFD status and objectives and that any water transfer option would be agreed in principle with the canal owner.

4. Overview of Feasible Options

4.1.1 The 115 WRMP feasible options (comprising of 81 supply-demand options and 34 Manchester and Pennine Resilience options) were assessed to identify if they presented a risk to the delivery of WFD objectives. The following sub-sections describe the activity categories associated with the options and outline how each activity has been dealt with during the Level 1 screening and the Level 2 detailed assessment.

Construction Phase Activities

In-channel Construction Activities

4.1.2 A total of 64 WRMP feasible options include the need for the construction of in-channel structures (e.g. new surface water abstractions requiring the construction of intake structures), or the construction of pipe lines with watercourse crossings. In-channel (or in-lake) construction may have the following impact on surface water bodies:

- Reduction in the chemical status due to deterioration in water quality due to disturbance of soils and sediments, particularly if contaminated;
- Reduction in the chemical status due to deterioration in water quality due to accidental spillage or leakage of fuels, oils and other chemicals associated with construction machinery;
- Reduction in the ecological status due to deterioration in chemical status;
- Reduction in the ecological status due to smothering of habitats or reduction in light due to release of sediments; and
- Reduction in the ecological status due to changes in hydrological regime, river continuity or morphological conditions as a result of impoundments or changes to the structure of the channel.

4.1.3 For the purposes of the WFD assessment, it has been assumed that construction best practice would be used, including pollution prevention measures (see **Section 3.3**). As such, any effects that do occur would be temporary and localised. In channel construction has therefore been flagged as a minor impact in the Level 1 screening and is not subject to a detailed Level 2 assessment.

Surface Catchment Construction Activities

4.1.4 A total of 105 WRMP feasible options include the construction or modification of raw water transfer pipe lines, water treatment works, booster stations and other infrastructure in the near surface environment, but away from watercourse channels.

4.1.5 These structures typically have a very small footprint compared to the WFD water bodies as a whole, and only involve relatively shallow excavations. Assuming that construction best practice is implemented (see **Section 3.3**), these activities are unlikely to have a negative impact on the status of the water bodies. As such, construction activities away from watercourses have been assigned a no or minimal impact in the Level 1 screening are not subject to a detailed Level 2 assessment.

Abstraction Borehole Construction or Refurbishment

4.1.6 A total of 32 WRMP feasible options associated with new groundwater abstractions include the construction of new abstraction boreholes (drilling, borehole development, pumping tests, installation of pumps, head works construction), or the refurbishment of existing boreholes (borehole development, installation of new pumps, new headworks), which may have the following impact on water bodies:

- Reduction in the chemical status of the groundwater body due to release of drilling chemicals into the aquifer, or migration of near surface contamination to ground;
- Reduction in the quantitative status of the groundwater body due to changes in groundwater levels and flows during test pumping. This could also affect the chemical status if changes in flows cause migration of contaminated or saline groundwater;
- Reduction in the quantitative status of the aquifer due to deterioration in a dependent surface water body or groundwater dependent terrestrial ecosystem test as a result of changes in the supply of baseflow to surface water environments during pumping tests;
- Reduction in the chemical or ecological status of surface water bodies due to reductions in baseflow causing changes to the hydrological regime or reduction in dilution of pollutants.

4.1.7 For the purposes of the WFD assessment, it has been assumed that drilling and test pumping would be undertaken in line with permits from the EA or NRW, and any at surface construction works would be undertaken according to construction best practice and pollution prevention measures (see **Section 3.3**). As such, any effects that do occur would be at worst, temporary and localised. Abstraction borehole drilling and refurbishment has therefore been flagged as a minor impact in the Level 1 screening and is not subject to a detailed Level 2 assessment.

Construction or Modification of Reservoirs

4.1.8 Four feasible options propose the construction of new reservoirs (WR004 – Longsleddale Reservoir and WR012 – Borrow Beck Reservoir) or raising the embankment structure of a reservoir (WR037a and WR037b Haweswater Reservoir).

4.1.9 The construction of a new reservoir could have a widespread impact on the river water body in which it is located due to the following:

- Reduction in the chemical status due to a deterioration in water quality as a result of disturbance of soils and sediments, particularly if contaminated;
- Reduction in the chemical status due to deterioration in water quality as a result of accidental spillage or leakage of fuels, oils and other chemicals associated with construction machinery;
- Reduction in the ecological status due to smothering of habitats or reduction in light as a result of release of sediments; and
- Reduction in the ecological status due to changes in hydrological regime, river continuity or morphological conditions as a result of impoundments and watercourse diversions.

4.1.10 While these effects would be temporary during the construction works, they would be widespread and therefore new reservoir construction has been flagged as high impact during the Level 1 screening and is subject to Level 2 detailed assessment.

4.1.11 Impacts of the construction activities associated with raising existing reservoir embankment structures would be similar to those listed above. Whilst these would be temporary, they could have widespread impacts on the lake water body associated with the reservoir due to the relatively small size of the water body. Impacts could also occur on the downstream river water body. These activities have been flagged as high impact during the Level 1 screening and are subject to Level 2 detailed assessment.

4.1.12 Options WR159 (Group 1 - Improved reservoir compensation release control) and WR160 (Group 2 - Improved reservoir compensation release control) involve a change to the penstock arrangements of reservoir compensation releases. As this only involves changes to pipework and associated equipment, any impacts on the WFD status of water bodies would be none or minimal, and this activity is not subject to a detailed Level 2 assessment.

Construction or Repair of Tunnels and Conduits

4.1.13 Two Manchester and Pennine Resilience options include the construction of new tunnels and conduits, and two include the repair of existing tunnels and conduits that make up the regional aqueduct. These four options also include the drilling of temporary and permanent access shafts to the new or existing tunnels. The potential impacts of these activities include:

- Reductions in the quantitative status of a groundwater body due to dewatering of shafts and tunnels;
- Changes to groundwater levels and flow patterns due to dewatering of shafts and tunnels, or through the creation or disruption of groundwater flow pathways due to subsurface excavation and construction. These changes could result in a reduction in the quantitative status of a groundwater body. Depending on the nature of the surface geology and the degree of connectivity between the groundwater and surface water environment, there may also be an impact on the hydrological regime of overlying surface water bodies or protected areas;
- Reductions in chemical status of groundwater bodies. This could be caused by migration of contaminated groundwater from shallow contaminated land or abandoned coal workings to unaffected areas of the groundwater body, or by leakages from construction machinery;
- Reduction in the chemical status of surface water bodies due to deterioration in water quality arising from disturbance of soils and sediments at the surface, particularly if contaminated, or due to accidental spillage or leakage of fuels, oils and other chemicals associated with construction machinery;
- Reduction in the ecological status of surface water bodies due to smothering of habitats or reduction in light as a result of the release of sediments from construction activities; and
- Reduction in the ecological status of surface water bodies resulting from a deterioration in chemical status.

4.1.14 The length of the tunnels (up to 52 km of new tunnels), the number of access shafts that need to be constructed (estimated at every 3 km), and the scale of the excavation and construction activities means that there is the potential for significant impacts on the WFD status of water bodies. As a result, resilience options that include tunnels have been assigned a medium level of impact in the Level 1 screening and are subject to a Level 2 detailed assessment.

Operation Phase Activities

Water Transfers

4.1.15 A total of 11 WRMP feasible options (many of the third party options (WR8xx), plus WR099a (Worsthorne Borehole (Compensation)), WR109 (Swineshaw Boreholes (Buckton Castle Water Treatment Works (WTW))), and WR114 (Python Mill Borehole)), involve transfer of water between water bodies via canals, or occasionally surface watercourses. The discharge of water can affect the water quality of the receiving watercourse, and also the hydrological flow regime. For the purposes of this WFD assessment, it has been assumed that any transfers would be consented by an appropriate discharge activity permit or equivalent controls if the activity would be exempt from such regulation. In addition, it is assumed that canals are managed (by the canal owner or equivalent organisations) to maintain flows and water levels to permit navigation and existing water transfer arrangements with UU, and that this is done with due consideration for WFD objectives (see **Section 3.3**).

4.1.16 Water transfers have been flagged as a minor level of impact in the Level 1 screening and are not subject to a detailed Level 2 assessment.

New or Increased Abstractions

4.1.17 A total of 65 WRMP feasible options include either a new abstraction or a change to an existing abstraction. Changes to an existing abstraction can either be an increase in the licensed quantity,

or an increase from recent actual abstraction levels, but still within the licensed quantity. For this latter option type, a new abstraction licence is not required, but the increase in abstraction is considered in the WFD assessment, as the increased abstraction may have an impact on the WFD status of the associated water bodies.

4.1.18 A further 32 options include a new or increased groundwater abstraction quantity. The impact of this activity may include:

- Reduction in the quantitative status of the groundwater body due to a failure of the quantitative water balance test as a result of long term abstraction rates from the aquifer exceeding long term recharge rates;
- Reduction in the quantitative status of the aquifer due to deterioration in the dependent surface water body or groundwater dependent terrestrial ecosystem test. This can occur as a result of changes in groundwater flows and levels changing the supply of baseflow to surface water environments;
- Reduction in the quantitative or chemical status of the groundwater body if changes in groundwater flow induced by the abstraction causes migration of contaminated or saline groundwater;
- Reduction in the chemical or ecological status of surface water bodies due to reductions in baseflow causing changes to the hydrological regime or reduction in dilution of pollutants.

4.1.19 A total of 33 options include a new or increased surface water abstraction quantity. The impact of this activity may include:

- Reduction in the ecological status of the surface water body due to changes in the hydrological regime failing to support good status of biological elements such as fish or benthic invertebrates;
- Reduction in the chemical status of the surface water body due to reduction of dilution of specific pollutants, priority substances or priority hazardous substances;
- Reduction in the ecological status of the surface water body due to changes in the chemical status failing to support good status of biological elements such as fish or benthic invertebrates; and
- Reduction in the quantitative water balance of a groundwater body due to changes to the quantity and patterns of leakage of surface water to groundwater.

4.1.20 Changes to abstractions may have a widespread or prolonged effect on the WFD status of surface water or ground water bodies, so water bodies in which a new or changed abstraction is located are screened in for Level 2 detailed assessments. For all abstractions, both the groundwater and surface water bodies in which they are located have been screened in. The Level 2 detailed assessment takes the following into consideration:

- The size of the proposed new abstraction (or size of the increase compared to the current abstraction);
- If an abstraction licence is already in place;
- The proximity of groundwater abstractions to surface watercourses; and
- The availability of water in the relevant surface water and groundwater bodies.

Changes to Existing Discharges

4.1.21 Option WR146 (Davyhulme - Final Effluent Reuse) is a direct final effluent reuse scheme which involves utilisation of the discharge from Davyhulme Waste Water Treatment Works (WwTW). Reduction in the volume of a discharge may affect the hydrological regime of a surface water body and therefore this option (the only option which involves a reduction of a discharge from a WwTW)

has been flagged as medium level of impact in the Level 1 screening and is subject to a Level 2 detailed assessment.

4.1.22 Options WR159 and WR160 comprise the reduction in compensation flows from 76 local and four regional reservoirs. This is not a reduction in the consented compensation flow, rather a reduction in the currently discharged volume to bring the compensation release in line with the consented volume. The current WFD status is based on the current flow regime (including recent actual abstraction and discharge patterns) and changes to the discharge patterns could result in a change to the hydrological regime of a surface water body. Therefore, reduction in compensation flows are flagged as medium impact at Level 1 screening for the river water body immediately downstream of the reservoir, and subject to a Level 2 detailed assessment. As the wetted area of the reservoir and downstream watercourses would not change significantly, any impact on groundwater bodies would be minor. Therefore, groundwater bodies for Options WR159 and WR160 have been flagged as no or minimal impact at Level 1 screening and are not subject to a detailed Level 2 assessment.

4.1.23 Where a reservoir is a WFD lake water body in its own right, the lake has not been screened in for Level 2 detailed assessment. This is because any water not released as compensation flow will be abstracted for supply, therefore there will not be a significant change to the lake water bodies and they have been flagged as no or minimal impact in the Level 1 screening.

Presence of New Reservoirs or Increased Size of Modified Reservoirs

4.1.24 Two options (Option WR004 (Longsleddale Reservoir) and Option WR012 (Borrow Beck Reservoir)) include the construction and subsequent operation of a new impounding reservoir. Out of all the activities planned, this has the potential for the greatest impact on the WFD status of the surface water body in which it is constructed due to permanent changes to the habitats, hydrological flow regime, and water quality of the watercourses. It may also result in the reclassification of a water body as highly modified water body. Interactions with underlying groundwater bodies may also occur affecting their WFD status. Therefore, these options are flagged as a high impact at Level 1 screening stage and subject to a Level 2 detailed assessment.

4.1.25 While increasing the size of a reservoir through embankment raising or other modifications has a lower potential for significant impacts, these are still flagged as a high impact at Level 1 screening stage, then assessed in more detail in the Level 2 assessment.

Presence of New Tunnels and Conduits

4.1.26 Two Manchester and Pennine Resilience options include the construction of new tunnels and conduits. These resilience options also include the construction of permanent access shafts to the new or existing tunnels. The potential impacts of these resilience options include:

- Changes to groundwater levels and flow patterns due to the presence of a new subsurface impermeable structure. Where the diameter of the tunnel is small in comparison to the saturated thickness of the aquifer, and the tunnel is well below the water table, impacts are likely to be minor. However, where the diameter of the tunnel is large relative to the saturated thickness of the aquifer, and the tunnel is close to the water table and active zone of groundwater flow, greater impacts may occur, particularly if the tunnel is perpendicular to the direction of groundwater flow. These changes may cause a reduction in the quantitative status of the groundwater body and may also impact on the hydrological regime of overlying surface water bodies or protected areas (depending on the degree of connection between the groundwater and surface water environment). Changes to groundwater levels and flow patterns may also occur if altered or preferential flow paths are created in the strata immediately surrounding the tunnels and shafts;
- Changes to the chemical status of groundwater bodies due to leakages from the aqueduct. However, it is assumed that the potable standard raw water would be free from hazardous and priority hazardous substances and other pollutants and would therefore not have a significant negative effect on the chemical status of the groundwater body.

4.1.27 The presence of large (up to 52 km long tunnels) impermeable structures in the subsurface has the potential to result in permanent changes to the groundwater environment which may impact on both groundwater and surface water bodies. As a result, resilience options which include tunnels have been assigned a medium level of impact in the Level 1 screening and have been subject to a Level 2 assessment.

Enabling Works for Trading Option

4.1.28 The Draft WRMP included a strategic choice to trade water to Thames Water during drought years (although this now longer forms part of United Utilities' Preferred Plan for the Final WRMP) but is included here for completeness to ensure all feasible options are considered. Water would be released from Lake Vyrnwy into the River Severn, re-abstracted from the River Severn at Deerhurst, transferred by a new pipeline to the River Thames at Culham, then re-abstracted from the River Thames using Thames Water existing infrastructure.

4.1.29 For the purposes of preparing the Draft WRMP and undertaking the WFD assessment, UU agreed with Thames Water that any environmental impacts downstream of Vyrnwy in the Severn catchment, and in the Thames catchments associated with this transfer, would be assessed in Thames Water's Water Resources Management Plan. These activities have therefore not been included in this WFD assessment, although the findings of the Thames Water WFD assessment[27] in respect of this transfer are summarised below. As the water traded is currently abstracted for UU supply, it is assumed that there would be no impacts on Lake Vyrnwy itself.

4.1.30 In order to facilitate the transfer of water from the UU supply area to the Thames Water supply area, enabling works would be required. The enabling works for the trading option include:

- Upgrading of the Vyrnwy Aqueduct;
- Modifications to Oswestry WTW;
- Transfer of water from the Dee Aqueduct to the Vyrnwy Aqueduct;
- Construction of four booster stations; and
- Transfer of water from Duddon Common Booster Station and Sandiford WTW.

4.1.31 These enabling works are included in this WFD assessment (Option B2).

Summary of the Thames Water Draft Water Resources Management Plan 2019 WFD Assessment of a Severn Thames Transfer

4.1.32 The Thames Water WFD assessment highlights that the additional releases of water from Lake Vyrnwy would be not likely to have a significant adverse impact on the WFD physico-chemical or chemical classifications sufficient to result in a change of WFD status in the Afon Vyrnwy or River Severn. However, the assessment notes that there is some uncertainty as to effects on dissolved oxygen and water temperature in the upper reaches of the Afon Vyrnwy downstream of the reservoir, due to the higher releases which may adversely impact on aquatic ecology, as well as a risk of higher flow velocities leading to the resuspension of copper from river bed sediment associated with historic copper mine workings in the river catchment area. The WFD assessment states that there may be beneficial effects under some flow conditions, particularly during low flows in hot weather, with higher flows helping to moderate elevated water temperatures and increasing dilution of diffuse pollution pressures.

4.1.33 The WFD assessment states that abstraction of water from the River Severn at Deerhurst would not be anticipated to result in a change in the flow regime that would be materially significant such as to alter the chemical status of the river. The abstracted water would be treated at the nearby treatment works, which would include ferric chloride, clarification and rapid gravity filters (RGF)

[27] Ricardo (2017) *Draft Water Resources Management Plan 2019: Water Framework Directive Assessment.* Available from https://corporate.thameswater.co.uk/-/media/Site-Content/Your-water-future-2018/Appendices/dWRMP19-Apendix-BB---Water-framework-directive-151217.pdf [Accessed July 2018].

treatment processes. The first flush of water through the pipeline after a period of non-use has the potential for adverse effects to water quality, although mitigation includes that the first flush of water through the pipeline would be tested and if required treated at a temporary holding lagoon. Once operational, the discharge would be treated to environmental standards at the water treatment works and this would provide sufficient quality of water for discharge taking account of the mixing and dilution that would occur within the receiving waters.

4.1.34 The effects of the discharge at the discharge/flow augmentation point at Culham (Thames (Evenlode to Thame) and the potentially impacted waterbodies downstream were considered in the WFD assessment. The assessment states that discharge would be treated to environmental standards and therefore there would be a low risk of impacting the physico-chemical quality elements of these River Thames water bodies (which are currently assessed as being at moderate WFD status). Peaks in suspended solids would be monitored and if there was an elevated level of suspended solids, the abstraction from the River Severn would be reduced to just the pipeline 'sweetening' flows, and would be treated prior to the main treatment works. The outfall to the River Thames would involve an aeration cascade structure to oxygenate the discharge water to minimise any adverse impacts on dissolved oxygen concentrations in the river. The assessment notes that there is the potential for some organic pollutants to be in the discharged, such as metaldehyde, as these pollutants are more difficult to treat and remove at the water treatment works.

5. Results of the WFD Assessment of WRMP Supply-Demand Feasible Options

5.1 Level 1 Screening of Feasible Options

5.1.1 The Level 1 screening identified 328 WFD water bodies that may be impacted by the 81 supply-demand feasible options. Many of these water bodies could be impacted by more than one option, resulting in a total number of 584 option-water body combinations. The screening exercise was undertaken for each option and its related water bodies. The results of the screening exercise are summarised in **Table 5.1** and presented in full in **Appendix B**.

Table 5.1 Summary of Level 1 Screening Exercise for Feasible Options

	No of option–water body combinations	No of water bodies	No of options
Total	584	328	81
High level of impact	10	6	4
Medium level of impact	198	126	65
Minor level of impact	201	128	39
No or minimal impact	175	127	28

Note that a water body may have varying levels of impact from different options, and an option may have differing levels of impact on different water bodies. This means that some water bodies and options are counted more than once in the values in this table.

5.2 Level 2 Assessment of Feasible Options

5.2.1 The Level 1 screening identified 69 feasible options that may have a medium or a high level of impact on one or more water bodies. The water bodies that may be subject to a medium or a high level of impact from these options were subject to a Level 2 detailed assessment. This involved further consideration of the activities proposed within those water bodies and review of baseline data. Following the Level 2 detailed assessment, the level of impact assigned during the Level 1 screening may have been reduced or increased depending on the judgement of the likely impact.

5.2.2 The results of the Level 2 assessment were combined with the results of the Level 1 assessment to produce a combined assessment result which is summarised in **Table 5.2** and presented in full in **Appendix B**. The individual Level 2 assessment spreadsheets are presented in **Appendix C**. In general terms, the Level 2 detailed assessments resulted in a lowering of the level of impacts, a reflection on the conservative approach adopted in the Level 1 screening.

5.2.3 Four options were identified as having a high level of impact. These are:

- WR004: Longsleddale reservoir;
- WR012: Borrow Beck impounding reservoir;
- WR039a: River Eden; and
- WR119b: Egremont Boreholes (new).

Table 5.2 Summary of Combined Assessment Results for Feasible Options

	No of option–water body combinations	No of water bodies	No of options
Total	584	328	81
High level of impact	4	4	4
Medium level of impact	52	38	34
Minor level of impact	337	198	68
No or minimal impact	191	134	38

Note that a water body may have varying levels of impact from different options, and an option may have differing levels of impact on different water bodies. This means that some water bodies and options are counted more than once in the values in this table.

6. Results of the WFD Assessment of Manchester and Pennine Resilience Options and Solutions

6.1 Introduction

6.1.1 The results of the Level 1 and Level 2 assessments for each resilience option are summarised in **Table 6.1**, and described by solution in Sections 6.3**Error! Reference source not found.** to 6.7. The assessments are presented in full in Appendices D and E.

6.1.2 For each of the five resilience solutions, the impact level of all the individual resilience options within that solution have been considered, and initial screening level cumulative and protected area assessments have been undertaken.

6.2 Resilience Options

6.2.1 **Table 6.1** presents a summary of the resilience options assessment. This assessment indicates that, in total:

- 22 resilience options have a no or minimal level of impact;
- 7 resilience options have a minor level of impact; and
- 5 resilience options have a medium level of impact.

Table 6.1 Summary of Resilience Option Assessment

Option Number	Solution	Option Description	WFD Impact Level	Confidence Rating
3	C	Manchester and Pennine Aqueduct to Raw: 2 Stage filtration (Bury)	No or minimal impact	High
37-38	B	Manchester and Pennine Aqueduct section T05 to T06	Medium level of impact	Low
37-42	D, E	Manchester and Pennine Aqueduct sections T01 to T06	Medium level of impact	Low
46	A, E	WELM Uprate to 150Ml/day	No or minimal impact	High
112	B, D	Manchester and Pennine Aqueduct Outage (4 weeks) for installation of connections	No or minimal impact	High
212	C	Manchester and Pennine Aqueduct to Raw (Newton-in-Bowland)	No or minimal impact	High
213	C	Manchester and Pennine Aqueduct to Raw (Clayton-le-Moors)	No or minimal impact	High
214	C	Manchester and Pennine Aqueduct to Raw (Haslingden)	No or minimal impact	High
215	E	Alternative Supply: Raw water transfer and WTW (Clayton-le-Moors)	Medium level of impact	Medium
216	A, E	Alternative Supply: Raw water abstraction and WTW (Haslingden)	Minor level of impact	Medium
217	E	Alternative Supply: Raw water transfer and WTW (Newton-in-Bowland)	Minor level of impact	High
218	E	Alternative Supply: Raw water transfer and WTW (Preston)	Minor level of impact	High

Option Number	Solution	Option Description	WFD Impact Level	Confidence Rating
238	B	Metals & UV treatment of BSPs: Bury	No or minimal impact	High
260	A	Ribblesdale South Well Isolation	No or minimal impact	High
261	A	Haslingden Well Isolation	No or minimal impact	High
296	A	T05 targeted repair 2025	Medium level of impact	Low
297	A	T06 targeted repair 2025	Medium level of impact	Low
301	C	Lunesdale Siphon BSPs North	Minor level of impact	High
303	C	Lunesdale Siphon BSPs South	Minor level of impact	High
306	C	Ribblesdale Siphon BSPs North	Minor level of impact	High
348	B	Metals & UV Treatment of BSPs: Lunesdale Siphon (1)	No or minimal impact	High
349	B	Metals & UV Treatment of BSPs: Lunesdale Siphon (2)	No or minimal impact	High
350	B	Metals & UV Treatment of BSPs: Lunesdale Siphon (3)	No or minimal impact	High
351	B	Metals & UV Treatment of BSPs: Lunesdale Siphon (4)	No or minimal impact	High
352	B	Metals & UV Treatment of BSPs: Lunesdale Siphon (5)	No or minimal impact	High
353	B	Metals & UV Treatment of BSPs: Lunesdale Siphon (6)	No or minimal impact	High
354	B	Metals & UV Treatment of BSPs: Hodder Siphon	No or minimal impact	High
355	B	Metals & UV Treatment of BSPs: Ribblesdale Siphon (1)	No or minimal impact	High
356	B	Metals & UV Treatment of BSPs: Ribblesdale Siphon (2)	No or minimal impact	High
357	B	Metals & UV Treatment of BSPs: Ribblesdale Siphon (3)	No or minimal impact	High
358	B	Metals & UV Treatment of BSPs: Ribblesdale Siphon (4)	No or minimal impact	High
359	B	Metals & UV Treatment of BSPs: Ribblesdale Siphon (5)	No or minimal impact	High
360	B	Metals & UV Treatment of BSPs: Haslingden	No or minimal impact	High
382	C	Manchester and Pennine Aqueduct to Raw: WTW reduced flow	Minor level of impact	High

6.3 Solution A (FM20-SO4)

6.3.1 Solution A includes six resilience options involving new sources and targeted repair of Tunnel 5 and Tunnel 6 (T05 and T06), centred around uprating the West East Link Main (WELM), construction of a new associated break tank near Bolton and new abstraction from the River Irwell with treatment.

6.3.2 Three resilience options in this solution have been assessed at no or minimal impact with a high level of confidence in the Level 1 screening assessment:

- 46: WELM Uprate to 150Ml/day;
- 260: Ribblesdale South Well Isolation; and
- 261: Haslingden Well Isolation.

6.3.3 Option 216 (Alternative Supply: Raw water abstraction and WTW (Haslingden) was assigned a medium level of impact in the Level 1 screening assessment as it includes a new surface water abstraction, but following the Level 2 assessment, the impact was lowered to minor with a medium confidence due to the relatively small size of the abstraction and the availability of water in the surface water body.

6.3.4 Two resilience options (296: T05 targeted repair 2025, and 297: T06 targeted repair 2025) were assigned a medium level of impact in the Level 1 screening, and this was confirmed in the Level 2 detailed assessment, but with a low level of confidence. These resilience options involve the repair of the existing Manchester and Pennine Aqueduct tunnels and conduits, including new access shafts. Medium impacts could occur in the groundwater bodies as a result of water quality impacts from drilling shafts through mine workings, or spillages from construction machinery in the subsurface environment. The assessment results have been assigned a low level of confidence due to the lack of design detail at this stage, and the high level of the WFD assessment (i.e. no detailed baseline data has been collected).

6.3.5 Cumulative assessments have not been undertaken at this time. Initial screening indicates that for most water bodies or operational catchments affected by more than one resilience option, the impact level would not be raised above the highest impact level assigned to the individual options. However, the Croal and Irwell catchment will be affected by both of the tunnel repair options (296 and 297) plus the new abstraction under Option 216. If this solution is selected as the preferred solution, further cumulative assessment would therefore be required.

6.3.6 No waterbodies affected by the options that comprise this solution are linked to a protected area, so a protected area assessment would not be required if this solution is selected as the preferred solution.

6.4 Solution B (C29)

6.4.1 Solution B includes sixteen resilience options related to new tunnel sections T05 and 06 and partial UV and metals treatment at existing UU facilities along the length of the existing Manchester and Pennine Aqueduct.

6.4.2 Fifteen of the sixteen resilience options have been assessed as no or minimal impact with a high level of confidence in the Level 1 screening. This includes resilience options 112 (HA Outage (4 weeks) for installation of connections), 238 and 348 to 360 (metals and UV treatment of bulk supply points).

6.4.3 Option 37 – 38 (Manchester and Pennine Aqueduct section T05 to T06) was assigned a medium level of impact in the Level 1 screening, and this was confirmed in the Level 2 detailed assessment, but with a low level of confidence. This resilience option involves the construction of 19.2 km of new tunnel and conduit, along with associated temporary and permanent access shafts, and connections into the existing Manchester and Pennine Aqueduct.

6.4.4 Medium impacts could occur in the construction phase due to dewatering of the tunnel and shafts, and due to water quality impacts from drilling shafts through mine workings, or spillages from construction machinery in the subsurface environment. Medium impacts could also occur in the operation phase due to permanent changes in the groundwater flow regime, impacting both groundwater and surface water bodies.

6.4.5 A detailed study of the geology of the tunnel route has not been undertaken at this time, and good connections between the groundwater and surface water environment have been assumed. Further study may indicate that lower permeability strata (e.g. mudstones) and superficial deposits (e.g. glacial till) may protect surface water bodies from impacts arising from changes in the groundwater regime. Due to this uncertainty, the general high level nature of the WFD assessments, and the lack of design detail at this stage, the results have been assigned a low level of confidence.

6.4.6 Cumulative assessments have not been undertaken at this time. Initial screening indicates that no waterbody that is affected by this solution is affected by more than one option. Several individual

waterbodies in the Croal and Irwell catchment and the Calder catchment are affected by Option 37-38 and in consequence, a cumulative assessment would be required should this solution be taken forward as the preferred solution, although it is unlikely that the impact on the surface watercourses would be raised above the current medium level of impact.

6.4.7 No waterbodies affected by the options that comprise this solution are linked to a protected area that is designated for protection of habitats and species, so a protected area assessment would not be required if this solution is selected as the preferred solution.

6.5 Solution C (FM15-SO4b)

6.5.1 This solution includes eight resilience options for converting the Manchester and Pennine Aqueduct to raw water supply and building water treatment works (WTWs).

6.5.2 All eight of the resilience options that make up this solution have been assessed as no or minimal or minor level of impact with a high level of confidence in the Level 1 screening. These resilience options would include new pipelines and/or new WTWs but with suitable construction best practice and pollution control measures in place, they would not have a prolonged or widespread impact on the WFD status of water bodies.

6.5.3 Cumulative assessments have not been undertaken at this time. As no options in this solution would have greater than a minimal level of impact, a cumulative assessment would not be required if this solution is selected as the preferred solution.

6.5.4 No waterbodies affected by options in this solution are linked to a protected area, so a protected area assessment would not be required if this solution is selected as the preferred solution.

6.6 Solution D (C11)

6.6.1 Solution D includes two resilience options associated with new tunnel sections T01, 02, 03, 04, 05 and 06.

6.6.2 Option 112 (HA Outage (4 weeks) for installation of connections) has been assessed as no or minimal impact with a high level of confidence in the Level 1 screening because there is no new infrastructure and no construction works proposed as part of this resilience option.

6.6.3 Option 37 – 42 (Manchester and Pennine Aqueduct sections T01 to T06) was assigned a medium level of impact in the Level 1 screening, and this was confirmed in the Level 2 detailed assessment, although with a low level of confidence. This resilience option involves the construction of 51.8 km of new tunnel and conduit, along with associated temporary and permanent access shafts, and connections into the existing Manchester and Pennine Aqueduct.

6.6.4 Medium impacts could occur in the construction phase of this resilience option due to dewatering of the tunnel and shafts, and due to water quality impacts from drilling shafts through mine workings, or spillages from construction machinery in the subsurface environment. Medium impacts could also occur in the operation phase due to permanent changes in the groundwater flow regime, impacting both groundwater and surface water bodies.

6.6.5 A detailed study of the geology of the tunnel route has not been undertaken at this time, and good connections between the groundwater and surface water environment have been assumed. Further study may indicate that lower permeability strata (e.g. mudstones) and superficial deposits (e.g. glacial till) may protect surface water bodies from impacts arising from changes in the groundwater regime. Due to this uncertainty, the general high level nature of the WFD assessments, and the lack of design detail at this stage, the results have been assigned a low level of confidence.

6.6.6 Cumulative assessments have not been undertaken at this time. An initial screening indicates that no waterbody that is affected by this solution is affected by more than one option. Several individual waterbodies in the Croal and Irwell catchment, the Calder catchment, the Kent

catchment, the Bela catchment and the Hodder and Loud catchment are affected by Option 37-42. If this solution is selected as the preferred solution, a cumulative assessment would therefore be required; however, it is unlikely that the impact on the surface watercourses would be raised above the current medium level of impact.

6.6.7 Six waterbodies affected by options under this solution are linked to protected areas that are designated for protection of habitats and species (The Bowland Fells, Morecambe Bay Pavements and the River Kent). In consequence, a protected area assessment would be required if this solution is selected as the preferred solution.

6.7 Solution E (C17)

6.7.1 This solution includes six resilience options, comprising new tunnel sections as for Solution D, plus new sources requiring WTWs and associated pipelines.

6.7.2 Three of the six resilience options have been assessed as no or minimal impact, or minor level of impact with a high level of confidence in the Level 1 screening because they involve relatively small scale in catchment or in channel construction works. These are resilience options:

- 46: WELM Uprate to 150 Ml/day;
- 217: Alternative Supply: Raw water transfer and WTW (Newton-in-Bowland); and
- 218: Alternative Supply: Raw water transfer and WTW (Preston).

6.7.3 Options 215 (Alternative Supply: Raw water transfer and WTW (Clayton-le-Moors)) and 216 (Alternative Supply: Raw water abstraction and WTW (Haslingden)) are both related to new surface water abstractions, and were assigned a medium level of impact in the Level 1 screening assessment. The Level 2 detailed assessment lowered the impact of Option 216 to a minor level of impact due to the relatively small size of the proposed abstraction and the availability of water in the surface water body in which the new abstraction is located. The impact of Option 215 has remained at medium in the Level 2 detailed assessment due to the large size of the abstraction.

6.7.4 As with Solution D, Option 37 – 42 (Manchester and Pennine Aqueduct sections T01 to T06 was assigned a medium level of impact in the Level 1 screening, and this was confirmed in the Level 2 detailed assessment, but with a low level of confidence. This resilience options involves the construction of 51.8 km of new tunnel and conduit, along with associated temporary and permanent access shafts, and connections into the existing Manchester and Pennine Aqueduct.

6.7.5 Medium impacts could occur in the construction phase of this option due to dewatering of the tunnel and shafts, and due to water quality impacts from drilling shafts through mine workings, or spillages from construction machinery in the subsurface environment. Medium impacts could also occur in the operation phase due to permanent changes in the groundwater flow regime, impacting both groundwater and surface water bodies.

6.7.6 A detailed study of the geology of the tunnel route has not been undertaken at this time, and good connections between the groundwater and surface water environment have been assumed. Further study may indicate that lower permeability strata (e.g. mudstones) and superficial deposits (e.g. glacial till) may protect surface water bodies from impacts arising from changes in the groundwater regime. Due to this uncertainty, the general high level nature of the WFD assessments, and the lack of design detail at this stage, the results have been assigned a low level of confidence.

6.7.7 Cumulative assessments have not been undertaken at this time. An initial screening indicates that for most water bodies or operational catchments affected by more than one option, the impact level would not be raised above the highest impact level assigned to the individual options. However, the three waterbodies will be affected the tunnel options (37-42) plus a new abstraction (option 215 or 216). If this solution is selected as the preferred solution, further cumulative assessment would therefore be required.

6.7.8 Six waterbodies affected by options in this solution are linked to protected areas that are designated for protection of habitats and species (The Bowland Fells, the River Kent, and Morecambe Bay Pavements), so a protected area assessment would be required if this solution is selected as the preferred solution.

7. Results of the WFD Assessment of the Final WRMP Preferred Plan

7.1 Overview

7.1.1 As set out in **Section 1.3**, the Final WRMP includes the following strategic choices:

- Adopt an enhanced leakage reduction comprising a total of 190 Ml/d over the planning period, a reduction of just over 40% from the baseline position of 448Ml/d. By the end of 2024/25 United Utilities plans to reduce leakage by at least 91 Ml/d, or 20%;
- Improve level of service for drought permits and orders to augment supply from 1 in 20 years to 1 in 40 years (moving from 5% to 2.5% annual average risk);
- Increase resilience to others hazards, specifically for the regional aqueduct system associated with Manchester and Pennines Resilience. This involves completing Solution D, which involves rebuilding all single line sections of the relevant aqueduct.

7.1.2 The Preferred Plan encompasses a combination of preferred demand management measures and resilience options designed to achieve the three strategic choices outlined above. It should be noted that the supply-demand preferred options that comprise the Preferred Plan do not include resource management measures (i.e. they are demand management measures including leakage reduction and water efficiency) and are therefore not expected to have impacts on WFD water bodies. The preferred Manchester and Pennine Resilience solution (Solution D) has been considered as part of this WFD assessment.

7.1.3 **Table 7.1** lists the resilience options that comprise the preferred Manchester and Pennine Resilience solution.

Table 7.1 Summary of Option Assessment for Manchester and Pennine Resilience Solution D

Option Number	Option Description	WFD Impact Level	Confidence Rating
37-42	Manchester and Pennine Aqueduct sections T01 to T06	Medium level of impact	Low
112	Manchester and Pennine Aqueduct Outage (4 weeks) for installation of connections	No or minimal impact	High

7.2 Results of the Assessment of Solution D

7.2.1 Solution D includes two resilience options associated with new tunnel sections T01, 02, 03, 04, 05 and 06. A summary of the Level 1 and Level 2 assessments for these options is presented in **Appendix J** and the Level 2 detailed assessments are included in **Appendix E**.

Individual Option Assessments

7.2.2 Option 112 (Manchester and Pennine Aqueduct Outage (4 weeks) for installation of connections) has been assessed as having no or minimal impact with a high level of confidence in the Level 1 screening because there is no new infrastructure and no construction works proposed as part of this resilience option.

7.2.3 Option 37 – 42 (Manchester and Pennine Aqueduct sections T01 to T06) was assigned a medium level of impact in the Level 1 screening, and this was confirmed in the Level 2 detailed assessment, although with a low level of confidence. This resilience option involves the construction of 51.8 km

of new tunnel and conduit, along with associated temporary and permanent access shafts, and connections into the existing Manchester and Pennine Aqueduct.

7.2.4 Medium impacts could occur in the construction phase of this resilience option due to dewatering of the tunnel and shafts, and due to water quality impacts from drilling shafts through mine workings, or spillages from construction machinery in the subsurface environment. Medium impacts could also occur in the operation phase due to permanent changes in the groundwater flow regime, impacting both groundwater and surface water bodies.

7.2.5 A detailed study of the geology of the tunnel route has not been undertaken at this time, and good connections between the groundwater and surface water environment have been assumed. Further study may indicate that lower permeability strata (e.g. mudstones) and superficial deposits (e.g. glacial till) may protect surface water bodies from impacts arising from changes in the groundwater regime. Due to this uncertainty, the general high level nature of the WFD assessments, and the lack of design detail at this stage, the results have been assigned a low level of confidence.

Water Body Cumulative Assessment

7.2.6 Where two or more options are located in the same water body, there is the potential for a cumulative impact on that waterbody. However, no waterbody that is affected by Solution D is affected by more than one option, so a waterbody scale cumulative assessment is not required.

Operational Catchment Cumulative Assessment

7.2.7 Where two or more options are located in multiple water bodies within one operational catchment, there may be cumulative effects on WFD objectives. For example, impacts in a downstream water body may combine with impacts from an upstream water body and result in a greater impact than assessed for each individual water body.

7.2.8 Several individual waterbodies in the Bela, Calder, Croal and Irwell, Hodder and Loud, and Kent operational catchments are affected by Option 37-42. Therefore, operational catchment scale cumulative assessments have been undertaken.

7.2.9 The same impact classification system has been used for the cumulative assessments as for the Level 1 and Level 2 assessments. The results are summarised in **Table 7.2** and presented in full in **Appendix K**.

7.2.10 For all five operational catchments, the cumulative impact on a catchment scale will not exceed the maximum impact on an individual water body of a medium level of impact. This is because:

- The individual option assessment assumed a worst-case scenario, due to the high-level nature of the assessment, and the lack of detailed information available at this stage on the design of the tunnel, the nature of the geological strata it will pass through, and the linkages between the groundwater and surface water environment.
- All the individual waterbodies have flow available across some or all of the flow regime, helping to mitigate any impacts on baseflow arising from the operational presence of the tunnels in the subsurface.

Table 7.2 Summary of Operational Catchment Cumulative Assessment

Catchment	WFD Water Body Information			Option		Assessment Result		
Operational Catchment	**ID**	**Type**	**WB Name**	**Ref**	**Option Name**	**Individual Option Assessment Result**	**Individual Options Assessment Confidence**	**Cumulative Assessment Result**
Bela	GB112073071090	River	Peasey Beck	37-42	Manchester and Pennine Aqueduct sections T01 to T06	Medium level of impact	Low	Medium level of impact
	GB112073071080	River	Lupton (Farleton) Beck			Medium level of impact	Low	
	GB112073071100	River	Stainton Beck			Medium level of impact	Low	
Calder	GB112071065490	River	Calder - Pendle Water to conf Ribble	37-42	Manchester and Pennine Aqueduct sections T01 to T06	Medium level of impact	Low	Medium level of impact
	GB112071065040	River	Hyndburn			Medium level of impact	Low	
Croal and Irwell	GB112069064641	River	Irwell (Cowpe Bk to Rossendale STW)	37-42	Manchester and Pennine Aqueduct sections T01 to T06	Medium level of impact	Low	Medium level of impact
	GB112069064620	River	Irwell (Rossendale STW to Roch)			Medium level of impact	Low	
	GB112069064650	River	Ogden			Medium level of impact	Low	
Hodder and Loud	GB112071065420	River	Whitendale River	37-42	Manchester and Pennine Aqueduct sections T01 to T06	Medium level of impact	Low	Medium level of impact
	GB112071065560	River	Hodder - conf Easington Bk to conf Ribble			Medium level of impact	Low	
Kent	GB112073071370	River	Mint	37-42		Medium level of impact	Low	Medium level of impact

Catchment	WFD Water Body Information			Option		Assessment Result		
Operational Catchment	**ID**	**Type**	**WB Name**	**Ref**	**Option Name**	**Individual Option Assessment Result**	**Individual Options Assessment Confidence**	**Cumulative Assessment Result**
	GB112073071340	River	Flodder Beck		Manchester and Pennine Aqueduct sections T01 to T06	Medium level of impact	Low	

Protected Area Assessment

7.2.11 Six water bodies affected by Option 37-42 are linked to protected areas that are designated for protection of habitats and species (Bowland Fells, Morecambe Bay Pavements and the River Kent). Therefore, a protected area assessment has been undertaken.

7.2.12 An assessment was undertaken for all habitat and species protected areas that are linked to a water body that contains a Preferred Plan option. The list of protected areas requiring assessment was established by comparing the list of protected areas and the water bodies they are linked to[28], to the list of water bodies affected by Option 37-42 (**Appendix D**).

7.2.13 Protected area assessments were undertaken for three protected areas. The results are presented in **Table 7.3**. For the Bowland Fells and Morecambe Bay Pavements protected areas, the level of impact is assessed as no or minimal due to the distance between the protected areas and the option. The potential impact on the River Kent protected area has been assessed as medium because two river water bodies which form part of the SAC have been assigned a medium level of impact in the Level 2 assessment. There may be impacts on the hydrological regime of the water courses, which could affect the migratory fish which are present in the SAC.

Table 7.3 Results of the Protected Area Assessment

Protected area	Designation	Preferred options	Summary of protected area assessment	Assessment Results
Bowland Fells	SPA	Manchester and Pennine Aqueduct sections T01 to T06	The new tunnel will pass beneath Bowland Fells SPA. At surface or near surface construction works have the potential to impact on the SPA, but it has been confirmed by UU that no at or near surface works (e.g. shaft construction) would be undertaken within the SPA. The nearest shafts are located 2 km to the north and 4 km to the south of the SPA. The SPA does include water dependent habitats (bogs, marshes, water fringed vegetation, fens) but given the depth of the tunnelling works and that no surface construction works will take place in or adjacent to the SPA, there should be no or minimal impact on the SPA.	No or minimal impact
Morecambe Bay Pavements	SAC	Manchester and Pennine Aqueduct sections T01 to T06	Morecambe Bay Pavements is comprised of several separate distinct areas, with the closest situated approximately 6 km to the west of the proposed new aqueduct sections. Only the southernmost sections near Kirkby Lonsdale are connected hydraulically to the option via the Lupton (Farleton) Beck water body. The SAC includes water dependent habitats (inland water bodies (Haweswater) and bogs, marshes, water fringed vegetation and fens); however these make up only 0.4% and 0.6% of the SAC respectively. Haweswater is not in the section of the SAC that is hydraulically connected to the option via the Lupton (Farleton) Beck river water body. Given that water dependent habitats make up less than 1% of the SAC, and that the SAC is 6 km from the option, any impact on the SAC is likely to be minimal.	No or minimal impact

[28] Downloaded from the EA's Catchment Data Explorer website October 2017: http://environment.data.gov.uk/catchment-planning/RiverBasinDistrict/12

Protected area	Designation	Preferred options	Summary of protected area assessment	Assessment Results
River Kent	SAC	Manchester and Pennine Aqueduct sections T01 to T06	The River Kent SAC is situated at the very north of Option 37 – 42 and is linked to the option via two river water bodies, Mint and Flodder Beck, both tributaries of the River Kent and part of the SAC. The SAC is almost completely (99%) comprised of inland water bodies, and this includes several species of migratory fish which may be affected by reductions in river flows. The northern extent of the option is within approximately 700 m of the river Mint. The Level 2 detailed assessment for the Mint and Flodder Beck water bodies indicated a medium level of impact (with low confidence), which also applies to the SAC.	Medium level of impact.

8. Summary and Conclusions

8.1 Summary of Feasible Options Assessment

8.1.1 A WFD assessment was undertaken on 115 feasible resource management and Manchester and Pennine Resilience options to inform UU's Final WRMP. Each option was subject to a Level 1 screening exercise. Option-water body combinations that were identified as being subject to a medium or high level of impact in the Level 1 screening were then subject to a Level 2 detailed assessment.

8.1.2 The results of the screening and detailed assessments were collated to produce a combined assessment result for all option-water body assessments, which are presented in **Appendix B** for the supply-demand feasible options and **Appendix D** for the Manchester and Pennine resilience feasible options and summarised in Sections 5 and 6.

8.2 Summary of Preferred Plan Assessment

8.2.1 UU has identified one resilience solution (Solution D) which forms part of the Preferred Plan for WRMP19. The solution comprises two options:

- Option 112: Manchester and Pennine Aqueduct Outage (4 weeks) for installation of connections; and
- Option 37 – 42: Manchester and Pennine Aqueduct sections T01 to T06.

Option 112: Manchester and Pennine Aqueduct Outage (4 weeks) for installation of connections

8.2.2 Option 112 has been assessed as having no or minimal impact with a high level of confidence in the Level 1 screening because there is no new infrastructure and no construction works proposed as part of this resilience option.

Option 37 – 42: Manchester and Pennine Aqueduct sections T01 to T06.

8.2.3 Option 37 – 42 was assigned a medium level of impact in the Level 1 screening, and this was confirmed in the Level 2 detailed assessment, although with a low level of confidence. This resilience option involves the construction of 51.8 km of new tunnel and conduit, along with associated temporary and permanent access shafts, and connections into the existing Manchester and Pennine Aqueduct.

8.2.4 Medium impacts could occur in the construction phase of this resilience option due to dewatering of the tunnel and shafts, and due to water quality impacts from drilling shafts through mine workings, or spillages from construction machinery in the subsurface environment. Medium impacts could also occur in the operation phase due to permanent changes in the groundwater flow regime, impacting both groundwater and surface water bodies.

8.2.5 The new tunnel passes through five operational catchments containing more than one waterbody which may be affected by the construction or operation of the new infrastructure. There is the potential for cumulative effects in these five operational catchments, but the cumulative assessment indicates that the cumulative impact will be no greater than the medium level of impact assigned to the individual water bodies.

8.2.6 The option is linked to three protected areas designated for habitats and/or species. Two of the protected areas would be subject to no or minimal impact, but there could be a medium level of impact on the River Kent SAC due to changes in the hydrological regime of the River Mint and Flodder affecting migratory fish.

8.2.7 A detailed study of the geology of the tunnel route has not been undertaken at this time, and good connections between the groundwater and surface water environment have been assumed. Further study may indicate that lower permeability strata (e.g. mudstones) and superficial deposits (e.g. glacial till) may protect surface water bodies from impacts arising from changes in the groundwater regime. Due to this uncertainty, the general high-level nature of the WFD assessments, and the lack of design detail at this stage, the results have been assigned a low level of confidence.

8.3 Summary of the Preferred Plan

8.3.1 The assessment results for the Preferred Plan for WRMP19 are summarised in **Table 8.1**. The results indicate that Option 37-42 of the Manchester and Pennine Resilience solution could have a medium level of impact against WFD objectives and as such, this option will require further assessment at the detailed planning (project) stage.

Table 8.1 Summary of Assessment Results for the Preferred Plan Options

Option	Result of Individual assessment	Result of cumulative assessment	Result of Protected Area assessment	Overall result	Confidence level
Option 112	No or minimal impact	n/a	n/a	No or minimal impact	High
Option 37 – 42	Medium level of impact	Medium level of impact	Medium level of impact	Medium level of impact	Low

8.4 WRMP Preferred Plan Options Requiring Further Assessment

The Reality of Moderate Potential Impact: A Regulatory Perspective

8.4.1 One of the Preferred Plan options (Option 37-42) has been assigned a medium level of potential impact on account of the risk to the quantitative and chemical status of groundwater bodies and changes to the hydrological regime (and therefor ecological status) of rivers. These activities pose a potential risk of widespread or prolonged impacts on the status of WFD water bodies.

8.4.2 In such cases, further WFD assessment is required to be more conclusive in respect of requirements, or otherwise, for bespoke mitigation in order to ensure that WFD objectives are not compromised. In reality, on consideration of further information and dialogue with the EA on proposed bespoke mitigation measures, this option is unlikely to result in significant or long-term potential impacts. Therefore, WFD compliance is unlikely to be an issue in respect of regulatory permitting once the further assessment provides the appropriate level of confidence for presentation to the regulator.

8.4.3 The assessment of Option 37-42 has a low level of confidence, which reflects the high-level nature of the WFD assessments undertaken at this time. The lack of detailed design or environmental baseline information has necessitated a precautionary approach to the assessments, which relies on assumptions (e.g. that changes to the groundwater environment will result in changes to flows in surface water courses), and results in a worst case level of impact. Further assessment and dialogue with the EA would likely result in a reduction of the level of impact, and an increase in the level of confidence.

Preferred Plan Option Requiring Further Assessment

8.4.4 Further detailed WFD assessment should be undertaken on Option 37-42 as it has been assigned a medium level of impact in the individual, cumulative and protected area assessments.

8.4.5 Further assessment should include consideration of more detailed design information, investigation of the water environment (in particular links between the groundwater and surface water environments), detailed impact assessment, and more detailed review of WFD objectives to ensure that the impacts highlighted in this report are appropriately accounted for.

9. Statement of Compliance with the WFD

9.1 Current Abstraction Licences

9.1.1 The assessments of the data provided by the EA and UU indicate that although there is some residual risk, overall the operation of the licences, the reductions noted by the EA and the schemes identified for AMP6 should be enough to mitigate against any significant risks to the WFD water bodies and are therefore compliant with the requirements of the WFD.

9.2 Preferred Plan Options

9.2.1 The assessments for the preferred options that comprise the Preferred Plan for WRMP19 indicate that one of the options (Option 37-42) could have a medium level of impact against WFD objectives. Further WFD assessment is therefore required to be more conclusive in respect of requirements, or otherwise, for bespoke mitigation in order to ensure that WFD objectives are not compromised.

9.2.2 In reality, on consideration of further information and dialogue with the EA on proposed bespoke mitigation measures during the consultation and project stages, this option is unlikely to result in significant or long-term potential impacts. Therefore, WFD compliance is unlikely to be an issue in respect of regulatory permitting once the further assessment provides the appropriate level of confidence for presentation to the regulator.

9.3 Article 4.7 Requirements

9.3.1 If the impact assessment for a Preferred Plan option concluded that there was a high risk that the option would not be compliant with WFD requirements after mitigation (i.e. there would be a deterioration in WFD status of one or more water bodies), documentation would be required to justify permitting of the option under the provisions of Article 4.7 of the WFD. Article 4.7 states that the option would not be in breach of the WFD if the following conditions were met:

- All practicable mitigation has been incorporated;
- There are no significantly better environmental options;
- The option is of overriding public interest and/or the benefits of the option outweigh the benefits of WFD compliance; and
- The reasons for the modifications to the water body are flagged to the EA for reporting in the next RBMP.

9.3.2 The Planning Inspectorate and the EA would be responsible for deciding whether the Article 4.7 conditions have been met with respect to any option.

9.3.3 Based on the assessments in this report, there is currently no requirement to implement Article 4.7 for either the current abstractions or the Preferred Plan options. However, this is based on the assumptions detailed in this report, the need to implement reductions on some of the current licences, and the assumption that additional investigations and mitigation will be implemented for the Preferred Plan options noted in **Section 8.4**.

Appendix A
List of Feasible Options

Option				
Ref	Option Name	Resilience Option?	Preferred Option at dWRMP Stage?	Preferred Option at fWRMP Stage?
WR001	River Alt To Prescot WTW			
WR003	Fisher Tarn (Kendal) to Thirlmere Aqueduct and Lostock For Treatment			
WR004	Longsleddale Reservoir			
WR006	Glaze Brook			
WR007	Sankey Brook			
WR009	River Rawthey To Watchgate			
WR012	Borrow Beck IR			
WR026a	River Ribble Support To Stocks Reservoir			
WR037a	Haweswater Reservoir – Raise Embankment Structure			
WR037b	Haweswater Reservoir – Raise Embankment Structure			
WR039a	River Eden (Temple Sowerby) To Watchgate			
WR041	River Irthing to Cumwhinton plus Castle Carrock Link			
WR047a	Milwr Tunnel, Bagillt (Transfer to Huntington)			
WR049b	River Ribble (Transfer to Anglezarke IR)			
WR062a	Worthington WTW			
WR062b	Worthington WTW (Rivington)			
WR074	River Darwen (Transfer to Fishmoor WTW)			
WR076	River Bollin			
WR079b	Appleton Reservoir, Warrington			
WR079c	Appleton Reservoir, Warrington			
WR079d	Appleton Reservoir, Warrington			
WR095	Roughton Gill			
WR099a	Worsthorne Borehole (Compensation)			
WR099b	Worsthorne Borehole (Hurstwood IR)		Yes	
WR099c	Worsthorne Borehole (Worsthorne WTW)			
WR100	Thorncliffe Road Borehole, Barrow-In-Furness			
WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity		Yes	
WR102a	Widnes Boreholes to Prescot WTW			
WR102ai	Widnes Boreholes To Prescot WTW			
WR102b	Widnes Boreholes To Liverpool And Warrington DMZs			
WR102c	Widnes Boreholes To Runcorn And Warrington DMZs			
WR102d	Eccleston Hill Borehole to Prescot WTW			
WR102e	Bold Heath Boreholes to Prescot WTW		Yes	
WR105a	Lymm Boreholes (Abandonment of Existing WTW Facility; New WTW at Sow Brook)			
WR105ai	Lymm Boreholes (Abandonment of Existing WTW Facility; New WTW at Sow Brook)			
WR105b	Lymm Boreholes (Abandonment of Existing WTW Facility; New WTW at Hill Cliffe)			
WR105bi	Lymm Boreholes (Abandonment Of Existing WTW Facility; New WTW At Hill Cliffe)			
WR106	Walton And Daresbury Boreholes			
WR107a	Aughton Park & Moss End Boreholes (Royal Oak WTW)			
WR107ai	Aughton Park & Moss End Boreholes (Royal Oak WTW)			
WR107b	Randles Bridge, Knowsley, Primrose Hill			
WR109	Swineshaw Boreholes (Buckton Castle WTW)			
WR110	Rushton Spencer Boreholes			
WR111	Woodford Borehole			
WR112	Bramhall Borehole			
WR113	Tytherington Boreholes		Yes	
WR114	Python Mill Borehole		Yes	
WR119a	Egremont Boreholes (Existing)			
WR119b	Egremont Boreholes (New)			
WR120	Cross Hill Boreholes, Wirral			
WR120i	Cross Hill Boreholes, Wirral			
WR121a	Eaton Boreholes (Hollins Hill)			
WR121b	Eaton Boreholes (Mid Cheshire Main)			
WR122	Newton Hollows Boreholes			
WR125	Bearstone Boreholes			
WR128	Tarn Wood (North Eden to Carlisle)			
WR129	North Cumbria Boreholes			
WR140	Horwich Wwtw – Final Effluent Reuse			
WR141	Rossendale Wwtw- Final Effluent Reuse			
WR142	Hyndburn Wwtw – Final Effluent Reuse			
WR144	Saddleworth and Mossley Top- Final Effluent Reuse			
WR146	Davyhulme- Final Effluent Reuse			
WR148	Cumwhinton Boreholes plus Castle Carrock Link			
WR150	Castle Carrock Dead Water Storage			
WR153	Simmonds Hill- Increased WTW Capacity			
WR154	Sandiford – Increased WTW Capacity			
WR159	Group 1 - Improved reservoir compensation release control from 76 individual reservoirs		Yes	
WR160	Group 2 - Improved reservoir compensation release control from Vyrnwy, Rivington, Thirlmere and Haweswater Reservoirs		Yes	
WR800	River Bela to Thirlmere Aqueduct			
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct			
WR812	Third Party Option: Kielder Water IR Transfer			
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal			
WR814a	Increased Abstraction Capacity at Heronbridge			
WR814b	Increased treatment capacity at Hurleston WTW via Canal			
WR814c	Increased treatment capacity at Hurleston WTW via Canal			
WR816	Third Party Option: Manchester Bolton Bury Canal To Integrated Zone			
WR817	Third Party Option: Carr Mill Dam To Integrated Resource Zone			
WR820	Third Party Option: Shropshire Union Canal To Integrated Resource Zone			
WR821	Shropshire Union Canal		Yes	
WR824	Third Party Option: Blenkinsopp Mine			
B2	Enabling Works		Yes	
3	HA to Raw: 2 Stage filtration Woodgate Hill	Yes		
37-38	Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)	Yes		
37-42	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	Yes		Yes
46	WELM Uprate to 150Ml/day	Yes		
112	HA Outage (4 weeks) for installation of connections	Yes		Yes
212	HA to Raw: Fober Barn	Yes		
213	HA to Raw: Martholme	Yes		
214	HA to Raw: Townsend Fold	Yes		
215	Alternative Supply: Raw water transfer and WTW at Martholme BSP	Yes		
216	Alternative Supply: Raw water abstraction and WTW at Townsend Fold BSP	Yes		
217	Alternative Supply: Raw water transfer and WTW at Fober Barn BSP	Yes		
218	Alternative Supply: Raw water transfer and WTW at Mill Lane	Yes		
238	Metals & UV treatment of bulk supply points (BSPs): Woodgate Hill	Yes		
260	Ribblesdale South Well Isolation	Yes		
261	Townsend Fold South Well Isolation	Yes		
296	T05 targeted repair 2025	Yes		
297	T06 targeted repair 2025	Yes		
301	Lunesdale Siphon BSPs North	Yes		

Option				
Ref	Option Name	Resilience Option?	Preferred Option at dWRMP Stage?	Preferred Option at fWRMP Stage?
303	Lunesdale Siphon BSPs South	Yes		
306	Ribblesdale Siphon BSPs North	Yes		
348	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Mansergh BSP	Yes		
349	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Casterton BSP	Yes		
350	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Parkside Farm BSP	Yes		
351	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Jacksons Pasture BSP	Yes		
352	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Lowgill BSP	Yes		
353	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Birks Farm BSP	Yes		
354	Metals & UV Treatment of Bulk Supply Points (BSPs): Hodder Siphon, Fober Barn BSP	Yes		
355	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Waddington BSP	Yes		
356	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Bashall Town BSP	Yes		
357	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Spring Wood BSP	Yes		
358	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Martholme BSP	Yes		
359	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Brown Birks BSP	Yes		
360	Metals & UV Treatment of Bulk Supply Points (BSPs): Haslingden Walmsley Tunnel (Townsend Fold BSP)	Yes		
382	HA to Raw: Watchgate WTW reduced flow	Yes		

Appendix B
Summary of Level 1 Screening and Level 2 Detailed Assessment Results for Supply-demand Feasible Options

Option		WFD Water Body Information												Option Detail																		Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / water course / aquifer	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing abstraction to surface water	New abstraction well drilling / refurbishment	New abstraction well borehole / surface structure	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR001	River Alt To Prescot WTW	GB112069060710	River	No designation	Prescot Brook (Logwood Mill Brook)	Ditton	moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	Moderate	Moderate by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR001	River Alt To Prescot WTW	GB112069060610	River	Heavily modified	Croxteth/Knowsley Brook	Alt	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR001	River Alt To Prescot WTW	GB112063060630	River	Heavily modified	Simonswood Brook	Alt	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR001	River Alt To Prescot WTW	GB112069061441	River	Heavily modified	Alt US Bull Bridge	Alt	Moderate	Good by 2027	n/a	n/a	Fail	Good by 2027	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR001	River Alt To Prescot WTW	GB112063061442	River	Heavily modified	Alt DS Bull Bridge	Alt	Moderate	Good by 2027	n/a	n/a	Fail	Good by 2027	Moderate	Good by 2027	Y	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR001	River Alt To Prescot WTW	GB41202G100100	Groundwater	No designation	Sankey and Glaze Carboniferous Aquifers Lower Mersey Basin and North Merseyside Permo-Triassic	Sankey and Glaze Carboniferous Aq Mersey Basin Lower and Merseyside North Permo-Triassic	n/a	n/a	Good	Poor by 2015	Poor	Good by 2027	Poor	Poor by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR001	River Alt To Prescot WTW	GB41201G101700	Groundwater	No designation	Sandstone Aquifers	Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR003	Fisher Tarn (Kendal) to Thirlmere Aqueduct and Lostock For Treatment	GB112073071100	River	No designation	Stainton Beck	Bela	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR003	Fisher Tarn (Kendal) to Thirlmere Aqueduct and Lostock For Treatment	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	High	No or minimal impact
WR004	Longsleddale Reservoir	GB112073071430	River	No designation	Sprint	Kent	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	Y	Y	High level of impact	Y	High level of impact	High	High level of impact
WR004	Longsleddale Reservoir	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	Y	Y	High level of impact	Y	Minor level of impact	High	Minor level of impact
WR006	Glaze Brook	GB112069061420	River	No designation	Glaze	Glaze	Poor	Poor by 2015	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Y	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR006	Glaze Brook	GB112069064520	River	Heavily modified	Hey/Borsdane Brook Lower Mersey Basin and North Merseyside Permo-Triassic	Glaze Mersey Basin Lower and Merseyside North Permo-Triassic	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR006	Glaze Brook	GB41201G101700	Groundwater	No designation	Sandstone Aquifers	Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	N	Y	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR007	Sankey Brook	170	River	No designation	Non reportable water body to the north of the River Mersey	Sankey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR007	Sankey Brook	GBS31206908100	Transitional wate	Heavily modified	Mersey	Sankey	Moderate	Good by 2027	n/a	n/a	Fail	Good by 2027	Moderate	Good by 2027	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR007	Sankey Brook	GB71210001	Canal	Artificial	Bridgewater Canal	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR007	Sankey Brook	GB71210004	Canal	Artificial	Manchester Ship Canal	Sankey	Moderate	Good by 2027	n/a	n/a	Fail	Good by 2027	Moderate	Good by 2027	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR007	Sankey Brook	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR007	Sankey Brook	GB41201G101700	Groundwater	No designation	Sandstone Aquifers Lower Mersey Basin and North Merseyside Permo-Triassic	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2026	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	N	Y	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR009	River Rawthey To Watchgate	GB112072071710	River	No designation	Rawthey - Lower	Greta and Rawthey	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR009	River Rawthey To Watchgate	GB112072071720	River	No designation	Lune - conf Birk Beck to conf Rawthey	Lune Upper	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR009	River Rawthey To Watchgate	GB112073071090	River	No designation	Peasey Beck	Bela	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR009	River Rawthey To Watchgate	GB112073071100	River	No designation	Stainton Beck	Bela	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR009	River Rawthey To Watchgate	GB112073071340	River	No designation	Flodder beck	Kent	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR009	River Rawthey To Watchgate	GB112073071370	River	No designation	Mint	Kent	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR009	River Rawthey To Watchgate	GB112073074640	River	No designation	Mint - Upper	Kent	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR009	River Rawthey To Watchgate	GB112073071460	River	No designation	Kent - conf Sprint to tidal	Kent	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR009	River Rawthey To Watchgate	GB112073071430	River	No designation	Sprint	Kent	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR009	River Rawthey To Watchgate	GB41202G102700	Groundwater	No designation	Lune and Wyre Carboniferous Aquifers	Lune and Wyre Carboniferous Aq	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Good	Good by 2027	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR009	River Rawthey To Watchgate	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	South Cumbria Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR012	Borrow Beck IR	GB112073074640	River	No designation	Mint- Upper	Kent	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR012	Borrow Beck IR	GB112072071770	River	No designation	Borrow Beck	Lune Upper	Good	Good by 2027	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	High level of impact	Y	High level of impact	High	High level of impact
WR012	Borrow Beck IR	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	Y	Y	High level of impact	Y	Minor level of impact	High	Minor level of impact
WR012	Borrow Beck IR	GB41202G102700	Groundwater	No designation	Lune and Wyre Carboniferous Aquifers	Lune and Wyre Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR026a	River Ribble Support To Stocks Reservoir	GB112071065612	River	No designation	Ribble DS Stock Beck	Ribble Middle - Settle to Calder	Good	Good by 2015	n/a	n/a	Fail	Fail by 2015	Moderate	Moderate by 2015	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR026a	River Ribble Support To Stocks Reservoir	GB112071065520	River	No designation	Bashall Brook	Ribble Middle - Settle to Calder	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR026a	River Ribble Support To Stocks Reservoir	GB112071065380	River	No designation	Easington Brook	Hodder and Loud	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR026a	River Ribble Support To Stocks Reservoir	GB112071065560	River	No designation	Hodder - conf Easington Bk to conf Ribble	Hodde and Loud	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR026a	River Ribble Support To Stocks Reservoir	GB112071065350	River	No designation	Hodder - conf Croasdale Bk to conf Easington Bk	Hodder and Loud	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR026a	River Ribble Support To Stocks Reservoir	GB112071065390	River	Heavily modified	Hodder - Stocks Reservoir to conf Croasdale Bk	Hodder and Loud	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR026a	River Ribble Support To Stocks Reservoir	GB31230030	Lake	Heavily modified	Stocks Reservoir	Hodder and Loud	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR026a	River Ribble Support To Stocks Reservoir	GB41202G103000	Groundwater	No designation	Ribble Carboniferous Aquifers	Ribble Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	Y	Y	N	N	Y	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR037a	Haweswater Reservoir – Raise Embankment Structure	GB30229073	Lake	Reservoir	Haweswater Reservoir	Eamont	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	High level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR037a	Haweswater Reservoir – Raise Embankment Structure	GB102076070720	River	No designation	Haweswater Beck	Eamont	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	High level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR037a	Haweswater Reservoir – Raise Embankment Structure	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	High level of impact	Y	Minor level of impact	High	Minor level of impact
WR037b	Haweswater Reservoir – Raise Embankment Structure	GB30229073	Lake	Heavily modified	Haweswater Reservoir	Eamont	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	High level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR037b	Haweswater Reservoir – Raise Embankment Structure	GB102076070720	River	No designation	Haweswater Beck	Eamont	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	High level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR037b	Haweswater Reservoir – Raise Embankment Structure	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	High level of impact	Y	Minor level of impact	High	Minor level of impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB102076070980	River	No designation	Eden Lyvennet to Eamont	Eden Upper	Moderate	Good by 2015	n/a	n/a	Good	Good by 2015	Moderate	Good by 2015	Y	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	High level of impact	Medium	High level of impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB102076070900	River	No designation	Leith	Eden Upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB102076070830	River	No designation	Morland Beck	Eden Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB102076070690	River	Heavily modified	Lowther (Upper)	Eamont	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB112072071810	River	No designation	Birk Beck	Lune Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB112072071770	River	No designation	Borrow Beck	Lune Upper	Good	Good by 2027	n/a	n/a	Good	Good by 2015	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB112073074640	River	No designation	Mint - Upper	Kent	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB40201G100400	Groundwater	No designation	Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers	Eden Valley and Carlisle Basin Permo-Triassic sandstone Aquifers	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB41202G102700	Groundwater	No designation	Lune and Wyre Carboniferous Aquifers	Lune and Wyre Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR039a	River Eden (Temple Sowerby) To Watchgate	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	South Cumbria Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR041	River Irthing to Cumwhinton plus Castle Carrock Link	GB102076073981	River	No designation	Irthing DS Crammel Linn Waterfall	Esk and Irthing	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR041	River Irthing to Cumwhinton plus Castle Carrock Link	GB102076073910	River	No designation	Pow Maughan Beck	Eden Lower	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR041	River Irthing to Cumwhinton plus Castle Carrock Link	GB102076073940	River	No designation	Eden- Eamont to tidal	Eden Lower	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR041	River Irthing to Cumwhinton plus Castle Carrock Link	GB102076073870	River	No designation	Cairn Beck	Eden Lower	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR041	River Irthing to Cumwhinton plus Castle Carrock Link	GB102076073900	River	No designation	Trout Beck (Cairn Beck)	Eden Lower	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR041	River Irthing to Cumwhinton plus Castle Carrock Link	GB102076074040	River	No designation	Gelt	Esk and Irthing	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR041	River Irthing to Cumwhinton plus Castle Carrock Link	GB40201G100400	Groundwater	No designation	Eden Valley and Carlisle Basin Permo-Triassic Sandstone aquifers	Eden Valley and Carlisle Basin Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR047a	Milwr Tunnel, Bagillt (Transfer to Huntington)	166	River	No designation	Non reportable water body at the mouth of the River Dee	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR047a	Milwr Tunnel, Bagillt (Transfer to Huntington)	GB111067056940	River	No designation	Swinchiard Brook	Dee	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR047a	Milwr Tunnel, Bagillt (Transfer to Huntington)	GB111067056880	River	No designation	Wepre Brook	Dee	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR047a	Milwr Tunnel, Bagillt (Transfer to Huntington)	GB111067052160	River	Heavily modified	Sandycroft Drain	Dee	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR047a	Milwr Tunnel, Bagillt (Transfer to Huntington)	GB111067052150	River	Heavily modified	Balderton Drain	Dee Estuary	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR047a	Milwr Tunnel, Bagillt (Transfer to Huntington)	GB111067057080	River	Heavily modified	Dee- Chester Weir to Ceiriog	Dee	Moderate	Good by 2021	n/a	n/a	Fail	Good by 2021	Moderate	Good by 2021	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR047a	Milwr Tunnel, Bagillt (Transfer to Huntington)	GB41101G202400	Groundwater	No designation	Dee Permo-Triassic Sandstone	Dee Permo-Triassic Sandstone	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR047a	Milwr Tunnel, Bagillt (Transfer to Huntington)	GB41102G204800	Groundwater	No designation	Dee Carboniferous Coal Measures	Dee Carboniferous Coal Measures	n/a	n/a	Good	None given	Poor	Poor by 2015	Poor	Poor by 2015	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact

Option		WFD Water Body Information												Option Detail																Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / estuary / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing abstraction to surface water	New abstraction well drilling / refurbishment	New abstraction well borehole / surface structure	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR049b	River Ribble (Transfer to Anglezarke IR)	GB112070064911	River	Heavily modified	Lostock US Farington Weir	Yarrow and Lostock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR049b	River Ribble (Transfer to Anglezarke IR)	GB112070064951	River	Heavily modified	Yarrow US Big Lodge Water	Yarrow and Lostock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR049b	River Ribble (Transfer to Anglezarke IR)	GB112071065500	River	Heavily modified	Ribble-conf Calder to Tidal	Big Ribble	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR049b	River Ribble (Transfer to Anglezarke IR)	GB112071065300	River	No designation	Darwen-conf Roddlesworth to tidal	Darwen	Bad	Good by 2027	n/a	n/a	Good	Good by 2027	Bad	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR049b	River Ribble (Transfer to Anglezarke IR)	GB112071065280	River	Heavily modified	Many Brooks	Darwen	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR049b	River Ribble (Transfer to Anglezarke IR)	GB112070064850	River	Heavily modified	Douglas upper	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR049b	River Ribble (Transfer to Anglezarke IR)	GB41201G100500	Groundwater	No designation	Fylde Permo-Triassic Sandstone Aquifers	Fylde Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR049b	River Ribble (Transfer to Anglezarke IR)	GB41202G100300	Groundwater	No designation	Douglas Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR049b	River Ribble (Transfer to Anglezarke IR)	GB31231190	Lake	Artificial	Anglezarke Reservoir	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2027	Moderate	Good by 2027	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR062a	Worthington WTW	GB112070064780	River	Heavily modified	Douglas- Mid	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR062a	Worthington WTW	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR062b	Worthington WTW (Rivington)	GB112070064780	River	Heavily modified	Douglas- Mid	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR062b	Worthington WTW (Rivington)	GB112070064800	River	Heavily modified	Buckhow (Hic Bibbi) Brook	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR062b	Worthington WTW (Rivington)	GB112070064850	River	Heavily modified	Douglas- Upper	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR062b	Worthington WTW (Rivington)	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR074	River Darwen (Transfer to Fishmoor WTW)	GB112071065500	River	Heavily modified	Ribble-conf Calder to Tidal	Big Ribble	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR074	River Darwen (Transfer to Fishmoor WTW)	GB112071065300	River	No designation	Darwen - conf Roddlesworth to tidal	Darwen	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR074	River Darwen (Transfer to Fishmoor WTW)	GB112071065290	River	No designation	Darwen - conf Blakewater to conf Roddlesworth	Darwen	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR074	River Darwen (Transfer to Fishmoor WTW)	GB112071065250	River	No designation	Roddlesworth	Darwen	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR074	River Darwen (Transfer to Fishmoor WTW)	GB112071065270	River	No designation	Darwen - conf Roddlesworth to tidal	Darwen	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR074	River Darwen (Transfer to Fishmoor WTW)	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Good	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR074	River Darwen (Transfer to Fishmoor WTW)	GB41201G100500	Groundwater	No designation	Fylde Permo-Triassic Sandstone Aquifers	Fylde Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR076	River Bollin	GB112069061382	River	Heavily modified	Bollin (Ashley Mill to Manchester Ship Canal)	Bollin Dean Mersey Upper	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR076	River Bollin	GB112069060980	River	No designation	Sinderland Brook	Bollin Dean Mersey Upper	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR076	River Bollin	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR079b	Appleton Reservoir, Warrington	GB31232665	Lake	Heavily modified	Appleton Reservoir	Weaver Lower	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR079b	Appleton Reservoir, Warrington	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR079b	Appleton Reservoir, Warrington	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR079b	Appleton Reservoir, Warrington	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR079c	Appleton Reservoir, Warrington	GB31232665	Lake	Heavily modified	Appleton Reservoir	Weaver Lower	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR079c	Appleton Reservoir, Warrington	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR079c	Appleton Reservoir, Warrington	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR079c	Appleton Reservoir, Warrington	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR079d	Appleton Reservoir, Warrington	GB31232665	Lake	Heavily modified	Appleton Reservoir	Weaver Lower	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	Y	Y	N	N	N	N	Y	N	N	N	N	Y	N	Medium level of impact	Y	Medium level of impact	Medium	Minor level of impact
WR079d	Appleton Reservoir, Warrington	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR079d	Appleton Reservoir, Warrington	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR079d	Appleton Reservoir, Warrington	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR095	Roughton Gill	GB102075073380	River	No designation	Chalk Beck	Waver-Wampool	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR095	Roughton Gill	GB102076073740	River	No designation	Whelpo (Cald) Beck	Caldew	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	Y	N	Y	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR095	Roughton Gill	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	Y	N	Y	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR099a	Worsthorne Borehole (Compensation)	GB112071065090	River	Heavily modified	Brun- headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR099a	Worsthorne Borehole (Compensation)	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR099b	Worsthorne Borehole (Hurstwood IR)	GB112071065090	River	Heavily modified	Brun- headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	Y	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR099b	Worsthorne Borehole (Hurstwood IR)	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	N	N	Y	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR099c	Worsthorne Borehole (Worsthorne WTW)	GB112071065090	River	Heavily modified	Brun- headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR099c	Worsthorne Borehole (Worsthorne WTW)	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR100	Thorncliffe Road Borehole, Barrow-In-Furness	344	River	No designation	Non reportable water body at the River Duddon Estuary	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR100	Thorncliffe Road Borehole, Barrow-In-Furness	GB41201G101900	Groundwater	No designation	Furness Permo-Triassic sandstone aquifers	Furness Permo-Triassic sandstone Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	GB112072065822	River	No designation	Wyre DS Grizedale Brook confl	Wyre and Calder	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	GB112072065810	River	No designation	Brock	Brock and Trib	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	GB112072066220	River	Heavily modified	Calder (Wyre)	Wyre and Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	GB112072065790	River	No designation	New Draught Brook	Brock and Trib	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	GB112072065800	River	No designation	Barton (Westfield) Brook	Brock and Trib	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	GB112072065760	River	No designation	Woodplumpton Brook	Brock and Trib	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	GB41201G100500	Groundwater	No designation	Fylde Permo-Triassic Sandstone Aquifers	Fylde Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR102a	Widnes Boreholes to Prescot WTW	GB112069060680	River	Heavily modified	Netherley Brook	Ditton	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102a	Widnes Boreholes to Prescot WTW	GB112069061390	River	Heavily modified	Ditton Brook (Halewood to Mersey Estuary)	Ditton	Moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	Moderate	Moderate by 2027	Y	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102a	Widnes Boreholes to Prescot WTW	GB112069060690	River	Heavily modified	Dog Clog Brook (including Mill Brook)	Ditton	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	Y	N	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102a	Widnes Boreholes to Prescot WTW	GB112069060710	River	No designation	Prescot Brook (Logwood Mill Brook)	Ditton	moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	moderate	Moderate by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102a	Widnes Boreholes to Prescot WTW	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Good	Good by 2027	Y	Y	N	Y	Y	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102ai	Widnes Boreholes To Prescot WTW	GB112069060680	River	Heavily modified	Netherley Brook	Ditton Brook (Halewood to Mersey Estuary)	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102ai	Widnes Boreholes To Prescot WTW	GB112069061390	River	Heavily modified	Ditton Brook (Halewood to Mersey Estuary)	Ditton Brook (Halewood to Mersey Estuary)	Moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	Moderate	Moderate by 2027	Y	N	N	N	N	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102ai	Widnes Boreholes To Prescot WTW	GB112069060690	River	Heavily modified	Dog Clog Brook (including Mill Brook)	Ditton	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	Y	N	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102ai	Widnes Boreholes To Prescot WTW	GB112069060710	River	No designation	Prescot Brook (Logwood Mill Brook)	Ditton	moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	moderate	Moderate by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102ai	Widnes Boreholes To Prescot WTW	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	Y	Y	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102b	Widnes Boreholes To Liverpool And Warrington DMZs	GB112069060680	River	Heavily modified	Netherley Brook	Ditton Brook (Halewood to Mersey Estuary)	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	Y	Y	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102b	Widnes Boreholes To Liverpool And Warrington DMZs	GB112069061390	River	Heavily modified	Ditton Brook (Halewood to Mersey Estuary)	Ditton Brook (Halewood to Mersey Estuary)	Moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	Moderate	Moderate by 2027	Y	Y	N	Y	N	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102b	Widnes Boreholes To Liverpool And Warrington DMZs	GB112069060690	River	Heavily modified	Dog Clog Brook (including Mill Brook)	Ditton	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102b	Widnes Boreholes To Liverpool And Warrington DMZs	167	River	No designation	Non reportable water body to the north of the River Mersey estuary	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR102b	Widnes Boreholes To Liverpool And Warrington DMZs	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102c	Widnes Boreholes To Runcorn And Warrington DMZs	GB112069061390	River	Heavily modified	Ditton Brook (Halewood to Mersey Estuary)	Ditton	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	N	N	N	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102c	Widnes Boreholes To Runcorn And Warrington DMZs	GB112069060690	River	Heavily modified	Dog Clog Brook (including Mill Brook)	Ditton	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102c	Widnes Boreholes To Runcorn And Warrington DMZs	GB112069060680	River	Heavily modified	Netherley Brook	Ditton	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102c	Widnes Boreholes To Runcorn And Warrington DMZs	167	River	No designation	Non reportable water body to the north of the River Mersey estuary	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR102c	Widnes Boreholes To Runcorn And Warrington DMZs	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact

Option		WFD Water Body Information												Option Detail																				Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / estuary / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing discharge to surface water	New abstraction well drilling / refurbishment	New abstraction well drilling / surface structure	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR102c	Widnes Boreholes To Runcorn And Warrington DMZs	170	River	No designation	Non reportable water body to the north of the River Mersey	Sankey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102c	Widnes Boreholes To Runcorn And Warrington DMZs	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2026	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	Y	Y	N	N	N	Minor level of impact	N			Minor level of impact
WR102c	Widnes Boreholes To Runcorn And Warrington DMZs	GB41101G202600	Groundwater	No designation	Wirral and West Cheshire Permo-Triassic Sandstone Aquifers	Wirral and West Cheshire Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102d	Eccleston Hill Borehole to Prescot WTW	GB112069061210	River	Heavily modified	Hardshaw (Windle) Brook	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR102d	Eccleston Hill Borehole to Prescot WTW	GB41202G100100	Groundwater	No designation	Sankey and Glaze Carboniferous aquifers	Sankey and Glaze Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102d	Eccleston Hill Borehole to Prescot WTW	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR102e	Bold Heath Boreholes to Prescot WTW	170	River	No designation	Non reportable water body to north of River Mersey	Sankey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB112069061210	River	Heavily modified	Hardshaw (Windle) Brook	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB112069061170	River	Heavily modified	Sutton Brook	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB112069060990	River	Heavily modified	Whittle Brook (Mersey Estuary)	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB112069060710	River	No designation	Prescot Brook (Logwood Mill Brook)	Ditton	moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	moderate	Moderate by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB41202G100100	Groundwater	No designation	Sankey and Glaze Carboniferous aquifers	Sankey and Glaze Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR105a	Lymm Boreholes (Abandonment of Existing WTW Facility; New WTW at Sow Brook)	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR105ai	Lymm Boreholes (Abandonment of Existing WTW Facility; New WTW at Sow Brook)	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR105ai	Lymm Boreholes (Abandonment of Existing WTW Facility; New WTW at Sow Brook)	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR105ai	Lymm Boreholes (Abandonment of Existing WTW Facility; New WTW at Sow Brook)	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR105b	Lymm Boreholes (Abandonment of Existing WTW Facility; New WTW at Hill Cliffe)	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR105b	Lymm Boreholes (Abandonment of Existing WTW Facility; New WTW at Hill Cliffe)	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR105bi	Lymm Boreholes (Abandonment Of Existing WTW Facility; New WTW At Hill Cliffe)	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR105bi	Lymm Boreholes (Abandonment Of Existing WTW Facility; New WTW At Hill Cliffe)	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR106	Walton And Daresbury Boreholes	GB112068060520	River	heavily modified	Keckwick Brook	Weaver Lower	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR106	Walton And Daresbury Boreholes	169	River	No designation	Non reportable water body to the south of the River Mersey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR106	Walton And Daresbury Boreholes	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR106	Walton And Daresbury Boreholes	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR107a	Aughton Park & Moss End Boreholes (Royal Oak WTW)	GB112069060640	River	Heavily modified	Downholland (Lydiate/Cheshires Lines) Brook	Alt	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR107a	Aughton Park & Moss End Boreholes (Royal Oak WTW)	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR107ai	Aughton Park & Moss End Boreholes (Royal Oak WTW)	GB112069060640	River	Heavily modified	Downholland (Lydiate/Cheshires Lines) Brook	Alt	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR107ai	Aughton Park & Moss End Boreholes (Royal Oak WTW)	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR107b	Randles Bridge, Knowsley, Primrose Hill	GB112063060610	River	Heavily modified	Croxteth/ Knowsley Brook	Alt	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR107b	Randles Bridge, Knowsley, Primrose Hill	GB112063060630	River	Heavily modified	Simonswood Brook	Alt	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR107b	Randles Bridge, Knowsley, Primrose Hill	GB112063060640	River	Heavily modified	Downholland (Lydiate/Cheshires Lines) Brook	Alt	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR107b	Randles Bridge, Knowsley, Primrose Hill	GB112063064510	River	Heavily modified	Chisnall Brook	Alt	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR107b	Randles Bridge, Knowsley, Primrose Hill	GB112070064830	River	Heavily modified	Three Pool's Waterway	Crossens System	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR107b	Randles Bridge, Knowsley, Primrose Hill	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sanstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR109	Swineshaw Boreholes (Buckton Castle WTW)	GB112069061111	River	Heavily modified	Tame (Chew Brook to Swineshaw Brook)	Goyt Etherow Tame	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR109	Swineshaw Boreholes (Buckton Castle WTW)	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR110	Rushton Spencer Boreholes	GB112068060180	River	No designation	Dane (Clough Brook to Cow Brook)	Dane	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR110	Rushton Spencer Boreholes	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifer	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR111	Woodford Borehole	GB112069060950	River	No designation	Poise Brook	Goyt Etherow Tame	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR111	Woodford Borehole	GB112069061360	River	No designation	Dean (Bollington to Bollin)	Bollin Dean Mersey Upper	Poor	Moderate by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR111	Woodford Borehole	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR111	Woodford Borehole	GB41201G101100	Groundwater	No designation	Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	Manchester and Cheshire East Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2021	Poor	Good by 2021	Poor	Good by 2021	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR112	Bramhall Borehole	GB112069060950	River	No designation	Poise Brook	Goyt Etherow Tame	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR112	Bramhall Borehole	GB112069061360	River	No designation	Dean (Bollington to Bollin)	Bollin Dean Mersey Upper	Poor	Moderate by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR112	Bramhall Borehole	GB112069060940	River	No designation	Dean (Bollington to Bollin)	Bollin Dean Mersey Upper	Poor	Moderate by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR112	Bramhall Borehole	GB112069060900	River	No designation	Poynton Brook	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR112	Bramhall Borehole	GB112069060920	River	Heavily modified	Micker (Norbury) Brook	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR112	Bramhall Borehole	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR112	Bramhall Borehole	GB41201G101100	Groundwater	No designation	Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	Manchester and Cheshire East Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2021	Poor	Good by 2021	Poor	Good by 2021	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR113	Tytherington Boreholes	GB112069061320	River	Heavily modified	Bollin (Source to Dean)	Bollin Dean Mersey Upper	Moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	Moderate	Moderate by 2027	Y	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR113	Tytherington Boreholes	GB41201G101100	Groundwater	No designation	Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	Manchester and Cheshire East Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR114	Python Mill Borehole	GB112069064720	River	Heavily modified	Roch (Source to Spodden)	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2027	Moderate	Good by 2027	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR114	Python Mill Borehole	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	N	Y	Y	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR114	Python Mill Borehole	GB71210517	AWB - Canal	Artificial	Rochdale Canal, western section	Roch Irk Medlock Canals and SWT	Moderate	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR119a	Egremont Boreholes (Existing)	GB112074069980	River	No designation	Ehen (lower)	Ehen-Calder	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR119a	Egremont Boreholes (Existing)	GB112074070010	River	Heavily modified	Ehen (upper including Liza)	Ehen-Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR119a	Egremont Boreholes (Existing)	353	River	No designation	Non reportable water body on the St Bees Coast	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR119a	Egremont Boreholes (Existing)	GB41201G102000	Groundwater	No designation	West Cumbria Permo-Triassic Sandstone Aquifers	Cumbria West Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR119a	Egremont Boreholes (Existing)	GB41202G103700	Groundwater	No designation	Derwent and West Cumbria Lower Palaeozoic and Carboniferous Aquifers	Derwent and West Cumbria Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR119b	Egremont Boreholes (New)	GB112074069980	River	No designation	Ehen (lower)	Ehen-Calder	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	Y	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	High level of impact	Medium	High level of impact
WR119b	Egremont Boreholes (New)	GB112074070010	River	Heavily modified	Ehen (upper including Liza)	Ehen-Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR119b	Egremont Boreholes (New)	353	River	No designation	Non reportable water body on the St Bees Coast	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR119b	Egremont Boreholes (New)	GB41201G102000	Groundwater	No designation	West Cumbria Permo-Triassic Sandstone Aquifers	Cumbria West Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	Y	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR119b	Egremont Boreholes (New)	GB41202G103700	Groundwater	No designation	Derwent and West Cumbria Lower Palaeozoic and Carboniferous Aquifers	Derwent and West Cumbria Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR120	Cross Hill Boreholes, Wirral	GB112068060530	River	Heavily modified	The Birket including Arrowe Brook and Fender	Wirral	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR120	Cross Hill Boreholes, Wirral	GB41101G202600	Groundwater	No designation	Wirral and West Cheshire Permo-Triassic Sandstone Aquifers	Wirral and West Cheshire Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR120i	Cross Hill Boreholes, Wirral	GB112068060530	River	Heavily modified	The Birket including Arrowe Brook and Fender	Wirral	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR120i	Cross Hill Boreholes, Wirral	GB41101G202600	Groundwater	No designation	Wirral and West Cheshire Permo-Triassic Sandstone Aquifers	Wirral and West Cheshire Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR121a	Eaton Boreholes (Hollins Hill)	GB112068055440	River	No designation	Wettenhall Brook	Weaver Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR121a	Eaton Boreholes (Hollins Hill)	GB112068060450	River	Heavily modified	Darley Brook	Weaver Lower	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR121a	Eaton Boreholes (Hollins Hill)	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR121a	Eaton Boreholes (Hollins Hill)	GB41101G202600	Groundwater	No designation	Wirral and West Cheshire Permo-Triassic Sandstone Aquifers	Wirral and West Cheshire Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR121b	Eaton Boreholes (Mid Cheshire Main)	GB112068055440	River	No designation	Wettenhall Brook	Weaver Upper	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR121b	Eaton Boreholes (Mid Cheshire Main)	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Good	Good by 2027	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact

Option		WFD Water Body Information												Option Detail																Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / estuary / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing abstraction to surface wate	New abstraction well drilling / refurbishment	New abstraction well drilling / surface structure	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR122	Newton Hollows Boreholes	GB112068060550	River	No designation	Crowton Brook	Weaver Lower	Poor	Moderate by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR122	Newton Hollows Boreholes	GB41101G202600	Groundwater	No designation	Wirral and West Cheshire Permo-Triassic Sandstone Aquifers	Wirral and Cheshire West Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR125	Bearstone Boreholes	GB109054055150	River	No designation	Tern- source to conf Loggerheads Bk	Perry Roden and Tern North Shropshire	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR125	Bearstone Boreholes	GB112068055220	River	No designation	Birchall Brook	Weaver Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR125	Bearstone Boreholes	GB40901G300100	Groundwater	No designation	Shropshire Middle Severn- PT Sandstone East Shropshire	Severn Middle Shropshire- Permo-Triassic Sandstone East Shropshire	n/a	n/a	Poor	Poor by 2015	Poor	Good by 2050	Poor	Poor by 2015	Y	Y	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR125	Bearstone Boreholes	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR128	Tarn Wood (North Eden to Carlisle)	GB102076073910	River	No designation	Pow Maughan Beck	Eden lower	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	Y	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR128	Tarn Wood (North Eden to Carlisle)	GB102076074030	River	No designation	Petteril d/s Blackrack Beck	Petteril	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR128	Tarn Wood (North Eden to Carlisle)	GB102076073940	River	No designation	Eden - Eamont to tidal	Eden lower	Good	Poor by 2027	n/a	n/a	Good	Good by 2027	Good	Poor by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR128	Tarn Wood (North Eden to Carlisle)	GB40201G100400	Groundwater	No designation	Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers	Eden Valley and Carlisle Basin Permo-Triassic sandstone Aq	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Good	Good by 2027	Y	Y	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR129	North Cumbria Boreholes	GB102075073410	River	No designation	Wampool (Upper)	Waver-Wampool	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR129	North Cumbria Boreholes	GB102075073390	River	Heavily modified	Wiza Beck	Waver-Wampool	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR129	North Cumbria Boreholes	GB102075073440	River	No designation	Waver	Waver-Wampool	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR129	North Cumbria Boreholes	GB102075073480	River	No designation	Crummock Beck u/s Holme Dub	Ellen and West Coast	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR129	North Cumbria Boreholes	GB111075073650	River	No designation	Ellen (Middle)	Ellen and West Coast	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR129	North Cumbria Boreholes	GB111075073640	River	No designation	Hellen (Lower)	Ellen and West Coast	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR129	North Cumbria Boreholes	GB111075073620	River	No designation	Threapland Gill	Ellen and West Coast	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR129	North Cumbria Boreholes	GB111075073630	River	No designation	Ellen (upper)	Ellen and West Coast	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR129	North Cumbria Boreholes	GB111075073600	River	No designation	Cockshot Beck	Ellen and West Coast	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR129	North Cumbria Boreholes	GB111075073570	River	No designation	Broughton Beck	Derwent	Moderate	Good by 2015	n/a	n/a	Good	Good by 2015	Moderate	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR129	North Cumbria Boreholes	GB40202G100900	Groundwater	No designation	Carlisle Basin Triassic and Jurassic Aquifers	Carlisle Basin Triassic and Jurassic Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR129	North Cumbria Boreholes	GB40201G100400	Groundwater	No designation	Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers	Eden Valley and Carlisle Basin Permo-Triassic sandstone Aq	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR129	North Cumbria Boreholes	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR129	North Cumbria Boreholes	GB41202G103700	Groundwater	No designation	Derwent and West Cumbria Lower Palaeozoic and Carboniferous Aquifers	Derwent and West Cumbria Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR140	Horwich Wwtw – Final Effluent Reuse	GB112070064850	River	Heavily modified	Douglas - Upper	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR140	Horwich Wwtw – Final Effluent Reuse	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas, Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR141	Rossendale Wwtw- Final Effluent Reuse	GB112069064641	River	Heavily modified	Irwell (Cowpe Bk to Rossendale STW)	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR141	Rossendale Wwtw- Final Effluent Reuse	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR142	Hyndburn Wwtw – Final Effluent Reuse	GB112071065490	River	No designation	Calder - Pendle Water to conf Ribble	Calder	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR142	Hyndburn Wwtw – Final Effluent Reuse	GB111071065070	River	No designation	Hyndburn Brook - Lower	Calder	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR142	Hyndburn Wwtw – Final Effluent Reuse	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas, Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR144	Saddleworth and Mossley Top- Final Effluent Reuse	GB111063061111	River	Heavily Modified	Tame (Chew Brook to Swineshaw Brook)	Goyt Etherow Tame	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR144	Saddleworth and Mossley Top- Final Effluent Reuse	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR146	Davyhulme- Final Effluent Reuse	GB112069061452	River	Heavily modified	Irwell/ Manchester Ship Canal (Irk to confluence with Upper Mersey)	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
WR146	Davyhulme- Final Effluent Reuse	GB112069061430	River	Heavily modified	Folly Brook and Salteye Brook	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR146	Davyhulme- Final Effluent Reuse	GB41201G101100	Groundwater	No designation	Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	Manchester and Cheshire East Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2021	Poor	Good by 2021	Poor	Good by 2021	Y	Y	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR146	Davyhulme- Final Effluent Reuse	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR148	Cumwhinton Boreholes plus Castle Carrock Link	GB102076073910	River	No designation	Pow Maughan Beck	Eden lower	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	N	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR148	Cumwhinton Boreholes plus Castle Carrock Link	GB102076073940	River	No designation	Eden - Eamont to tidal	Eden lower	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR148	Cumwhinton Boreholes plus Castle Carrock Link	GB102076073870	River	No designation	Cairn Beck	eden lower	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR148	Cumwhinton Boreholes plus Castle Carrock Link	GB102076073900	River	No designation	Trout Beck (Cairn Beck)	Eden lower	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR148	Cumwhinton Boreholes plus Castle Carrock Link	GB102076074040	River	No designation	Gelt	Esk and Irthing	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR148	Cumwhinton Boreholes plus Castle Carrock Link	GB40201G100400	Groundwater	No designation	Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers	Eden Valley and Carlisle Basin Permo-Triassic sandstone Aq	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Good	Good by 2027	Y	Y	N	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR150	Castle Carrock Dead Water Storage	GB102076074040	River	No designation	Gelt	Esk and Irthing	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR150	Castle Carrock Dead Water Storage	GB40201G100400	Groundwater	No designation	Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers	Eden Valley and Carlisle Basin Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR153	Simmonds Hill- Increased WTW Capacity	GB112068060330	River	No designation	Peckmill Brook, Hoolpool Gutter at Ince Marshes	Gowy	Poor	Poor by 2015	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR153	Simmonds Hill- Increased WTW Capacity	GB112068060500	River	Heavily modified	Weaver (Dane to Frodsham)	Weaver Lower	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR153	Simmonds Hill- Increased WTW Capacity	GB41101G202600	Groundwater	No designation	Wirral and West Cheshire Permo-Triassic Sandstone Aquifers	Wirral and Cheshire West Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR154	Sandiford – Increased WTW Capacity	GB112068060450	River	Heavily modified	Darley Brook	Weaver Lower	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR154	Sandiford – Increased WTW Capacity	GB41101G202600	Groundwater	No designation	Wirral and West Cheshire Permo-Triassic Sandstone Aquifers	Wirral and Cheshire West Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR154	Sandiford – Increased WTW Capacity	GB112068060480	River	No designation	Cuddington Brook (Source to Crowton Brook)	Weaver Lower	Poor	Good by 2021	n/a	n	Good	Good by 2015	Poor	Good by 2021	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	GB31230812	Lake	Heavily modified	Mitchells House Reservoir No 1	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	GB31230833	Lake	Artificial	Mitchells House Reservoir No 2	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	GB112071065040	River	Heavily modified	Hyndburn	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB112074069790	River	Heavily modified	Mill Beck (Poaka Beck)	Duddon	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB112073071160	River	No designation	Dragley Beck	Leven	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB31229599	Lake	Artificial	Harlock Reservoir	Duddon	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB31229607	Lake	Heavily modified	Pennington Reservoir	Leven	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB31229615	Lake	Artificial	Poaka Beck Reservoir	Duddon	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LEVERS WATER	GB31229285	Lake	Heavily modified	Levers Water	Crake	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LEVERS WATER	GB112073071210	River	No designation	Yewdale/Church Beck	Crake	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LEVERS WATER	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – FISHMOOR TOTAL	GB31230883	Lake	Artificial	Fishmoor Reservoir	Darwen	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – FISHMOOR TOTAL	GB112071065270	River	Heavily modified	Darwen - conf Davy Field Bk to conf Blakewater	Darwen	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – FISHMOOR TOTAL	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	GB31233250	Lake	Heavily modified	Ridgegate Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	GB31233247	Lake	Heavily modified	Trentabank Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	GB112069061320	River	Heavily modified	Bollin (Source to Dean)	Bollin Dean Mersey Upper	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LAMALOAD	GB31233063	Lake	Heavily modified	Lamaload Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LAMALOAD	GB111069060650	River	Heavily modified	Dean (Lamaload to Bollington)	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LAMALOAD	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WET SLEDDALE	GB102076070690	River	Heavily modified	Lowther (Upper)	Eamont	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact

Option		WFD Water Body Information											Option Detail															Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing abstraction to surface water	New abstraction well drilling / refurbishment	New abstraction well borehole / surface structure	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR159	Group 1 - Improved reservoir compensation release control – WET SLEDDALE	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB31231200	Lake	Heavily modified	Wayoh Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB31231202	Lake	Heavily modified	Turton and Entwistle Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB31231306	Lake	Heavily modified	Jumbles Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB112069064580	River	Heavily modified	Bradshaw Brook	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – DELPH	GB31231264	Lake	Heavily modified	Delph Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – DELPH	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – DELPH	GB112069064570	River	Heavily modified	Eagley Brook	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	GB31231314	Lake	Artificial	Dingle Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	GB31231312	Lake	Heavily modified	Springs Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	GB112069064570	River	Heavily modified	Eagley Brook	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ASHWORTH MOOR	GB31231267	Lake	Heavily modified	Ashworth Moor Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ASHWORTH MOOR	GB112069064710	River	Heavily modified	Naden Brook	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – ASHWORTH MOOR	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB31231260	Lake	Heavily modified	Greenbooth Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB31231250	Lake	Heavily modified	Lower Naden Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB31231229	Lake	Heavily modified	Middle Naden Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB112069064710	River	Heavily modified	Naden Brook	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB31231212	Lake	Heavily modified	Spring Mill Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB31231164	Lake	Heavily modified	Watergrove Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB31231141	Lake	Heavily modified	Cowm Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB112069064730	River	Heavily modified	Spodden	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB112069064720	River	Heavily modified	Roch (Source to Spodden)	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – HURSTWOOD	GB31230625	Lake	Heavily modified	Hurstwood Reservoir	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – HURSTWOOD	GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – HURSTWOOD	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CANT CLOUGH	GB31230663	Lake	Heavily modified	Cant Clough Reservoir	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CANT CLOUGH	GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CANT CLOUGH	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	GB31230591	Lake	Heavily modified	Swinden Higher Reservoir	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	GB31230590	Lake	Artificial	Swinden Lower Reservoir	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LANESHAW	GB31230377	Lake	Heavily modified	Laneshaw Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LANESHAW	GB112071065210	River	Heavily modified	Colne Water (Laneshaw)	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LANESHAW	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	GB31230523	Lake	Heavily modified	Coldwell Lower Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	GB31230533	Lake	Heavily modified	Coldwell Upper Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	GB112071065130	River	Heavily modified	Walverden Water	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	GB31230422	Lake	Heavily modified	Ogden Lower Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	GB31230431	Lake	Heavily modified	Ogden Upper Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	GB112071065230	River	No designation	Pendle Water - headwaters to Colne Water	Colne Water	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CHURN CLOUGH	GB31230459	Lake	Heavily modified	Churn Clough Reservoir	Calder	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CHURN CLOUGH	GB112071065140	River	No designation	Sabden Brook	Calder	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CHURN CLOUGH	GB41202G103000	Groundwater	No designation	Ribble Carboniferous Aquifers	Ribble Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – STOCKS	GB31230030	Lake	Heavily modified	Stocks Reservoir	Hodder and Loud	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – STOCKS	GB112071065390	River	Heavily modified	Hodder - Stocks Reservoir to conf Croasdale Bk	Hodder and Loud	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – STOCKS	GB41202G103000	Groundwater	No designation	Ribble Carboniferous Aquifers	Ribble Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB31231393	Lake	Heavily modified	Piethorne Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB31231367	Lake	Heavily modified	Norman Hill Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB31231399	Lake	Heavily modified	Kitcliffe Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB31231398	Lake	Heavily modified	Ogden Reservoir Rochdale	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB31231405	Lake	Heavily modified	Hanging Lees Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB31231435	Lake	Heavily modified	Rooden Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB112069064690	River	Heavily modified	Beal	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WARLAND	GB30431070	Lake	Heavily modified	Warland Reservoir	Calder Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WARLAND	GB104027062600	River	Heavily modified	Walsden Water from Source to River Calder	Calder Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – WARLAND	GB40402G700400	Groundwater	No designation	Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.	Aire and Calder Carb Limestone - Millstone Grit Coal - Meas	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB31231168	Lake	Heavily modified	Blackstone Edge Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB30431104	Lake	Heavily modified	White Holme Reservoir	Calder Upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB104027062600	River	Heavily modified	Walsden Water from Source to River Calder	Calder Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB40402G700400	Groundwater	No designation	Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.	Aire and Calder Carb Limestone - Millstone Grit Coal - Meas	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB112069064720	River	Heavily modified	Roch (Source to Spodden)	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CASTLESHAW UPPER & LOWER	GB31231531	Lake	Heavily modified	Upper and Lower Castleshaw Reservoirs	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CASTLESHAW UPPER & LOWER	GB112069064741	River	Heavily modified	Tame (Source to Chew Brook)	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CASTLESHAW UPPER & LOWER	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB31231404	Lake	Heavily modified	Readycon Dean Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact

Option		WFD Water Body Information												Option Detail																		Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / estuary / sea / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing discharge to surface wate	New abstraction well drilling / refurbishment	New abstraction well borehole / surface structure	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB31231454	Lake	Heavily modified	Crook Gate Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB31231482	Lake	Heavily modified	Dowry Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB31231508	Lake	Heavily modified	New Years Bridge Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB112069064741	River	Heavily modified	Tame (Source to Chew Brook)	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB31231778	Lake	Heavily modified	Greenfield Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB31231791	Lake	Heavily modified	Yeoman Hey Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB31231829	Lake	Heavily modified	Dovestone Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB31231942	Lake	Heavily modified	Chew Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB112069061300	River	Heavily modified	Chew Brook	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB31232108	Lake	Heavily modified	Brushes Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB31232112	Lake	Heavily modified	Walkerwood Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB31232066	Lake	Heavily modified	Higher Swineshaw Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB31232094	Lake	Heavily modified	Lower Swineshaw Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB112069061111	River	Heavily modified	Tame (Chew Brook to Swineshaw Brook)	Goyt Etherow Tame	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – Kinder	GB31232499	Lake	Heavily modified	Kinder Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – Kinder	GB112069060970	River	No designation	Sett	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – Kinder	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ERREOOD & FERNILEE	GB31233043	Lake	Heavily modified	Errwood Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ERREOOD & FERNILEE	GB31232950	Lake	Heavily modified	Fernilee Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ERREOOD & FERNILEE	GB112069060850	River	Heavily modified	Goyt (Source to Randall Carr Brook)	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – ERREOOD & FERNILEE	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	GB31247004	Lake	Heavily modified	Bollinhurst Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	GB31247005	Lake	Heavily modified	Horse Coppice Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	GB112069060920	River	Heavily modified	Micker (Norbury) Brook	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB31231025	Lake	Heavily modified	Calf Hey Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB31231013	Lake	Heavily modified	Ogden Reservoir Lancashire	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB31231027	Lake	Heavily modified	Holden Wood Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB112069064650	River	Heavily modified	Ogden	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COWPE & CRAGG HOLES	GB31231115	Lake	Heavily modified	Cowpe Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COWPE & CRAGG HOLES	GB112069064660	River	Heavily modified	Irwell (Source to Whitewell Brook)	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – COWPE & CRAGG HOLES	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SCOUT MOOR	GB31231130	Lake	Heavily modified	Scout Moor Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SCOUT MOOR	GB112069064620	River	Heavily modified	Irwell (Rossendale STW to Roch)	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SCOUT MOOR	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CLOUGH BOTTOM	GB31230858	Lake	Heavily modified	Clough Bottom Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CLOUGH BOTTOM	GB112069064670	River	Heavily modified	Whitewell Brook	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CLOUGH BOTTOM	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CLOWBRIDGE	GB31230769	Lake	Heavily modified	Clowbridge Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CLOWBRIDGE	GB112069064680	River	Heavily modified	Limy Water	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CLOWBRIDGE	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232065	Lake	Heavily modified	Woodhead Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232111	Lake	Heavily modified	Torside Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232136	Lake	Heavily modified	Rhodeswood Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232150	Lake	Heavily modified	Valehouse Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232166	Lake	Heavily modified	Arnfield Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232183	Lake	Heavily modified	Audenshaw Reservoirs	Bollin Dean Mersey Upper	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB112069061060	River	Heavily modified	Platt Brook (Source to Fallowfield Bk)	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB112069060780	River	Heavily modified	Etherow (Woodhead Res. to Glossop Bk.)	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB112069061112	River	Heavily modified	Tame (Swineshaw Brook to Mersey)	Goyt Etherow Tame	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – Thirlmere	GB31229021	Lake	Heavily modified	Thirlmere	Derwent	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – Thirlmere	GB112075070430	River	Heavily modified	St John's Beck	Derwent	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR160	Group 2 - Improved reservoir compensation release control – Thirlmere	GB41202G103700	Groundwater	No designation	Derwent and West Cumbria Lower Palaeozoic and Carboniferous A	Derwent and Cumbria West Lower Palaeozoic and Carbonif	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – RIVINGTON	GB31231288	Lake	Heavily modified	Rivington Reservoirs	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – RIVINGTON	GB112070064850	River	Heavily modified	Douglas - Upper	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR160	Group 2 - Improved reservoir compensation release control – RIVINGTON	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – HAWESWATER	GB30229073	Lake	Heavily modified	Haweswater Reservoir	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – HAWESWATER	GB102076070720	River	Heavily modified	Haweswater Beck	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR160	Group 2 - Improved reservoir compensation release control – HAWESWATER	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – VYRNWY	GB30935568	Lake	Heavily modified	Llyn Efyrnwy	Severn Uplands	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – VYRNWY	GB109054049880	River	Heavily modified	Vrynwy - Lake Vrynwy to conf Afon Cownwy	Severn Uplands	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR160	Group 2 - Improved reservoir compensation release control – VYRNWY	GB40902G205300	Groundwater	No designation	Severn Uplands- Lower Palaeozoic	Severn	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR800	River Bela to Thirlmere Aqueduct	GB112073071070	River	Heavily modified	Bela	Bela	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR800	River Bela to Thirlmere Aqueduct	GB112073071080	River	No designation	Lupton (Farleton) Beck	Bela	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR800	River Bela to Thirlmere Aqueduct	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB30328860	Lake	Heavily modified	Cow Green Reservoir	Tees Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Low	No or minimal impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB103025076080	River	Heavily modified	Tees from Trout Beck to Maize Beck	Tees Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Low	No or minimal impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB103025072440	River	Heavily modified	Maize Beck from Source to River Tees	Tees Upper	High	Good by 2027	n/a	n/a	Good	Good by 2015	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB102076070910	River	No designation	Burthwaite Beck	Eden Upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB102076070960	River	No designation	Swindale Beck nr Dufton	Eden Upper	Good	Good by 2017	n/a	n/a	Good	Good by 2015	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact

Option		WFD Water Body Information												Option Detail																Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / water course / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing discharge to surface wate	New abstraction well drilling / refurbishment	New abstraction well borehole / surface structure	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB102076070930	River	No designation	Trout Beck	Eden Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB102076070880	River	No designation	Eden - Scandal Beck to Lyvennet	Eden Upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB102076070840	River	No designation	Lyvennet	Eden Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB102076070830	River	No designation	Morland Beck	Eden Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB102076070900	River	No designation	Leith	Eden Upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB102076071010	River	Heavily modified	Lowther (Lower)	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB102076070720	River	heavily modified	Haweswater Beck	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB30229073	Lake	heavily modified	Haweswater Reservoir	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB40302G700300	Groundwater	No designation	Tees Carb Limestone & Millstone Grit	Tees Carb Limestone & Millstone Grit	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR810	Third Party Option: Cow Green IR To Haweswater via Heltondale Aqueduct	GB40201G100400	Groundwater	No designation	Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers	Eden Valley and Carlisle Basin Permo-Triassic sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076070720	River	heavily modified	Haweswater Beck	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076070990	River	No designation	Eamont (Lower)	Eamont	Good	Good by 2027	n/a	n/a	Good	Good by 2015	Good	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076071010	River	heavily modified	Lowther (Lower)	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076071020	River	No designation	Eamont (Upper)	Eamont	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076073840	River	No designation	Raven Beck	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076073850	River	No designation	Briggle Beck (Croglin)	Eden Lower	Poor	Good 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076073860	River	No designation	Croglin Water (upper)	Eden Lower	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076073940	River	No designation	Eden - Eamont to tidal	Eden lower	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076073981	River	No designation	Irthing DS Crammel Linn Waterfall	Esk and Irthing	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076073982	River	No designation	Irthing US Crammel Linn Waterfall	Esk and Irthing	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076074010	River	No designation	New Water	Esk and Irthing	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076074020	River	No designation	Old Water	Esk and Irthing	Moderate	Moderate by 2015			Good	Good 2015	Moderate	Moderate 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076074070	River	No designation	Butter Burn	Esk and Irthing	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB102076074100	River	No designation	Irthing (upstream Butter Burn)	Esk and Irthing	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB103023074930	River	No designation	Chirdon Burn catch trib of N Tyne	North tyne upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB103023074940	River	No designation	Smales Burn Catch (trib of N Tyne)	North tyne upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB103023075070	River	heavily modified	N Tyne from Lewis Burn to Tarset Burn	North tyne upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB103023075460	River	No designation	Black Burn Catchment (Trib of Hartley Burn)	South Tyne Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB103023075470	River	No designation	Hartley Burn from Source to Black Burn	South Tyne Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB103023075510	River	No designation	Kellah Burn Catchment (Trib of Hartley Burn)	South Tyne Upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB103023075531	River	No designation	South Tyne from Black Burn to Tipalt Burn	South Tyne Upper	Moderate	Good by 2027	n/a	n/a	Fail	Good by 2027	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB103023075580	River	No designation	Tipalt Burn from Source to South Tyne	South Tyne Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB30229073	Lake	heavily modified	Haweswater Reservoir	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB30327698	Lake	heavily modified	Kielder Water	North Tyne Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB40201G100400	Groundwater	No designation	Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers	Eden Valley and Carlisle Basin Permo-Triassic sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR812	Third Party Option: Kielder Water IR Transfer	GB40302G702700	Groundwater	No designation	Tyne Carboniferous Limestone	Tyne Carboniferous Limestone	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Low	No or minimal impact
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal	GB30431243	Lake	heavily modified	Scammonden Water	Calder Middle	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal	GB104027062570	River	heavily modified	Black Brook from Source to River Calder	Calder Middle	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal	GB104027063330	River	heavily modified	Colne from Wessenden Brook to R Holme	Colne and Holme	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal	GB70410269	Canal	Artificial	Huddersfield Narrow Canal east section	Calder canals	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal	GB70410520	Canal	Artificial	Huddersfield Narrow Canal summit section	Calder canals	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal	GB71210268	Canal	Artificial	Huddersfield Narrow Canal west section	Calder canals	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Good	Good by 2027	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal	GB112069061111	River	heavily modified	Tame (Chew Brook to Swineshaw Brook)	Goyt Etherow Tame	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal	GB40402G700400	Groundwater	No designation	Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.	Aire and Calder Carb Limestone - Millstone Grit Coal - Measures	n/a	n/a	Good	Poor by 2015	Poor	Poor by 2015	Poor	Poor by 2015	Y	Y	Y	Y	N	N	Y	N	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR813	Third Party Option: Scammonden IR To Buckton Castle via Huddersfield Narrows Canal	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and East Cheshire Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	Y	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR814a	Increased Abstraction Capacity at Heronbridge	GB41101G202400	Groundwater	No designation	Dee Permo-Triassic Sandstone	Dee Permo-Triassic Sandstone	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	High	No or minimal impact
WR814a	Increased Abstraction Capacity at Heronbridge	GB111067057080	River	Heavily modified	Dee- Chester Weir to Ceiriog	Dee	Moderate	Good by 2021	n/a	n/a	Fail	Good by 2021	Moderate	Good by 2021	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	High	No or minimal impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB111067052060	River	Heavily modified	Dee - Ceiriog to Alwen	Dee	Good	Good by 2015	n/a	n/a	Fail	Good by 2021	Moderate	Good by 2021	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB111067051910	River	No designation	Ceiriog - confluence Dee to Teirw	Dee	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB111067051600	River	No designation	Morlas Brook	Ceiriog	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB109054055010	River	No designation	Perry - source to conf Common Bk	Perry Roden and Tern North Shropshire	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB109054054970	River	No designation	Perry - conf Common Bk to conf Tetchill Bk	Perry Roden and Tern North Shropshire	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB109054055000	River	No designation	Tetchill Bk - source to conf R Perry	Perry Roden and Tern North Shropshire	Poor	Moderate by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB109054055020	River	No designation	Roden - source to conf unnamed trib	Perry Roden and Tern North Shropshire	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB109054054980	River	No designation	Tributary - source to conf R Roden	Perry Roden and Tern North Shropshire	Bad	Good by 2027	n/a	n/a	Good	Good by 2015	Bad	Good by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB111067052200	River	No designation	Worthenbury Brook - upper	Worthenbury	Poor	Moderate by 2027	n/a	n/a	Fail	Good by 2027	Poor	Moderate by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB112068055260	River	No designation	Bickley Brook	Weaver Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2027	Moderate	Good by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB112068055300	River	No designation	Weaver (Source to Marbury Brook)	Weaver Upper	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB112068055470	River	No designation	Weaver (Marbury Brook to Barnett Brook)	Weaver Upper	Poor	Moderate by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB112068055250	River	No designation	Edleston Brook	Weaver Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB112068055340	River	No designation	Rookery Brook, Burland and Brindley Bk. to Weaver	Weaver Upper	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB112068060460	River	No designation	Weaver (Marbury Brook to Dane)	Weaver Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB70910082	AWB - Canal	Artificial	Llangollen Canal	Perry Roden and Tern North Shropshire Canals	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB41102G200200	Groundwater	No designation	Dee Silurian/Ordovician	Dee Silurian/Ordovician	n/a	n/a	Good	None given	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB41101G202200	Groundwater	No designation	Dee Carboniferous Limestone	Dee Carboniferous Limestone	n/a	n/a	Good	None given	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB41102G204800	Groundwater	No designation	Dee Carboniferous Coal Measures	Dee Carboniferous Coal Measures	n/a	n/a	Good	None given	Poor	Poor by 2015	Poor	Poor by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB40902G205400	Groundwater	No designation	Severn Uplands - Carboniferous Oswestry	Severn Uplands - Carboniferous Oswestry	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB41101G202400	Groundwater	No designation	Dee Permo-Triassic Sandstone	Dee Permo-Triassic Sandstone	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB40902G991800	Groundwater	No designation	Shropshire Middle Severn - Secondary Mudrocks and Drift Wem	Severn Middle Shropshire - Secondary Mudrocks and Drift Wem	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814b	Increased treatment capacity at Hurleston WTW via Canal	GB40902G991400	Groundwater	No designation	Dee Triassic Mercia Mudstone	Dee Triassic Mercia Mudstone	n/a	n/a	Good	None given	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB111067052060	River	Heavily modified	Dee - Ceiriog to Alwen	Dee	Good	Good by 2015	n/a	n/a	Fail	Good by 2021	Moderate	Good by 2021	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact

Option		WFD Water Body Information												Option Detail																Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / water course / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing abstraction to surface wate	New abstraction well drilling / refurbishment	New abstraction well borehole / surface structure	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB111067051910	River	No designation	Ceiriog - confluence Dee to Teirw	Dee	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB111067051600	River	No designation	Morlas Brook	Dee	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB109054055010	River	No designation	Perry - source to conf Common Bk	Perry Roden and Tern North Shropshire	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB109054054970	River	No designation	Perry - conf Common Bk to conf Tetchill Bk	Perry Roden and Tern North Shropshire	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB109054055000	River	No designation	Tetchill Bk - source to conf R Perry	Perry Roden and Tern North Shropshire	Poor	Moderate by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB109054055020	River	No designation	Roden - source to conf unnamed trib	Perry Roden and Tern North Shropshire	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB109054054980	River	No designation	Tributary - source to conf R Roden	Perry Roden and Tern North Shropshire	Bad	Good by 2027	n/a	n/a	Good	Good by 2015	Bad	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB111067052200	River	No designation	Worthenbury Brook - upper	Dee	Poor	Moderate by 2027	n/a	n/a	Fail	Good by 2027	Poor	Moderate by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB112068055260	River	No designation	Bickley Brook	Weaver Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2027	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB112068055300	River	No designation	Weaver (Source to Marbury Brook)	Weaver Upper	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB112068055470	River	No designation	Weaver (Marbury Brook to Barnett Brook)	Weaver Upper	Poor	Moderate by 2027	n/a	n/a	Good	Good by 2015	Poor	Moderate by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB112068055250	River	No designation	Edleston Brook	Weaver Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB112068055340	River	No designation	Rookery Brook, Burland and Brindley Bk. to Weaver	Weaver Upper	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB112068060460	River	No designation	Weaver (Marbury Brook to Dane)	Weaver Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB70910082	Canal	Artificial	Llangollen Canal	Perry Roden and Tern North Shropshire Canals	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB841102G200200	Groundwater	No designation	Dee Silurian/Ordovician	Dee Silurian/Ordovician	n/a	n/a	Good	None given	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB841101G202200	Groundwater	No designation	Dee Carboniferous Limestone	Dee Carboniferous Limestone	n/a	n/a	Good	None given	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB841102G204800	Groundwater	No designation	Dee Carboniferous Coal Measures	Dee Carboniferous Coal Measures	n/a	n/a	Good	None given	Poor	Poor by 2015	Poor	Poor by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB840902G205400	Groundwater	No designation	Severn Uplands - Carboniferous Oswestry	Severn Uplands - Carboniferous Oswestry	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB841101G202400	Groundwater	No designation	Dee Permo-Triassic Sandstone	Dee Permo-Triassic Sandstone	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB840902G991800	Groundwater	No designation	Shropshire Middle Severn - Secondary Mudrocks and Drift Wem	Shropshire Middle Severn - Secondary Mudrocks and Drift Wem	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB841202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR814c	Increased treatment capacity at Hurleston WTW via Canal	GB840902G991400	Groundwater	No designation	Dee Triassic Mercia Mudstone	Dee Triassic Mercia Mudstone	n/a	n/a	Good	None given	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR816	Third Party Option: Manchester Bolton Bury Canal To Integrated Zone	GB112069060840	River	heavily modified	Irwell (Roch to Croal)	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR816	Third Party Option: Manchester Bolton Bury Canal To Integrated Zone	GB71210501	Canal	Artificial	Manchester, Bolton and Bury Canal (North)	Croal Irwell Canals	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR816	Third Party Option: Manchester Bolton Bury Canal To Integrated Zone	GB841202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR816	Third Party Option: Manchester Bolton Bury Canal To Integrated Zone	GB112069064620	River	heavily modified	Irwell (Rossendale STW to Roch)	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR816	Third Party Option: Manchester Bolton Bury Canal To Integrated Zone	GB112069064600	River	heavily modified	Roch (Spodden to Irwell)	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR817	Third Party Option: Carr Mill Dam To Integrated Resource Zone	GB112069061230	River	Heavily modified	Black Brook (Mersey Estuary)	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR817	Third Party Option: Carr Mill Dam To Integrated Resource Zone	GB112069061220	River	Heavily modified	Millingford (Newton) Brook	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR817	Third Party Option: Carr Mill Dam To Integrated Resource Zone	GB71210088	Canal	Artificial	St Helens Canal	Sankey Canals	Moderate	Good by 2027	n/a	n/a	Good	Good by 2027	Moderate	Good by 2027	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR817	Third Party Option: Carr Mill Dam To Integrated Resource Zone	GB841202G100100	Groundwater	No designation	Sankey and Glaze Carboniferous Aquifers	Sankey and Glaze Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR820	Third Party Option: Shropshire Union Canal To Integrated Resource Zone	GB112068060460	River	No designation	Weaver (Marbury Brook to Dane)	Weaver upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR820	Third Party Option: Shropshire Union Canal To Integrated Resource Zone	GB71210133	River	Artificial	Shropshire Union Canal, Market Drayton to Ellesmere Port	Weaver Upper Canals	Moderate	Good by by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by by 2027	N	N	Y	N	N	N	Y	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR820	Third Party Option: Shropshire Union Canal To Integrated Resource Zone	GB112068055340	River	No designation	Rookery Brook, Burland and Brindley Bk. to Weaver	Weaver upper	Moderate	Good by by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by by 2021	Y	Y	N	N	Y	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR820	Third Party Option: Shropshire Union Canal To Integrated Resource Zone	GB841202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	Y	N	Y	N	Y	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR821	Shropshire Union Canal	GB112068060460	River	No designation	Weaver (Marbury Brook to Dane)	Weaver Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR821	Shropshire Union Canal	GB112068055340	River	No designation	Rookery Brook, Burland and Brindley Bk. To Weaver	Weaver Upper	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	Y	Y	N	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR821	Shropshire Union Canal	GB71210133	AWB - Canal	Artificial	Shropshire Union Canal, Market Drayton to Ellesmere Port	Weaver Upper Canals	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR821	Shropshire Union Canal	GB841202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	Y	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR824	Third Party Option: Blenkinsopp Mine	GB103023075580	River	No designation	Tipalt Burn from Source to South Tyne	South Tyne Lower	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	No or minimal impact	Medium	No or minimal impact
WR824	Third Party Option: Blenkinsopp Mine	GB103023075531	River	No designation	South Tyne from Black Burn to Tipalt Burn	South Tyne Upper	Moderate	Good by 2027	n/a	n/a	Fail	Good by 2027	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR824	Third Party Option: Blenkinsopp Mine	GB103023075510	River	No designation	Kellah Burn Catchment (Trib of Hartley Burn)	South Tyne Upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR824	Third Party Option: Blenkinsopp Mine	GB103023075470	River	No designation	Hartley Burn from Source to Black Burn	South Tyne Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR824	Third Party Option: Blenkinsopp Mine	GB102076074040	River	No designation	Gelt	Esk and Irthing	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR824	Third Party Option: Blenkinsopp Mine	GB840202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR824	Third Party Option: Blenkinsopp Mine	GB840302G701500	Groundwater	No designation	Tyne Carboniferous Limestone and Coal Measures	Tyne Carboniferous Limestone and Coal Measures	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR824	Third Party Option: Blenkinsopp Mine	GB840201G100400	Groundwater	No designation	Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers	Eden Valley and Carlisle Basin Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
B2	Enabling Works	GB109054049880	River	Heavily modified	Vrynwy - Lake Vrynwy to conf Afon Cownwy	Vrynwy	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054049920	River	No designation	Hirnant - source to conf Afon Tanat	Tanat	Poor	Good by 2021	n/a	n/a	Fail	Good by 2021	Poor	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054049960	River	No designation	Afon Tanat - conf Hirnant to conf Afon Rhaeadr	Tanat	Moderate	Good by 2021	n/a	n/a	Fail	Good by 2021	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054055040	River	No designation	Afon Rhaeadr - source to conf Afon Tanat	Tanat	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054055050	River	No designation	Afon Iwrch - source to conf Afon Tanat	Tanat	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054050050	River	No designation	Afon Tanat - conf Afon Rhaeadr to conf Afon Vyrnwy	Tanat	Moderate	Good by 2021	n/a	n/a	Fail	Good by 2021	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054055060	River	No designation	Afon Cynllaith - source to conf Afon Tanat	Tanat	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054055070	River	No designation	Morda - source to conf unnamed trib	Morda and Severn North Shropshire	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054050010	River	No designation	Oswestry Bk	Morda and Severn North Shropshire	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB840902G205300	Groundwater	No designation	Severn Uplands - Lower Palaeozoic	Severn Uplands - Lower Palaeozoic	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB840902G205400	Groundwater	No designation	Severn Uplands - Carboniferous Oswestry	Severn Uplands - Carboniferous Oswestry	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact

Appendix C
Level 2 Detailed Assessments for Supply-demand Feasible Options

		Water body ID:		**GB112063061442**	**Scheme:**	**River Alt to Prescot WTW**				
		Water Body Name:		**Alt DS Bull Bridge**	**Reference**	**WR001**				
		RBMP:		**Alt and Crossens**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Alt**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**Heavily modified**						
		Relevant upstream water bodies:		**Alt US Bull Bridge, Downholland Brook**						
		Downstream water bodies:		**Alt**						
		WFD Element (Receptor)	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New /modified surface water intake.** Minor level of impact. **Transfer pipe line on land.** No or minimal impact. **New pumping station.** Minor level of impact.	**High**	**New surface water abstraction quantity.** Medium level of impact. New surface water abstraction from the River Alt near Maghull of 5-20 Ml/d. In the ALS water is identified as available at all flows (Q30, Q50, Q70 and Q95) however the abstraction is moderate in size and could have a medium impact on the hydrological regime of the River Alt. A new abstraction licence would be required to be issued by the Environment Agency. **Use of new transfer pipe line, and pumping station.** No or minimal impact.	**Medium**	
		Macrophytes								
		Macrophytes and phytobenthos	Good							
		Bethic invertebrates	Poor							
		Fish	Not provided							
	Hydromorphology	**Hydrological regime**	Supports good							
		River continuity	Not provided							
		Morphological conditions	Not provided							
	Physico-chemical	**General physico-chemical**	All high/good except ammonia- moderate, Phosphate- poor							
		Specific pollutants:	All high							
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Tributyltin Compounds- fail							
		Priority substances	All good							
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**					
		Chemical	**Fail**	**Good by 2027**	**N/A**					
		Overall	**Moderate**	**Good by 2027**	**N/A**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\North Eden\WR127
EA Abstraction Licence Strategy: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB41201G101700**	**Scheme:**	**River Alt to Prescot WTW**				
		Water body Name:		**Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifer**	**Reference**	**WR001**				
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifer**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**N\A**						
		Downstream water bodies:		**N\A**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**Use of new transfer pipe line, and pumping station.** No or minimal impact. **New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from the River Alt near Maghull of 5 - 20 Ml/d. The ALS highlights restricted availability of groundwater in the area. Due to the moderate size of the proposed abstraction there may be reductions in leakage from the river to the aquifer, however as the ALS indicates there is surface water available at all flows its likely that any reductions in leakage would be minor and localised, and unlikely to have a sustained or wide spread impact on the quantitative water balance of the groundwater body.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Poor						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Poor						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\ Potential		**Quantitative**	**Poor**	**Good by 2027**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\North Eden\WR127\
EA Abstraction Licence Strategy: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB112073071100**	**Scheme:**	**FISHER TARN (KENDAL) TO THIRLMERE AQUEDUCT AND LOSTOCK FOR TREATMENT**			
		Water body Name:		**Stainton Beck**	**Reference:**	**WR003**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Bela**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N/A**					
		Downstream water bodies:		**Bela**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**New transfer pipe line on land** No or minimal impact. **New pumping station** Minor level of impact. **New / modified water treatment works** No or minimal impact.	**High**	**New surface water abstraction quantity.** Minor level of impact. A new abstraction licence would be granted by the Environment Agency (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status). The yield of the reservoir is uncertain and is assumed to equate to the previous licence condition of 5 Ml/d. There is also a requirement to maintain an existing compensation flow condition of 0.273 Ml/d from the reservoir to the watercourse (Stainton Beck). The Environment Agency's Abstraction Licensing Strategy for South Cumbria shows water available at all flow regimes (Q95, Q70, Q50 and Q30). **Use of pipe line, pumping station, and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Good						
		Fish	-						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	-						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR003\WR003 Fisher Tarn.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,
EA Historical Landfill: http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=waste&layerGroups=default&lang=_e&ep=map&scale=1&x=357682.99999999994&y=355133.99999999994#x=322374&y=497910&lg=
EA Abstraction Licence Strategy (South Cumbria): https://www.gov.uk/government/publications/south-cumbria-abstraction-licensing-strategy

		Water body ID:		**Groundwater**	**Scheme:**	**FISHER TARN (KENDAL) TO THIRLMERE AQUEDUCT AND LOSTOCK FOR TREATMENT**			
		Water body Name:		**IRZ**	**Reference**	**WR003**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Cumbria South Lowe**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New transfer pipe line on land** No or minimal impact. **New pumping station** No or minimal impact. **New / modified water treatment works** No or minimal impact.	**High**	**New surface water abstraction quantity.** No or minimal impact. As the abstraction is from a reservoir, and compensation flows will be maintained, there will be no or very minimal change in groundwater - surface water interactions as a result of the new abstraction. The Environment Agency's Abstraction Licensing Strategy for South Cumbria shows water available at all flow regimes (Q95, Q70, Q50 and Q30). **Use of pipe line, pumping station, and water treatment works.** No or minimal impact.	**High**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.

2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.

3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.

4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.

5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.

6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.

7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/

Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR003\WR003 Fisher Tarn.xlsx

EA Abstraction Licence Strategy (South Cumbria): https://www.gov.uk/government/publications/south-cumbria-abstraction-licensing-strategy

		Water body ID:		**GB112073071430**	**Scheme:**	**Longsleddale Reservoir**			
		Water body Name:		**Sprint**	**Reference**	**WR004**			
		RBMP:		**Kent and Leven**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Kent**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Kent- conf Sprint to Tidal**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New transfer pipe line on land.** No or minimal impact. **New transfer pipe line with water course crossings.** Minor level of impact. **New pumping station.** Minor level of impact. **New impounding reservoir.** Medium level of impact on water body downstream of the proposed reservoir. The reach of the water body that will form part of the new reservoir is assessed in the operation section. Biology: temporary habitat changes will result from the diversion of the Sprint during construction. There is the potential for suspended sediment to enter the Sprint and affect the ecology (i.e. smothering, reduction in light) including fish, macrophytes/phytobenthos and invertebrates. Sediment loss downstream of the reservoir will deplete habitats, fish migration is likely to be affected and flow within the watercourse is also likely to decrease. Hydromorphology: diversion of the Sprint during construction will result in temporary changes to the hydrological regime, river continuity and morphological conditions. Chemical and Physiochemical: direct temporary effects could occur as a result of accidental spillage or leakage of chemicals such as Polycyclic Aromatic Hydrocarbons (PAHs) associated with construction vehicle/machinery fuels and oils, or metals (from machinery itself). The initial flooding of the valley may result in a "pulse" of poor quality water due to disturbance of contaminated sediment.	**Medium**	**Use of new transfer pipe line and pumping station.** No or minimal impact. **New impounding reservoir.** High level of impact. New impounding reservoir and abstraction of 25 Ml/d. Biology: long term habitat changes will result from the flooding of the Sprint valley. Hydromorphology: long term changes to the hydrological regime of the Sprint will result from the presence of the reservoir. Both high and low flows will be changed. Changes to sediment transport regime will change morphological conditions. River continuity will be interrupted by the embankment. Chemical and Physiochemical: long term water quality changes are likely to occur due to the stilling and storage of water in the reservoir. The construction of a new reservoir may result in the re-designation of the Sprint as a highly modified water body for water supply. It is unlikely that the reservoir could be constructed/operated without a deterioration of status in one or more elements.	**High**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	High						
		Benthic invertebrates	High						
		Fish	High						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status|Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR004\WR004_Longsledd
Abstraction Licensing Strategies (South Cumbria): https://www.gov.uk/government/publications/south-cumbria-abstraction-licensing-strategy

		Water body ID:		**GB41202G102100**	**Scheme:**	**Longsleddale Reservoir**			
		Water body Name:		**South Cumbria Lower Palaeozoic and Carboniferous Aquifer**	**Reference**	**WR004**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**South Cumbria Lower Palaeozoic and Carboniferous Aquifer**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New transfer pipe line on land.** No or minimal impact. **New transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **Construction of new impounding reservoir.** Minor level of impact. Localised construction activities are unlikely to have a widespread or prolonged effect on the groundwater body.	**High**	**Use of transfer pipe line and pumping station.** No or minimal impact. **New impounding reservoir.** Minor level of impact. New impounding reservoir and abstraction of 25 Ml/d. The presence of the new reservoir is unlikely to have widespread effects on the groundwater body. Localised recharge patterns and interaction with the surface water body are likely to change, but these changes are small in extent compared to the water body as a whole. Changes to the classification and status of the Sprint surface water body may have implications for the status of this groundwater body (e.g. via the quantitative dependent surface water body status).	**High**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Element	**Prevent and Limit Objective**	-						
		Trend Assessment	No trend						
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR004\WR004_Longsleddale Reservoir.xlsx
Abstraction Licensing Strategies (South Cumbria): https://www.gov.uk/government/publications/south-cumbria-abstraction-licensing-strategy

		Water body ID:		**GB112069061420**	**Scheme:**	**Glaze Brook**			
		Water body Name:		**Glaze**	**Reference**	**WR006**			
		RBMP:		**Mersey Lower**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Glaze**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Bedford Brook and Pennington Brook (Glaze)**					
		Downstream water bodies:		**Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact.	**High**	**New surface water abstraction quantity.** Medium level of impact. New surface water abstraction from Glaze Brook near the village of Glaze Brook of 15 Ml/d. In the ALS water is identified as available at Q30, Q50 and Q70, but restricted at Q95 flows. The abstraction is moderate in size and could have a medium impact on the hydrological regime of Glaze Brook, particularly at low flows. A new abstraction licence would be required to be issued by the Environment Agency. **Use of new transfer pipe line.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Poor						
		Benthic invertebrates	Poor						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high/good except: Ammonia- moderate, BOD- poor, Phosphate- Poor						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	All good						
Overall Status\Potential		**Ecological**	**Poor**	**Poor by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Poor**	**Poor by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR006\WR006_Glaze
Abstraction Licence Strategy: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB41201G101700**	**Scheme:**	**Glaze Brook**			
		Water body Name:		**Merseyside Permo-Triassic Sandstone Aquifers**	**Reference**	**WR006**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Merseyside North Permo-Triassic Sandstone Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New surface water intake.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New water treatment works.** No or minimal impact.	**High**	**New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from Glaze Brook near the village of Glaze Brook of 15 Ml/d. The ALS highlights water is available in East Glaze but not available in West Glaze groundwater. Due to the moderate size of the proposed abstraction there may be reductions in leakage from the river to the aquifer. The principal aquifer is likely to be well connected to surface water bodies, but any changes in leakage are likely to be minor and localised, and not have a significant impact on the aquifers quantitative water balance. **Use of new transfer pipe line, surface water intake, and water treatment works** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Poor						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Poor						
		General Chemical Test	Good						
	Supporting Element	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\ Potential		**Quantitative**	**Poor**	**Good by 2027**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR006\WR006_Glaze Brook.xlsx
Abstraction Licence Strategy: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB41201G101700**	**Scheme:**	**Sankey Brook**			
		Water body Name:		**Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers**	**Reference**	**WR007**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N/A**					
		Downstream water bodies:		**N/A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	good			**Transfer pipe line with water course crossing.** No or minimal impact. **New water treatment works.** No or minimal impact. **New surface water intake.** No or minimal impact.	**High**	**New surface water abstraction quantity.** No or minimal impact. New surface water abstraction from Sankey Brook near Great Sankey of 10 Ml/d. The ALS identifies restricted availability of groundwater in the area. The abstraction is moderate in size, but is located in a transitional surface water body which has water available across all flows. Any reductions in flow as a result of the new abstraction are unlikely to have a significant impact on leakage to the aquifer or on the quantitative water balance of the aquifer. **New Transfer Pipe Line and Pumping Station** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	good						
		Quantitative Saline Intrusion	Poor						
		Quantitative Water Balance	good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	good						
		Chemical Saline Intrusion	Poor						
		General Chemical Test	good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Poor**	**Good by 2026**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which wo
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR007\WR00
EA Abstraction Licence Strategy: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pd

		Water body ID:		**GB531206908100**	**Scheme:**	**Sankey Brook**			
		Water body Name:		**Mersey**	**Reference**	**WR007**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Sankey**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**and Clatter Brook, Ditton Brook**					
		Downstream water bodies:		**Mersey Mouth**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Moderate			**New surface water intake.** Minor level of impact.	**High**	**New surface water abstraction quantity.** Medium level of impact. New surface water abstraction from the Sankey Brook near Great Sankey of 10 Ml/d. In the ALS water is identified as available at all flows for the transitional water body. However the abstraction is moderate in size and could have an impact on the hydrological regime of lower part of the Sankey Brook. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	High	Good by 2015					
		Macrophytes and phytobenthos							
		Benthic invertebrates	Good	Good by 2015					
		Fish	-	-					
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	-						
		Morphological conditions	-						
	Physico-chem	**General physico-chemical**	Moderate	Good by 2027					
		Specific pollutants:	Moderate	Good by 2027					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good						
		Priority substances	Fail	Good by 2015					
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Fail**	**Good by 2027**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
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3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR007\WR007_Sankey Brook.docx
EA Abstraction Licence Strategy: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB112072071710**	**Scheme:**	**RIVER RAWTHEY TO WATCHGATE**			
		Water body Name:		**Rawthey - Lower**	**Reference:**	**WR009**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Greta and Rawthey**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Clough, Dee - conf Deepdale Bk to conf Rawthey, Rawthey - Upper**					
		Downstream water bodies:		**Lune - conf Rawthey to conf Greta**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New /modified surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact.	**High**	**Use of new transfer pipeline, and pumping station.** No or minimal impact. **New surface water abstraction quantity.** Abstraction increase of up to 20Ml/d Medium level of impact. New abstraction from the River Rawthey near Sedbergh of 10 - 20 Ml/d. The ALS indicates that there is water available from the River Rawthey at high flow (Q30), but medium and low flows (Q50, Q70, Q95) have limited water available. The moderate size of the abstraction (20 Ml/d) could impact on the hydrological regime of the river. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	High						
		Benthic invertebrates	High						
		Fish	High						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	-						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR009\WR009_River Rawthey to Watchgate.docx
EA Abstraction Licence Strategy: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf

		Water body ID:		**GB41202G102700**	**Scheme:**	**RIVER RAWTHEY TO WATCHGATE**			
		Water body Name:		**Lune and Wyre Carboniferous Aquifers**	**Reference**	**WR009**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Lune and Wyre Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent**	Good			**Transfer Pipe Line.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**Use of new transfer pipe line, and pumping station.** No or minimal impact. **New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from the River Rawthey near Sedburgh of 10 - 20 Ml/d. The ALS does not highlight any restricted or non availability of groundwater in the area. Due to the moderate size of the proposed abstraction there may be reductions in leakage from the river to the aquifer, however these would be localised, and the secondary aquifer is unlikely to be highly dependent on leakage from surface water courses to maintain its quantitative water balance.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward Trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2027**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR009\WR009_River Rawthey to Watchgate.docx
EA Abstraction Licence Strategy: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf

		Water body ID:		**GB112072071770**	**Scheme:**	**Borrow Beck IR**			
		Water body Name:		**Borrow Beck**	**Reference**	**WR012**			
		RBMP:		**Lune**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Lune Upper**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Lune- conf Birk Beck to conf Rawthey**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New transfer pipe line on land.** No or minimal impact. **New transfer pipe line with water course crossings.** Minor level of impact. **New impounding reservoir.** Medium level of impact on water body downstream of the proposed reservoir. The reach of the water body that will form part of the new reservoir is assessed in the operation section. Biology: temporary habitat changes will result from the diversion of the Borrow Beck during construction. There is the potential for suspended sediment to enter the Borrow Beck and effect the ecology (i.e. smothering, reduction in light) including fish, macrophytes/phytobenthos and invertebrates. Hydromorphology: diversion of the Borrow Beck during construction will result in temporary changes to the hydrological regime, river continuity and morphological conditions. Chemical and Physiochemical: direct temporary effects could occur as a result of accidental spillage or leakage of chemicals such as Polycyclic Aromatic Hydrocarbons (PAHs) associated with construction vehicle/machinery fuels and oils, or metals (from machinery itself). The initial flooding of the valley may result in a "pulse" of poor quality water.	**High**	**Use of transfer pipe line.** No or minimal impact. **New impounding reservoir.** High level of impact. Biology: long term habitat changes will result from the flooding of the Borrow Beck valley. This may be partly mitigated by fish passes. Hydromorphology: long term changes to the hydrological regime of the Borrow Beck will result from the presence of the reservoir. Both high and low flows will be changed. Changes to sediment transport regime will change morphological conditions. River continuity will be interrupted by the embankment. Chemical and Physiochemical: long term water quality changes are likely to occur due to the stilling and storage of water in the reservoir. The construction of a new reservoir may result in the re-designation of the Borrow Beck as a highly modified water body for water supply. It is unlikely that the reservoir could be constructed/operated without a deterioration of status in one or more elements.	**High**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.

6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx

		Water body ID:		**GB41202G102100**	**Scheme:**	**Borrow Beck IR**			
		Water body Name:		**South Cumbria Lower Palaeozoic and Carboniferous Aquifers**	**Reference**	**WR012**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Cumrbia South Lower Paleozoic and Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New transfer pipe line on land.** No or minimal impact. **New transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **Construction of new impounding reservoir.** Minor level of impact. Localised construction activities are unlikely to have a widespread or prolonged effect on the groundwater body.	**High**	**Use of transfer pipe line and pumping station.** No or minimal impact. **New impounding reservoir.** Minor level of impact. The presence of the new lake and embankment is unlikely to have widespread effects on the groundwater body. Localised recharge patterns and interaction with the surface water body are likely to change, but these changes are small in extent compared to the water body as a whole. The solid geology is primarily mudstones and siltstones (with some sandstone layers). The relatively low permeability and transmissivity of this secondary aquifer reduce the sensitivity of the groundwater body to impacts from the reservoir. Changes to the classification and status of the Borrow Beck surface water body may have implications for the status of this groundwater body (e.g. via the quantitative dependent surface water body status).	**High**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=
EA Historical Landfill: http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=waste&layerGroups=default&lang=_e&ep=map&scale=1&x=357682.99999999994&y=355133.99999999994#x=322374&y=497910
EA aquifer designation mapping: http://apps.environment-agency.gov.uk/wiyby/default.aspx
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB112071065612**	**Scheme:**	**RIVER RIBBLE SUPPORT TO STOCKS RESERVOIR**			
		Water body Name:		**Ribble DS Stock Beck**	**Reference:**	**WR026a**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Ribble Middle - Settle to**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact.	**High**	**Use of new transfer pipe line, pumping station and surface water intake.** No or minimal impact. **New surface water abstraction quantity.** Medium level of impact. New surface water abstraction from the River Ribble near Clitheroe of 5 - 10 Ml/d. In the ALS water is identified as available at all flows (Q30, Q50, Q70 and Q95) however the abstraction is moderate in size and could have a medium impact on the hydrological regime of the River Ribble. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	-						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	Good						
		Specific pollutants:	High						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Fail						
		Priority substances	Good						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Fail**	**Fail by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which wo
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR026a\WR(
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881

		Water body ID:		**GB41202G103000**	**Scheme:**	**RIVER RIBBLE SUPPORT TO STOCKS RESERVOIR**			
		Water body Name:		**Ribble Carboniferous Aquifers**	**Reference**	**WR026a**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Ribble Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New /modified surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact. **New outfall to reservoir.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station, surface water intake, outfall** No or minimal impact. **New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from the River Ribble near Clitheroe of 5 - 10 Ml/d. The ALS does not highlight any restricted or non availability of groundwater in the area, or surface water in the Ribble. Due to the moderate size of the proposed abstraction there may be reductions in leakage from the river to the aquifer, however these would be localised, and the secondary Carboniferous aquifer is unlikely to be highly dependent on leakage from surface water courses to maintain its quantitative water balance.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Good						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which w
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossing
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR026a\WF
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f8

	Water body ID:		**GB30229073**	**Scheme:**	**HAWESWATER RESERVOIR – RAISE EMBANKMENT STRUCTURE**			
	Water body Name:		**Haweswater Reservoir**	**Reference**	**WR037b**			
	RBMP:		**Solway tweed**	**Scheme Phase**	**Construction**		**Operational**	
	Operational catchment:		**Eamont**	**Impact potential**	**Direct**		**Direct**	
	Designation (and uses):		**Heavily modified**					
	Relevant upstream water bodies:		**-**					
	Downstream water bodies:		**-**					
	WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for LakesIReservoirs: Ecological – **Biology**	**Phytoplankton**	High			**Raise height of reservoir embankment.** Minor level of impact. Biology: There is the potential for suspended sediment to enter the reservoir and effect the ecology (i.e. smothering, reduction in light) including fish, macrophytes/phytobenthos and invertebrates. However any impacts would be temporary and restricted to the downstream section of the reservoir, close to the embankment. Hydromorphology: No longer term or extensive changes to the hydrological regime of the reservoir are expected. Chemical and Physiochemical: direct temporary effects could occur as a result of accidental spillage or leakage of chemicals such as Polycyclic Aromatic Hydrocarbons (PAHs) associated with construction vehicle/machinery fuels and oils, or metals (from machinery itself). The initial flooding of the new reservoir volume may result in a "pulse" of poor quality water.	**High**	**Operation of increased volume reservoir** No or minimal impact. The reservoir water body would increase in size as a result of the raised embankment. No or minimal impacts on biology, hydromorphology, chemical and physiochemical elements are expected, which would not cause a deterioration in WFD status. It is assumed that current compensation flow releases, fish pass arrangements and the characteristics of the banks of the reservoir would be maintained.	**Medium**
	Macrophytes	-						
	Phytobenthos	-						
	Macrophytes and phytobenthos	-						
	Chironomids (CPET)	-						
	Fish	-						
Hydromorphology	**Hydrological regime**	-						
	River continuity	-						
Physico-chemical	**Morphological conditions**	-						
	General physico-chemical	Moderate						
	Specific pollutants:	-						
WFD elements for LakesIReservoirs: Chemical	**Priority hazardous substances**	Does not require assessment						
	Priority substances	Does not require assessment						
Overall Status\Potential	**Ecological**	**Good**	**Good by 2027**	**NIA**				
	Chemical	**Good**	**Good by 2027**	**NIA**				
	Overall	**Good**	**Good by 2027**	**NIA**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
3- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
4- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
5- Reservoir compensation flows and fish pass arrangements will be maintained during construction and operation.
6- In-channel works will be undertaken at a time which won't have a significant impact on fish communities

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR037a\WR037_Haweswater Reservoir.docx
EA aquifer designation mapping: http://apps.environment-agency.gov.uk/wiyby/default.aspx
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB102076070720**	**Scheme:**	**HAWESWATER RESERVOIR – RAISE EMBANKMENT STRUCTURE**			
		Water body Name:		**Haweswater Beck**	**Reference**	**WR037b**			
		RBMP:		**Solway tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eamont**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Lowther (Lower)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Raise height of reservoir embankment.** Minor level of impact. Biology: There is the potential for suspended sediment to enter the Haweswater Beck and effect the ecology (i.e. smothering, reduction in light) including fish, macrophytes/phytobenthos and invertebrates. However any impacts would be temporary. Hydromorphology: No long term or extensive changes to the hydrological regime of the Haweswater Beck are expected, as it is assumed that compensation flows from the reservoir would be maintained during construction. Sediment release may have a short term impact on the morphological conditions of the Beck. Chemical and Physiochemical: direct temporary effects could occur as a result of accidental spillage or leakage of chemicals such as Polycyclic Aromatic Hydrocarbons (PAHs) associated with construction vehicle/machinery fuels and oils, or metals (from machinery itself). The initial flooding of the new reservoir volume may result in a "pulse" of poor quality water.	**Medium**	**Operation of increased volume reservoir** Minor level of impact. Part of the upper reaches of the Haweswater Beck will be flooded by the increased volume of the reservoir. This will result in changes to habitats, hydromorphology, chemical and physiochemical elements in the effected reach. However this is expected to be a small reach of water course, and an extension of the existing reservoir habitats so a deterioration of the status of the WFD water body is unlikely. It is assumed that current compensation flow releases and fish pass arrangements would be maintained.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	Good						
		Fish	Moderate						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	Good						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
3- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
4- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
5- Reservoir compensation flows and fish pass arrangements will be maintained during construction and operation.
6- In-channel works will be undertaken at a time which won't have a significant impact on fish communities

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR037a\WR037_Haweswater Reservoir.docx
EA aquifer designation mapping: http://apps.environment-agency.gov.uk/wiyby/default.aspx
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB40201G102300**	**Scheme:**	**HAWESWATER RESERVOIR – RAISE EMBANKMENT STRUCTURE**			
		Water Body Name:		**Eden and Esk Lower Palaeozoic and Carboniferous Aquifers**	**Reference**	**WR037b**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eden and Esk Lower Palaeozoic and Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative**	Good			**Raise height of reservoir embankment** Minor impact. Localised surface construction activities are unlikely to have a widespread or prolonged effect on the groundwater body.	**High**	**Operation of increased volume reservoir** No or minimal impact. The presence of the increased lake volume and raised embankment is unlikely to have widespread effects on the groundwater body. Localised recharge patterns and interaction with the surface water body are likely to change, but these changes are very small in extent compared to the water body as a whole. The solid geology is igneous strata. The relatively low permeability and transmissivity of this secondary aquifer reduce the sensitivity of the groundwater body to impacts from the reservoir.	**High**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward Trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
3- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
4- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
5- Reservoir compensation flows and fish pass arrangements will be maintained during construction and operation.
6- In-channel works will be undertaken at a time which won't have a significant impact on fish communities

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR037a\WR037_Haweswater Reservoir.docx
EA aquifer designation mapping: http://apps.environment-agency.gov.uk/wiyby/default.aspx
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

	Water body ID:		**GB30229073**	**Scheme:**	**HAWESWATER RESERVOIR – RAISE EMBANKMENT STRUCTURE**			
	Water body Name:		**Haweswater Reservoir**	**Reference**	**WR037b**			
	RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
	Operational catchment:		**Eamont**	**Impact potential**	**Direct**		**Direct**	
	Designation (and uses):		**Heavily modified**					
	Relevant upstream water bodies:		**-**					
	Downstream water bodies:		**-**					
	WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Lakes\Reservoirs: Ecological – **Biology**	**Phytoplankton**	High			**Raise height of reservoir embankment.** Minor level of impact. Biology: There is the potential for suspended sediment to enter the reservoir and effect the ecology (i.e. smothering, reduction in light) including fish, macrophytes/phytobenthos and invertebrates. However any impacts would be temporary and restricted to the downstream section of the reservoir, close to the embankment. Hydromorphology: No longer term or extensive changes to the hydrological regime of the reservoir are expected. Chemical and Physiochemical: direct temporary effects could occur as a result of accidental spillage or leakage of chemicals such as Polycyclic Aromatic Hydrocarbons (PAHs) associated with construction vehicle/machinery fuels and oils, or metals (from machinery itself). The initial flooding of the new reservoir volume may result in a "pulse" of poor quality water.	**High**	**Operation of increased volume reservoir** No or minimal impact. The reservoir water body would increase in size as a result of the raised embankment. No or minimal impacts on biology, hydromorphology, chemical and physiochemical elements are expected, which would not cause a deterioration in WFD status. It is assumed that current compensation flow releases, fish pass arrangements and the characteristics of the banks of the reservoir would be maintained.	**Medium**
	Macrophytes	-						
	Phytobenthos	-						
	Macrophytes and phytobenthos	-						
	Chironomids (CPET)	-						
	Fish	-						
Hydromorphology	**Hydrological regime**	-						
	River continuity	-						
Physico-chemical	**Morphological conditions**	-						
	General physico-chemical	Moderate						
	Specific pollutants:	-						
WFD elements for Lakes\ Reservoirs: Chemical	**WFD elements for Lakes\ Reservoirs: Chemical**	Does not require assessment						
	Priority substances	Does not require assessment						
Overall Status\ Potential	**Ecological**	**Good**	**Good by 2027**	**N\A**				
	Chemical	**Good**	**Good by 2027**	**N\A**				
	Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
3- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
4- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
5- Reservoir compensation flows and fish pass arrangements will be maintained during construction and operation.
6- In-channel works will be undertaken at a time which won't have a significant impact on fish communities

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR037b\WR037_Haweswater Reservoir.docx
EA aquifer designation mapping: http://apps.environment-agency.gov.uk/wiyby/default.aspx
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB102076070720**	**Scheme:**	**HAWESWATER RESERVOIR – RAISE EMBANKMENT STRUCTURE**			
		Water body Name:		**Haweswater Beck**	**Reference**	**WR037b**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eamont**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Lowther (Lower)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Raise height of reservoir embankment.** Minor level of impact. Biology: There is the potential for suspended sediment to enter the Haweswater Beck and effect the ecology (i.e. smothering, reduction in light) including fish, macrophytes/phytobenthos and invertebrates. However any impacts would be temporary. Hydromorphology: No long term or extensive changes to the hydrological regime of the Haweswater Beck are expected, as it is assumed that compensation flows from the reservoir would be maintained during construction. Sediment release may have a short term impact on the morphological conditions of the Beck. Chemical and Physiochemical: direct temporary effects could occur as a result of accidental spillage or leakage of chemicals such as Polycyclic Aromatic Hydrocarbons (PAHs) associated with construction vehicle/machinery fuels and oils, or metals (from machinery itself). The initial flooding of the new reservoir volume may result in a "pulse" of poor quality water.	**Medium**	**Operation of increased volume reservoir** Minor level of impact. Part of the upper reaches of the Haweswater Beck will be flooded by the increased volume of the reservoir. This will result in changes to habitats, hydromorphology, chemical and physiochemical elements in the effected reach. However this is expected to be a small reach of water course, and an extension of the existing reservoir habitats so a deterioration of the status of the WFD water body is unlikely. It is assumed that current compensation flow releases and fish pass arrangements would be maintained.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	Good						
		Fish	Moderate						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	Good						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
3- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
4- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
5- Reservoir compensation flows and fish pass arrangements will be maintained during construction and operation.
6- In-channel works will be undertaken at a time which won't have a significant impact on fish communities

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR037b\WR037_Haweswater Reservoir.docx
EA aquifer designation mapping: http://apps.environment-agency.gov.uk/wiyby/default.aspx
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB40201G102300**	**Scheme:**	**HAWESWATER RESERVOIR – RAISE EMBANKMENT STRUCTURE**			
		Water Body Name:		**Eden and Esk Lower Palaeozoic and Carboniferous Aquifers**	**Reference**	**WR037b**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eden and Esk Lower Palaeozoic and Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative**	Good			**Raise height of reservoir embankment** Minor impact. Localised surface construction activities are unlikely to have a widespread or prolonged effect on the groundwater body.	**High**	**Operation of increased volume reservoir** No or minimal impact. The presence of the increased lake volume and raised embankment is unlikely to have widespread effects on the groundwater body. Localised recharge patterns and interaction with the surface water body are likely to change, but these changes are very small in extent compared to the water body as a whole. The solid geology is igneous strata. The relatively low permeability and transmissivity of this secondary aquifer reduce the sensitivity of the groundwater body to impacts from the reservoir.	**High**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward Trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
3- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
4- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
5- Reservoir compensation flows and fish pass arrangements will be maintained during construction and operation.
6- In-channel works will be undertaken at a time which won't have a significant impact on fish communities

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR037b\WR037_Haweswater Reservoir.docx
EA aquifer designation mapping: http://apps.environment-agency.gov.uk/wiyby/default.aspx
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB102076070980**	**Scheme:**	**RIVER EDEN (TEMPLE SOWERBY) TO WATCHGATE**			
		Water body Name:		**Eden Lyvennet to Eamont**	**Reference:**	**WR039a**			
		RBMP:		**Solway Tweed**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Eden Upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Crowdundle Beck - Lower, Eden - Scandal Beck to Lyvennet, Leith**					
		Downstream water bodies:		**Eden - Eamont to tidal**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact.	**High**	**Use of new transfer pipe line, pumping station and surface water intake.** No or minimal impact. **New surface water abstraction quantity.** High level of impact. New abstraction of 25 to 50 Ml/d from the river Eden near Temple Sowerby. In the ALS, water is identified as available at all flows (Q30, Q50, Q70 and Q95), however the abstraction quantity is large, and could have a high impact on the hydrological regime of the river Eden. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	High						
		Fish	High						
	Hydromorphology	**Hydrological regime**	High						
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	High						
		Specific pollutants:	High						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good						
		Priority substances	Good						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a sign
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries c
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR039\WR039_River Eden
EA Abstraction Licence Strategy (Eden and Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_7889_1384b1.

		Water body ID:		**GB40201G100400**	**Scheme:**	**RIVER EDEN (TEMPLE SOWERBY) TO WATCHGATE**				
		Water body Name:		**Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers**	**Reference**	**WR039a**				
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:								
		Downstream water bodies:								
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station, and surface water intake.** No or minimal impact. **New surface water abstraction quantity** Medium level of impact. New surface water abstraction from the river Eden of 25-50 Ml/d near Temple Sowerby. The ALS does not highlight any restricted or non availability of groundwater in the area, or in the corresponding surface water body. However, due to the significant size of the proposed abstraction there may be reductions in leakage form the river to the aquifer. The principal aquifer may be dependent on leakage from overlying water courses to maintain its quantitative water balance.	**Medium**
		Quantitative GWDTEs test	Good							
		Quantitative Saline Intrusion	Good							
		Quantitative Water Balance	Good							
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good							
		Chemical Drinking Water Protected Area	Poor							
		Chemical GWDTEs test	Poor							
		Chemical Saline Intrusion	Good							
		General Chemical Test	Good							
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-							
		Trend Assessment	Upward trend							
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**					
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**					
		Overall	**Poor**	**Good by 2027**	**N/A**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't h
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR039\WR039_I
EA Abstraction Licence Strategy (Eden and Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_788

		Water body ID:		**GB102076073981**	**Scheme:**	**River Irthing to Cumwhinton Plus Castle Carrock Link**			
		Water body Name:		**Irthing DS Crammel Linn Waterfall**	**Reference**	**WR041**			
		RBMP:		**Eden and Esk**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Esk and Irthing**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Gelt, Irthing US Crammel Linn Waterfall, King Water and Quarry Beck**					
		Downstream water bodies:		**Eden- Eamont to tidal**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact.	**Medium**	**New surface water abstraction quantity.** Medium level of impact. A new abstraction licence would be granted by the Environment Agency (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status) on the River Irthing at Newby East, near Warwick Bridge of 6.5 Ml/d. The ALS (Abstraction Licensing Strategy) indicates that there is restricted water available from surface water sources at all flow regimes (Q95, Q70, Q50 and Q30). **Use of new pipe lines, surface water intake and pumping station.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.

7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Carlisle\WR041\WR041_River Irthing to Cumwhinton.docx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&scale=7
EA Historical Landfill: http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=waste&layerGroups=default&lang=_e&ep=map&scale=1&x=357682.99999999994&y=355133.99999999994#x=322374&y=497910&lg=1,2,3,10,&scale=7
Abstraction Licensing Strategies (Eden and Esk): https://www.gov.uk/government/publications/eden-and-esk-abstraction-licensing-strategy

		Water body ID:		**GB40201G100400**	**Scheme:**	**River Irthing to Cumwhinton Plus Castle Carrock Link**				
		Water body Name:		**Permo-Triassic Sandstone Aquifers**	**Reference**	**WR041**				
		RBMP:		**Solway Tweed GW**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Eden Valley and Carlisle Basin Permo-Triassic Sandstone Aq**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**Not provided**						
		Downstream water bodies:		**Not provided**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent**	Good						
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Poor			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact.	**High**	**New surface water abstraction quantity.** Minor level of impact. A new abstraction licence would be granted by the Environment Agency (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status) on the River Irthing at Newby East, near Warwick Bridge of 6.5 Ml/d. The ALS (Abstraction Licensing Strategy) indicates that there is restricted water available from surface water sources at all flow regimes (Q95, Q70, Q50 and Q30). There may be localised minor reductions in leakage from rivers to the aquifer. **Use of new pipe lines, surface water intake and pumping station.** No or minimal impact.	**Medium**
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.

2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.

3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.

4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.

5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.

6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.

7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/

Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Carlisle\WR041\WR041_River Irthing to Cumwhinton.docx

EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&scale=7

EA Historical Landfill: http://maps.environment-

Abstraction Licensing Strategies (Eden and Esk): https://www.gov.uk/government/publications/eden-and-esk-abstraction-licensing-strategy

		Water body ID:		**166**	**Scheme:**	**Milwr Tunnel, Bagillt (Transfer to Huntington)**			
		Water body Name:		**Non reportable WB at the mouth of the River Dee**	**Reference**	**WR047a**			
		RBMP:		**N/A**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**N/A**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N/A**					
		Downstream water bodies:		**N/A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	N/A			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact.	**High**	**New surface water abstraction quantity** Medium level of impact. A new abstraction licence would be granted by National Resources Wales (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status) from the outfall of the Milwr tunnel at Bagillt up to 20 Ml/d even in dry summers, possibly more at other times). There is no Abstraction Management Strategy (NRW) for this transitional waterbody. **Use of new pipe lines, surface water intake and pumping station.** No or minimal impact.	**Low**
		Macrophytes	N/A						
		Macrophytes and phytobenthos	N/A						
		Benthic invertebrates	N/A						
		Fish	N/A						
	Hydromorphology	**Hydrological regime**	N/A						
		River continuity	N/A						
		Morphological conditions	N/A						
	Physico-chemical	**General physico-chemical**	N/A						
		Specific pollutants:	N/A						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	N/A						
		Priority substances	N/A						
Overall Status\ Potential		**Ecological**	**N/A**	**N/A**	**N\A**				
		Chemical	**N/A**	**N/A**	**N\A**				
		Overall	**N/A**	**N/A**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,
EA Historical Landfill: http://maps.environment-
NRW Catchment Abstraction Management Strategy (Dee): https://naturalresources.wales/media/674759/dee_cams_2015_english.pdf

		Water body ID:		**GB41102G204800**	**Scheme:**	**Milwr Tunnel, Bagillt (Transfer to Huntington)**			
		Water body Name:		**Dee Carboniferous Coal Measures**	**Reference**	**WR047a**			
		RBMP:		**Dee**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Dee Carboniferous Coal Measures**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**New surface water abstraction quantity.** Minor level of impact. A new abstraction licence would be granted by National Resources Wales (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status) from the outfall of the Milwr tunnel at Bagillt up to 20 Ml/d even in dry summers, possibly more at other times). Increased surface water abstraction may result in localised minor reductions in leakage from rivers to the aquifer, but the Coal Measures are unlikely to be heavily reliant on river leakage to support water resources. **Use of new pipe lines, surface water intake and pumping station.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	High						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Not provided						
Overall Status\ Potential		**Quantitative**	**Good**	**None provided.**	**N\A**				
		Chemical (GW)	**Poor**	**Poor by 2015**	**N\A**				
		Overall	**Poor**	**Poor by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&sca
EA Historical Landfill: http://maps.environment-.
NRW Catchment Abstraction Management Strategy (Dee): https://naturalresources.wales/media/674759/dee_cams_2015_english.pdf

		Water body ID:		**GB112071065500**	**Scheme:**	**River Ribble (Transfer to Anglezarke ir)**			
		Water body name:		**Ribble-conf Calder to Tidal**	**Reference**	**WR049b**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Big Ribble**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Showley Brook,Calder - Pendle Water to conf Ribble,Ribble DS Stock Beck,Duddel Brook**					
		Downstream water bodies:		**RIBBLE**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Transfer pipe line on land.** No or minimal impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact.	**High**	**New surface water abstraction quantity.** Medium level of impact. A new abstraction licence would be granted by the Environment Agency (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status) with an abstraction of up to 40 Ml/d. The ALS (Abstraction Licensing Strategy) indicates that there is water available from the Ribble (at Q70, Q50 and Q30), however 40 Ml/d is a relatively large abstraction and impacts on the hydrological regime may occur. **Use of new pipe line, surface water intake and pumping station.** No or minimal impact.	**Medium**
		Macrophytes							
		Macrophytes and phytobenthos	Moderate	Good by 2027	N\A				
		Benthic invertebrates	Good	Good by 2015	N\A				
		Fish							
	Hydromorphology	**Hydrological regime**	Supports Good	Supports Good by 2015	N\A				
		River continuity							
		Morphological conditions	Supports Good	Supports Good by 2015	N\A				
	Physico-chemical	**General physico-chemical**	Moderate	Good by 2027	N\A				
		Specific pollutants:	High	High by 2015	N\A				
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good	Good by 2015	N\A				
		Priority substances	Good	Good by 2015	N\A				
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Ribble, Douglas & Crossens): https://www.gov.uk/government/publications/ribble-douglas-and-crossens-bstraction-licensing-strategy

		Water body ID:		**GB41201G100500**	**Scheme:**	**River Ribble (Transfer to Anglezarke ir)**			
		Water Body Name:		**Fylde Permo-Triassic**	**Reference**	**WR049b**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Fylde Permo-Triassic**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative**	Good	Good by 2015	N/A				
		Quantitative GWDTEs test	Good	Good by 2015	N/A				
		Quantitative Saline Intrusion	Good	Good by 2015	N/A				
		Quantitative Water Balance	Good	Good by 2015	N/A				
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent**				**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**New surface water abstraction quantity.** Medium level of impact. A new abstraction licence would be granted by the Environment Agency (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status) with an abstraction of up to 40 Ml/d. The ALS (Abstraction Licensing Strategy) indicates that there is water available from the Ribble (at Q70, Q50 and Q30). Due to the size of the proposed abstraction, there may be reductions in leakage from rivers to the aquifer, which could impact on the quantitative water balance of the water body. **Use of new pipe lines, surface water intake and pumping station.** No or minimal impact.	**Medium**
		Chemical Drinking Water Protected Area	Good	Good by 2015	N/A				
		Chemical GWDTEs test	Good	Good by 2015	N/A				
		Chemical Saline Intrusion	Good	Good by 2015	N/A				
		General Chemical Test	Good	Good by 2015	N/A				
	Supporting Elements (groundwater)	**Prevent and Limit Objective**							
		Trend Assessment	No Trend	N/A					
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Ribble, Douglas & Crossens): https://www.gov.uk/government/publications/ribble-douglas-and-crossens-bstraction-licensing-strategy

		Water body ID:		**GB112071065500**	**Scheme:**	**RIVER DARWEN (TRANSFER TO FISHMOOR WTW)**			
		Water body name:		**Ribble-conf Calder to Tidal**	**Reference**	**WR074**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Big Ribble**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Showley Brook,Calder - Pendle Water to conf Ribble,Ribble DS Stock Beck,Duddel Brook**					
		Downstream water bodies:		**RIBBLE**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Transfer pipe line on land.** No or minimal impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact.	**High**	**New surface water abstraction quantity.** Medium level of impact. A new abstraction licence would be granted by the Environment Agency (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status) with an abstraction of up to 10 Ml/d from the River Darwen near Roach Bridge. The ALS (Abstraction Licensing Strategy) indicates that there is water available at all flow regimes (Q95, Q70, Q50 and Q30), however the abstraction is moderate in size and could have a medium impact on the hydrological regime of the River Darwen. **Use of new pipe line, surface water intake and pumping station.** No or minimal impact.	**Medium**
		Macrophytes							
		Macrophytes and phytobenthos	Moderate	Good by 2027	N\A				
		Benthic invertebrates	Good	Good by 2015	N\A				
		Fish							
	Hydromorphology	**Hydrological regime**	Supports Good	Supports Good by 2015	N\A				
		River continuity							
		Morphological conditions	Supports Good	Supports Good by 2015	N\A				
	Physico-Chemical	**General physico-chemical**	Moderate	Good by 2027	N\A				
		Specific pollutants:	High	High by 2015	N\A				
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good	Good by 2015	N\A				
		Priority substances	Good	Good by 2015	N\A				
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice pollution prevention methods e.g. the GPPs
2- Small scale shallow dewatering would take place
3- Stockpiling of resources or spoil near watercourse maybe required
4- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required
5- Assumed all over ground pipelay will be along roads and over water crossings along exsisting bridges
6- An abstraction licence can be granted that will ensure there is no significant environmental impact from the abstraction
7- Dewatering of excavations would not require a permit from the Environment Agency. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed above. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Ribble, Douglas & Crossens)

		Water body ID:		**GB41201G100500**	**Scheme:**	**RIVER DARWEN (TRANSFER TO FISHMOOR WTW)**			
		Water Body Name:		**Fylde Permo-Triassic Sandstone Aquifers**	**Reference**	**WR074**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Fylde Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good	Good by 2015	N/A	**Transfer pipe line on land.** No or minimal impact. **New surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**New surface water abstraction quantity.** Minor level of impact. A new abstraction licence would be granted by the Environment Agency (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status) with an abstraction of up to 10 Ml/d from the River Darwen near Roach Bridge. Due to the moderate size of the proposed abstraction, there may be reductions in leakage from the river to the aquifer, which could impact locally on the quantitative water balance of this principal sandstone aquifer. However as the ALS indicates there is water available at all flow regimes (Q95, Q70, Q50 and Q30) in the surface water body, the flow is unlikely to be reduced sufficiently to have a wide or significant impact on the water balance of the water body as a whole. **Use of new pipe line, surface water intake and pumping station.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good	Good by 2015	N/A				
		Quantitative Saline Intrusion	Good	Good by 2015	N/A				
		Quantitative Water Balance	Good	Good by 2015	N/A				
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**							
		Chemical Drinking Water Protected Area	Good	Good by 2015	N/A				
		Chemical GWDTEs test	Good	Good by 2015	N/A				
		Chemical Saline Intrusion	Good	Good by 2015	N/A				
		General Chemical Test	Good	Good by 2015	N/A				
	Supporting Elements (groundwat	**Prevent and Limit Objective**							
		Trend Assessment	No Trend	N/A					
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Environmental permitting will be adhered to and will stipulate appropriate conditions for water quality and quantity.
2- Application of standard best practice pollution prevention methods e.g. the GPPs
3- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required
4- Assumed all over ground pipelay will be along roads and over water crossings along exsisting bridges
5- Dewatering of excavations would not require a permit from the Environment Agency. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed above. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b

		Water body ID:		**GB112069061382**	**Scheme:**	**River Bollin**			
		Water body Name:		**Bollin (Ashley Mill to Manchester Ship Canal)**	**Reference**	**WR076**			
		RBMP:		**Mersey Upper**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Bollin Dean Mersey Upper**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Birkin Brook- Mobberley Brook to River Bollin (including Rostherne Brook)**					
		Downstream water bodies:		**Manchester Ship Canal**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact. **New water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station and water treatment works.** No or minimal impact. **New surface water abstraction quantity.** Medium level of impact. New surface water abstraction from the River Bollin near Lymm of 25 Ml/d. In the ALS water is identified as available at all flows (Q30, Q50, Q70 and Q95) however the abstraction is relatively large in size and could have a medium impact on the hydrological regime of the River Bollin. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Good						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Moderate by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR076\WR076 Ri
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_

		Water body ID:		**GB41202G991700**	**Scheme:**	**River Bollin**			
		Water body Name:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Reference**	**WR076**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact. **New water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station and water treatment works.** No or minimal impact. **New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from the River Bollin near Lymm of 25 Ml/d. The ALS does not define a groundwater management unit for this water body, but there is no restricted or non availability of surface water in the overlying water body. Due to the relatively large size of the proposed abstraction there may be reductions in leakage from the river to the aquifer, however these would be localised, and the secondary aquifer is unlikely to be highly dependent on leakage from surface water courses to maintain its quantitative water balance.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR076\WR076 River Bollin.xlsx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

	Water body ID:		**GB31232665**	**Scheme:**	**APPLETON RESERVOIR, WARRINGTON**				
	Water body Name:		**Appleton Reservoir**	**Reference:**	**WR079b**				
	RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**		
	Operational catchment:		**Weaver Lower**	**Impact potential:**	**Direct**		**Direct**		
	Designation (and uses):		**Heavily modified**						
	Relevant upstream water bodies:								
	Downstream water bodies:								
	WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Lakes\Reservoirs: Ecological — **Biology**	**Phytoplankton**	Moderate			**Modified surface water intake.** Minor level of impact.	**High**	**Increased surface water abstraction quantity** Medium level of impact. Reinstatement of surface water abstraction from the Appleton reservoir, near Warrington of 6 Ml/d. The ALS does not provided an assessment of the water availability of the reservoir itself, but the catchment in which Appleton Reservoir is located has no water available at Q30 to Q70 and limited water available at Q95. This means that river flows are below the level required to support good ecological status. The required abstraction quantity is within the current abstraction licence (12 Ml/d) for the reservoir. Recent use of the reservoir has been for emergency fire-fighting supply for an industrial customer. It is assumed that the reinstated potable water abstraction would involve higher abstraction rates than recent use, and as such, reinstatement of the abstraction may cause widespread or prolonged effects on the WFD status of the lake water body.	**Low**
	Macrophytes	-							
	Phytobenthos	-							
	Macrophytes and phytobenthos	-							
	Chironomids (CPET)	-							
	Fish	-							
Hydromorphology	**Hydrological regime**	-							
	River continuity	-							
Physico-chemical	**Morphological conditions**	-							
	General physico-chemical	Moderate							
	Specific pollutants:	-							
WFD elements for Lakes\Reservoirs: Chemical	**Priority hazardous substances**	Does not require assessment							
	Priority substances	Does not require assessment							
Overall Status\ Potential	**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**					
	Chemical	**Good**	**Good by 2015**	**N/A**					
	Overall	**Moderate**	**Moderate by 2015**	**N/A**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR079abcd\WR079_Appleton Reservoir.docx
EA Abstraction Licence Strategy (Lower Mersey & Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LI

		Water body ID:		**GB169**	**Scheme:**	**APPLETON RESERVOIR, WARRINGTON**			
		Water body Name:		**Not part of a river WB catchment**	**Reference:**	**WR079b**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**-**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**-**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact. **New water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station water treatment works, and surface water intake.** No or minimal impact. **Increased surface water abstraction quantity.** Minor level of impact. Reinstatement of surface water abstraction from the Appleton reservoir, near Warrington of 6 Ml/d. The ALS states that the catchment in which Appleton Reservoir is located has no water available at Q30 to Q70 and limited water available at Q95. This means that river flows are below the level required to support good ecological status. However, the water body downstream of the reservoir has water available at all flows. Reinstating the abstraction has the potential to reduce flows in the downstream part of the water body (assuming the reinstated abstraction would be greater than the current use as emergency fire fighting supply), but given the downstream surface water body has water available at all flows, the abstraction is from a reservoir rather than the "natural" water courses within the surface water body, the abstraction is within the current licenced quantity, and assuming compensation flows from the reservoir will be maintained, impacts on the surface water body are unlikely to be prolonged or widespread.	**Low**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	-						
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	-						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	-						
		Priority substances	-						
Overall Status\Potential		**Ecological**	-	-					
		Chemical	-	-					
		Overall	-	-					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which w
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossing
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR079abcd\WR079_Apple
EA Abstraction Licence Strategy (Lower Mersey & Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490

		Water body ID:		**GB41202G991700**	**Scheme:**	**APPLETON RESERVOIR, WARRINGTON**			
		Water body Name:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Reference**	**WR079b**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **Modified surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station, surface water intake.** No or minimal impact. **Increased surface water abstraction quantity** Minor level of impact. Reinstatement of surface water abstraction from the Appleton reservoir, near Warrington of 6 Ml/d. There may be localised or temporary effects on interactions between the reservoir, downstream water courses and groundwater, as the groundwater body comprises shallow sands and gravels which may be well connected to surface water courses. As the proposed abstraction is from a reservoir, within the current abstraction licence (12 Ml/d), and downstream surface water bodies have water available at all flows, changes are unlikely to be widespread or prolonged. There is no groundwater management unit defined for this area.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
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5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR079abcd\WR079_Appleton
EA Abstraction Licence Strategy (Lower Mersey & Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_

	Water body ID:		**GB31232665**	**Scheme:**	**APPLETON RESERVOIR, WARRINGTON**			
	Water body Name:		**Appleton Reservoir**	**Reference:**	**WR079c**			
	RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
	Operational catchment:		**Weaver Lower**	**Impact potential:**	**Direct**		**Direct**	
	Designation (and uses):		**Heavily modified**					
	Relevant upstream water bodies:							
	Downstream water bodies:							
	WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Lakes\Reservoirs: Ecological — **Biology**	**Phytoplankton**	Moderate			**Modified surface water intake.** Minor level of impact.	**High**	**Increased surface water abstraction quantity** Medium level of impact. Reinstatement of surface water abstraction from the Appleton reservoir, near Warrington of 9 Ml/d. The ALS does not provided an assessment of the water availability of the reservoir itself, but the catchment in which Appleton Reservoir is located has no water available at Q30 to Q70 and limited water available at Q95. This means that river flows are below the level required to support good ecological status. The required abstraction quantity is within the current abstraction licence (12 Ml/d) for the reservoir. Recent use of the reservoir has been for emergency fire-fighting supply for an industrial customer. It is assumed that the reinstated potable water abstraction would involve higher abstraction rates than recent use, and as such, reinstatement of the abstraction may cause widespread or prolonged effects on the WFD status of the lake water body.	**Low**
	Macrophytes	-						
	Phytobenthos	-						
	Macrophytes and phytobenthos	-						
	Chironomids (CPET)	-						
	Fish	-						
Hydromorphology	**Hydrological regime**	-						
	River continuity	-						
Physico-chemical	**Morphological conditions**	-						
	General physico-chemical	Moderate						
	Specific pollutants:	-						
WFD elements for Lakes\Reservoirs: Chemical	**Priority hazardous substances**	Does not require assessment						
	Priority substances	Does not require assessment						
Overall Status\ Potential	**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
	Chemical	**Good**	**Good by 2015**	**N/A**				
	Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
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Evidence

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Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR079abcd\WR079_Appleton Reservoir.docx
EA Abstraction Licence Strategy (Lower Mersey & Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LI

		Water body ID:		**GB169**	**Scheme:**	**APPLETON RESERVOIR, WARRINGTON**			
		Water body Name:		**Not part of a river WB catchment**	**Reference:**	**WR079c**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		-	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		-					
		Relevant upstream water bodies:		-					
		Downstream water bodies:		-					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact. **New water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station water treatment works, and surface water intake.** No or minimal impact. **Increased surface water abstraction quantity.** MInor level of impact. Reinstatement of surface water abstraction from the Appleton reservoir, near Warrington of 9 Ml/d. The ALS states that the catchment in which Appleton Reservoir is located has no water available at Q30 to Q70 and limited water available at Q95. This means that river flows are below the level required to support good ecological status. However, the water body downstream of the reservoir has water available at all flows. Reinstating the abstraction has the potential to reduce flows in the downstream part of the water body (assuming the reinstated abstraction would be greater than the current use as emergency fire fighting supply), but given the downstream surface water body has water available at all flows, the abstraction is from a reservoir rather than the "natural" water courses within the surface water body, the abstraction is within the current licenced quantity, and assuming compensation flows from the reservoir will be maintained, impacts on the surface water body are unlikely to be prolonged or widespread.	**Low**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	-						
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	-						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	-						
		Priority substances	-						
Overall Status|Potential		**Ecological**	-	-					
		Chemical	-	-					
		Overall	-	-					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
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Evidence

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Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR079abcd\WR079_Apple
EA Abstraction Licence Strategy (Lower Mersey & Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/L

		Water body ID:		**GB41202G991700**	**Scheme:**	**APPLETON RESERVOIR, WARRINGTON**			
		Water body Name:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Reference**	**WR079c**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **Modified surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station, surface water intake.** No or minimal impact. **Increased surface water abstraction quantity** Minor level of impact. Reinstatement of surface water abstraction from the Appleton reservoir, near Warrington of 9 Ml/d. There may be localised or temporary effects on interactions between the reservoir, downstream water courses and groundwater, as the groundwater body comprises shallow sands and gravels which may be well connected to surface water courses. As the proposed abstraction is from a reservoir, within the current abstraction licence (12 Ml/d), and downstream surface water bodies have water available at all flows, changes are unlikely to be widespread or prolonged. There is no groundwater management unit defined for this area.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't h
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8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

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Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR079abcd\WR079_Appleton
EA Abstraction Licence Strategy (Lower Mersey & Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_

	Water body ID:		**GB31232665**	**Scheme:**	**APPLETON RESERVOIR, WARRINGTON**			
	Water body Name:		**Appleton Reservoir**	**Reference:**	**WR079b**			
	RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
	Operational catchment:		**Weaver Lower**	**Impact potential:**	**Direct**		**Direct**	
	Designation (and uses):		**Heavily modified**					
	Relevant upstream water bodies:							
	Downstream water bodies:							
	WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Lakes\Reservoirs: Ecological — **Biology**	**Phytoplankton**	Moderate			**Modified surface water intake.** Minor level of impact.	**High**	**Increased surface water abstraction quantity** Medium level of impact. Reinstatement of surface water abstraction from the Appleton reservoir, near Warrington of 12 Ml/d. The ALS does not provided an assessment of the water availability of the reservoir itself, but the catchment in which Appleton Reservoir is located has no water available at Q30 to Q70 and limited water available at Q95. This means that river flows are below the level required to support good ecological status. The required abstraction quantity is within the current abstraction licence (12 Ml/d) for the reservoir. Recent use of the reservoir has been for emergency fire-fighting supply for an industrial customer. It is assumed that the reinstated potable water abstraction would involve higher abstraction rates than recent use, and as such, reinstatement of the abstraction may cause widespread or prolonged effects on the WFD status of the lake water body.	**Low**
	Macrophytes	-						
	Phytobenthos	-						
	Macrophytes and phytobenthos	-						
	Chironomids (CPET)	-						
	Fish	-						
Hydromorphology	**Hydrological regime**	-						
	River continuity	-						
Physico-chemical	**Morphological conditions**	-						
	General physico-chemical	Moderate						
	Specific pollutants:	-						
WFD elements for Lakes\Reservoirs: Chemical	**Priority hazardous substances**	Does not require assessment						
	Priority substances	Does not require assessment						
Overall Status\ Potential	**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
	Chemical	**Good**	**Good by 2015**	**N/A**				
	Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
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Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR079abcd\WR079_Appleton Reservoir.docx
EA Abstraction Licence Strategy (Lower Mersey & Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LI

		Water body ID:		**GB169**	**Scheme:**	**APPLETON RESERVOIR, WARRINGTON**			
		Water body Name:		**Not part of a river WB catchment**	**Reference:**	**WR079b**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**-**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**-**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact. **New water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station water treatment works, and surface water intake.** No or minimal impact. **Increased surface water abstraction quantity.** Minor level of impact. Reinstatement of surface water abstraction from the Appleton reservoir, near Warrington of 12 Ml/d. The ALS states that the catchment in which Appleton Reservoir is located has no water available at Q30 to Q70 and limited water available at Q95. This means that river flows are below the level required to support good ecological status. However, the water body downstream of the reservoir has water available at all flows. Reinstating the abstraction has the potential to reduce flows in the downstream part of the water body (assuming the reinstated abstraction would be greater than the current use as emergency fire fighting supply), but given the downstream surface water body has water available at all flows, the abstraction is from a reservoir rather than the "natural" water courses within the surface water body, the abstraction is within the current licenced quantity, and assuming compensation flows from the reservoir will be maintained, impacts on the surface water body are unlikely to be prolonged or widespread.	**Low**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	-						
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	-						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	-						
		Priority substances	-						
Overall Status\Potential		**Ecological**	-	-					
		Chemical	**-**	**-**					
		Overall	**-**	**-**					

Assumptions

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Evidence

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EA Abstraction Licence Strategy (Lower Mersey & Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490

		Water body ID:		**GB41202G991700**	**Scheme:**	**APPLETON RESERVOIR, WARRINGTON**			
		Water body Name:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Reference**	**WR079b**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **Modified surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station, surface water intake.** No or minimal impact. **Increased surface water abstraction quantity** Minor level of impact. Reinstatement of surface water abstraction from the Appleton reservoir, near Warrington of 12 Ml/d. There may be localised or temporary effects on interactions between the reservoir, downstream water courses and groundwater, as the groundwater body comprises shallow sands and gravels which may be well connected to surface water courses. As the proposed abstraction is from a reservoir, is equal to the current abstraction licence (12 Ml/d), and downstream surface water bodies have water available at all flows, changes are unlikely to be widespread or prolonged. There is no groundwater management unit defined for this area.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't h
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of e
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR079abcd\WR079_Appleton
EA Abstraction Licence Strategy (Lower Mersey & Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_

		Water body ID:		**GB102076073740**	**Scheme:**	**Roughton Gill**			
		Water body name:		**Whelpo (Cald) Beck**	**Reference**	**WR095**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Caldew**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**Caldew d/s Calderbeck**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New water treatment works.** Minor level of impact.	**High**	**New groundwater abstraction quantity.** Minor level of impact. Reinstatement of abstraction at Roughton Gill Mine. Maximum output of 1.5 Ml/d. The ALS does not define a groundwater management unit for this secondary aquifer. There is water availabe in the surface water body at all flows other than at Q95 when there is limited water available. Given the relatively small size of the asbtraction, and the general availabiliy of water, widespread or prolonged effects on the hydrologial regime of the suraface water body are not anticipated. **Use of new transfer pipe line, water treatment works and surface water intake.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	-						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	Copper and Zinc-high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good						
		Priority substances	Good						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\North Eden\WR095\WR095 Roughton Gill.xlsm
Aquifer designation map: http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx
EA Abstraction Licence Strategy (Eden & Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_7889_1384b1.pdf

		Water body ID:		**GB40201G102300**	**Scheme:**	**Roughton Gill**			
		Water Body Name:		**Eden and Esk Lower Palaeozoic and Carboniferous Aquifers**	**Reference**	**WR095**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eden and Esk Lower Palaeozoic and Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New /modified surface water intake.** No or minimal impact. **New / modified water treatment works.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Minor level of impact. Reinstatement of abstraction at Roughton Gill Mine. Maximum output of 1.5 Ml/d. The ALS does not define a groundwater management unit for this secondary aquifer. Given the small size of the asbtraction, and that it is likely abstracting water that would discharge to the Roughton Gill if not abstracted, widespread or prolonged effects on the quantitative water balance of the groundwater body are not anticipated. **Use of new transfer pipe line.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward Trend						
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\North Eden\WR095\WR095 Roughton Gill.xlsm
Aquifer designation map: http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx
EA Abstraction Licence Strategy (Eden & Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_7889_1384b1.pdf

		Water body ID:		**GB112071065090**	**Scheme:**	**Worsthorne Borehole (Compensation)**			
		Water body Name:		**Brun- headwaters to conf Don**	**Reference**	**WR099a**			
		RBMP:		**Ribble**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**None**					
		Downstream water bodies:		**Brun- conf Don to conf Calder**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Abstraction well refurbishment.** No or Minimal Impact Expected. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact.	**High**	**Changed groundwater abstraction quantity.** Minor level of impact. Reinstatement of Worsthorne borehole. Maximum output of 4 Ml/d based on exisiting abstraction licence, discharged to River Brun as compesation flow. The ALS shows that surface water is available at Q95 flows only, whilst limited at Q70 and not available at Q50 and Q30. Given that there is already an abstraction licence in place, the moderate size of the abstraction, that there are unlikely to be strong dependencies between the secondary aquifer and the surface watercourses, and that the abstracted water is to be discharged to the River Brun as compensation flow, the use of the borehole is not expected to have a widespread or prolonged effect on the hydrological regime of this water body. **Use of new transfer pipe line.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	Moderate						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stoc
icence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT75

		Water body ID:		**GB41202G100300**	**Scheme:**	**Worsthorne Borehole (Compensation)**				
		Water body Name:		**Douglas, Darwen and Calder Carboniferous Aquifers**	**Reference**	**WR099a**				
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Douglas Darwen and Calder Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**Not identified**						
		Downstream water bodies:		**Not identified**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Abstraction well refurbishment.** Minor level of impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact.	**High**	**Changed groundwater abstraction quantity.** Minor level of impact. Reinstatement of Worsthorne borehole. Maximum output of 4 Ml/d based on exisiting abstraction licence, discharged to River Brun as compesation flow. The ALS does not identify a GWMU for this area, but does show that surface water is available at Q95 flows only, whilst limited at Q70 and not available at Q50 and Q30. Given there is already an abstraction licence in place, the abstraction is of moderate size, and that the abstracted water is to be used as a compensation flow, there is unlikey to be a widespread or prolonged effect on the quantitative water balance of the aquifer or on the quantitative dependent surface water body status. **Use of new transfer pipe line.** No or minimal impact.	**Medium**	
		Quantitative GWDTEs test	Good							
		Quantitative Saline Intrusion	Good							
		Quantitative Water Balance	Good							
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor							
		Chemical Drinking Water Protected Area	Good							
		Chemical GWDTEs test	Good							
		Chemical Saline Intrusion	Good							
		General Chemical Test	Good							
	Supporting Element	**Prevent and Limit Objective**	Not provided							
		Trend Assessment	Upward trend							
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**					
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**					
		Overall	**Poor**	**Good by 2027**	**N\A**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112071065090**	**Scheme:**	**Worsthorne Borehole (Hurstwood IR)**			
		Water body Name:		**Brun- headwaters to conf Don**	**Reference**	**WR099b**			
		RBMP:		**Ribble**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Brun- conf Don to conf Calder**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Abstraction well refurbishment.** No or Minimal Impact Expected. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact.	**High**	**Changed groundwater abstraction quantity.** Minor level of impact. Reinstatement of Worsthorne borehole. Maximum output of 4 Ml/d based on existing abstraction licence. For transfer to Hurstwood Impounding reservoir. The ALS shows that surface water is available at Q95 flows only whilst limited at Q70 and not available at Q50 and Q30. Given that there is already an abstraction licence in place, the moderate size of the abstraction, the abstraction is approx. 800m away from the River Brun, and that there are unlikely to be strong dependencies between the secondary aquifer and the surface watercourses, the use of the borehole is not expected to have a widespread or prolonged effect on the hydrological regime of this water body. **Use of new transfer pipe line.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	Moderate						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stoc
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/

		Water body ID:		**GB41202G100300**	**Scheme:**	**Worsthorne Borehole (Hurstwood IR)**			
		Water body Name:		**Douglas, Darwen and Calder Carboniferous Aquifers**	**Reference**	**WR099b**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Douglas Darwen and Calder Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Abstraction well refurbishment.** Minor level of impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact.	**High**	**Changed groundwater abstraction quantity.** Minor level of impact. Reinstatement of Worsthorne boreholes. Maximum output of 4 Ml/d based on exisiting abstraction licence. For transfer to Hurstwood Impounding Reservoir. The ALS does not identify a GWMU for this area, but does show that surface water is available at Q95 flows only, whilst limited at Q70 and not available at Q50 and Q30. Pressures on baseflow from the aquifer would likely show up as a water restriction at low flows (i.e. Q95) rather than higher flows. As there is already an abstraction licence in place, the abstraction is of moderate size, and the water body is a secondary aquifer, widespread and prolonged effects on the quantitative water balance of the groundwater body are unlikely. **Use of new transfer pipe line.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwat	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status \ Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112071065090**	**Scheme:**	**Worsthorne Borehole (Worsthorne WTW)**			
		Water body Name:		**Brun- headwaters to conf Don**	**Reference**	**WR099c**			
		RBMP:		**Ribble**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Brun- conf Don to conf Calder**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Reinstate and refurbish abstraction boreholes.** No or Minimal Impact Expected. **Modified water treatment works.** No or minimal impact.	**High**	**Changed groundwater abstraction quantity.** Minor level of impact. Reinstatement of Worsthorne borehole. Maximum output of 4 Ml/d based on exisiting abstraction licence. For transfer to Worsthorne WTW. The ALS shows that surface water is available at Q95 flows only whilst limited at Q70 and not available at Q50 and Q30 (Note. this need clarifying with the EA). Given that there is already an abstraction licence in place, the moderate size of the abstraction, and that there are unlikely to be strong dependencies between the secondary aquifer and the surface watercourses, the use of the borehole is not expected to have a widespread or prolonged effect on the hydrological regime of this water body.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	Moderate						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stock
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data

		Water body ID:		**GB41202G100300**	**Scheme:**	**Worsthorne Borehole (Worsthorne WTW)**			
		Water body Name:		**Douglas, Darwen and Calder Carboniferous Aquifers**	**Reference**	**WR099c**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Douglas Darwen and Calder Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Abstraction well refurbishment.** Minor level of impact. **Modified water treatment works.** No or minimal impact.	**High**	**Changed groundwater abstraction quantity.** Minor level of impact. Reinstatement of Worsthorne boreholes. Maximum output of 4 Ml/d based on exisiting abstraction licence. For transfer to Worsthorne WTW. The ALS does not identify a GWMU for this area, but does show that surface water is available at Q95 flows only, whilst limited at Q70 and not available at Q50 and Q30. Pressures on baseflow from the aquifer would likely show up as a water restriction at low flows (i.e. Q95) rather than higher flows. As there is already an abstraction licence in place, the abstraction is of moderate size, and the water body is a secondary aquifer, widespread and prolongued effects on the quantitative water balance of the groundwater body are unlikely.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwat	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**344**	**Scheme:**	**THORNCLIFFE ROAD BOREHOLE, BARROW-IN-FURNESS**			
		Water body Name:		**Non reportable WB at the River Duddon Estuaryu**	**Reference**	**WR100**			
		RBMP:		**N/A**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**N/A**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**N/A**					
		Relevant upstream water bodies:		**N/A**					
		Downstream water bodies:		**N/A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	N/A			**New water treatment works.** No or minimal impact. **New abstraction well drilling.** No or minimal impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity to 4.5 Ml/d.** Minor level of impact. Increased groundwater abstraction from the Thorncliffe Road site due to construction of new borehole. Increase in abstraction from 4.5 Ml/d to 9.0 Ml/d. Current licenced rate is 4.5 Ml/d. The Abstraction Licensing Strategy (ALS) indicates that there is no surface water available at low flows (Q95 and Q70), and limited water available at medium and high flows (Q50 and Q30). However, as the increase in groundwater abstraction at Thorncliffe Road will be matched by a reduction in abstraction from Schneider Road (located approx. 600 m to the east and within the same groundwater body), any impacts on the surface water body are likely to be localised. **Use of water treatement works and pumping station.** No or minimal impact.	**Medium**
		Macrophytes	N/A						
		Macrophytes and phytobenthos	N/A						
		Benthic invertebrates	N/A						
		Fish	N/A						
	Hydro-morphology	**Hydrological regime**	N/A						
		River continuity	N/A						
		Morphological conditions	N/A						
	Physico-chemical	**General physico-chemical**	N/A						
		Specific pollutants:	N/A						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	N/A						
		Priority substances	N/A						
Overall Status\ Potential		**Ecological**	**N/A**	**N/A**	**N\A**				
		Chemical	**N/A**	**N/A**	**N\A**				
		Overall	**N/A**	**N/A**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR100\WR100_Thorncliffe Road Borehole, Barrow.docx
Abstraction license strategy (South Cumbria): https://www.gov.uk/government/publications/south-cumbria-abstraction-licensing-strategy

		Water body ID:		**GB41201G101900**	**Scheme:**	**THORNCLIFFE ROAD BOREHOLE, BARROW-IN-FURNESS**			
		Water body Name:		**Furness Permo-Triassic sandstone aquifers**	**Reference**	**WR100**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Furness Permo-Triassic sandstone aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good	Good by 2015		**New water treatment works.** No or minimal impact. **New abstraction well drilling.** Minor level of impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity to 4.5 Ml/d.** Minor level of impact. Increased groundwater abstraction from the Thorncliffe Road site due to construction of new borehole. Increase in abstraction from 4.5 Ml/d to 9.0 Ml/d. Current licenced tate is 4.5 Ml/d. The Abstraction Licensing Strategy (ALS) indicates that there is limited water available (there is a licence restriction of 4.2 Ml/d water available from the South Furness groundwater management unit). However, as part of this option a reduction in abstraction from the Schneider Road boreholes (located approx. 600 m to the east and within the same groundwater body) would be implemented to avoid negative impacts on the quantitative water balance of the groundwater body. Therfore any impacts on the groundwater body would be localised. **Use of water treatement works and pumping station.** No or minimal impact.	**High**
		Quantitative GWDTEs test	Good	Good by 2015					
		Quantitative Saline Intrusion	Good	Good by 2015					
		Quantitative Water Balance	Good	Good by 2015					
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good	Good by 2015					
		Chemical Drinking Water Protected Area	Good	Good by 2015					
		Chemical GWDTEs test	Good	Good by 2015					
		Chemical Saline Intrusion	Good	Good by 2015					
		General Chemical Test	Good	Good by 2015					
	Supporting Elements	**Prevent and Limit Objective**	-						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR100\WR100_Thorncliffe Road Borehole, Barrow.docx
Abstraction license strategy (South Cumbria): https://www.gov.uk/government/publications/south-cumbria-abstraction-licensing-strategy

		Water body ID:		**GB112072065822**	**Scheme:**	**FRANKLAW Z SITE PLUS INCREASED FRANKLAW WTW TREATMENT CAPACITY**			
		Water body Name:		**Wyre DS Grizedale Brook confl**	**Reference**	**WR101**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Wyre and Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Calder (Wyre), Wyre - Upper**					
		Downstream water bodies:		**Wyre - conf R Brock to tidal**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity** Medium level of impact. Increased abstraction of 30 Ml/d (from approximately 98 Ml/d recent use, to approx. 128 Ml/d), split across several Franklaw and Broughton borehole sites. The increased abstraction quantity is within the current licence quantity for the borehole group (maximum aggregated daily peak of 190 Ml/d). The Abstraction Licensing Strategy (ALS) indicates that there is no water available for the groundwater body in which the abstraction boreholes are located. This means that more water has been abstracted based on recent amounts than the amount available. In this surface water body there is no surface water available at Q95, Q70 and Q50 but limited water available at Q30. The Environment Agency have classified these abstractions as Category 3 which means that based on full use of the abstraction licence deterioration is likely after 2027. The recent actual abstraction rates are not causing deterioration. It is not clear at which abstraction rate between recent actual and fully licenced deterioration would start to occur. Based on the evidence above, that there may be good hydraulic connections between the principal sandstone aquifer and water courses, and that the Franklaw Z site (where an increase in abstraction of 18 Ml/d is proposed) is approx. 100 m from the River Wyre, it is considered that there is the potential for widespread or prolonged effects on the hydrological regime of the surface water body, although this is associated with a number of uncertainties (such as the abstraction rates at which deterioration would occur).	**Low**
		Macrophytes	-						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	High						
		Fish	High						
	Hydromorphology	**Hydrological regime**	Does not support good						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	Good						
		Specific pollutants:	High						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Good						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR101\WR101_Franklaw Z site_increased WTW capacity.docx
Abstraction license strategy (Lune and Wyre): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf

		Water body ID:		**GB112072065810**	**Scheme:**	**FRANKLAW Z SITE PLUS INCREASED FRANKLAW WTW TREATMENT CAPACITY**		
		Water body Name:		**Brock**	**Reference**	**WR101**		
		RBMP:		**North West**	**Scheme Phase**	**Construction**	**Operational**	
		Operational catchment:		**Brock and Trib**	**Impact potential**	**Direct**	**Direct**	
		Designation (and uses):		**No designation**				
		Relevant upstream water bodies:		**New Draught Brook**				
		Downstream water bodies:		**Wyre - conf R Brock to tidal**				
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**	**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact. **Modified water treatment works.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity** Minor level of impact. Increased abstraction of 30 Ml/d (from approximately 98 Ml/d recent use, to approx. 128 Ml/d), split across several Franklaw and Broughton borehole sites. The increased abstraction quantity is within the current licence quantity for the borehole group (maximum aggregated daily peak of 190 Ml/d). The Abstraction Licensing Strategy (ALS) indicates that there is no water available for the groundwater body in which the abstraction boreholes are located. This means that more water has been abstracted based on recent amounts than the amount available. In this surface water body there is no surface water available at Q95, Q70 and Q50 but limited water available at Q30. The Environment Agency have classified these abstractions as Category 3 which means that based on full use of the abstraction licence deterioration is likely after 2027. The recent actual abstraction rates are not causing deterioration. It is not clear at which abstraction rate between recent actual and fully licenced deterioration would start to occur. In this water body, the abstraction locations are some distance from the mapped WFD water course, and the increase in abstraction from any one location is relatively small (<4Ml/d), therefore impacts on the hydrological regime of the surface water body are unlikely to be widespread or prolonged. **Modified water treatment works.** No or minimal impact.	**Medium**
		Macrophytes						
		Macrophytes and phytobenthos	Good	Good by 2015				
		Benthic invertebrates	High	Good by 2015				
		Fish						
	Hydromorphology	**Hydrological regime**	Does not support good	Supports good by 2027				
		River continuity						
		Morphological conditions	Supports good.	-				
	Physico-chemical	**General physico-chemical**	All high or good	Good by 2015				
		Specific pollutants:	Copper: high	High by 2015				
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment	Does not require assessment				
		Priority substances	Does not require assessment	Does not require assessment				
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N\A**			
		Chemical	**Good**	**Good by 2015**	**N\A**			
		Overall	**Good**	**Good by 2015**	**N\A**			

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR101\WR101_Franklaw Z site_increased WTW capacity.docx
Abstraction license strategy (Lune and Wyre): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf

		Water body ID:		**GB112072066220**	**Scheme:**	**FRANKLAW Z SITE PLUS INCREASED FRANKLAW WTW TREATMENT CAPACITY**		
		Water body Name:		**Calder (Wyre)**	**Reference**	**WR101**		
		RBMP:		**North West**	**Scheme Phase**	**Construction**	**Operational**	
		Operational catchment:		**Wyre and Calder**	**Impact potential**	**Direct**	**Direct**	
		Designation (and uses):		**Heavily Modified**				
		Relevant upstream water bodies:		**-**				
		Downstream water bodies:		**Wyre DS Grizedale Brook confl**				
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**	**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity** Medium level of impact. Increased abstraction of 30 Ml/d (from approximately 98 Ml/d recent use, to approx. 128 Ml/d), split across several Franklaw and Broughton borehole sites. The increased abstraction quantity is within the current licence quantity for the borehole group (maximum aggregated daily peak of 190 Ml/d). The Abstraction Licensing Strategy (ALS) indicates that there is no water available for the groundwater body in which the abstraction boreholes are located. This means that more water has been abstracted based on recent amounts than the amount available. In this surface water body there is no surface water available at any flow. The Environment Agency have classified these abstractions as Category 3 which means that based on full use of the abstraction licence deterioration is likely after 2027. The recent actual abstraction rates are not causing deterioration. It is not clear at which abstraction rate between recent actual and fully licenced deterioration would start to occur. Based on the evidence above, that there may be good hydraulic connections between the principal sandstone aquifer and water courses, and that the Franklaw R site is approx. 600 m from the River Calder, it is considered that there is the potential for widespread or prolonged effects on the hydrological regime of the surface water body, although this is associated with a number of uncertainties (such as if abstraction will increase at the Franklaw R site).	**Low**
		Macrophytes	-	-				
		Macrophytes and phytobenthos	Good	Good by 2015				
		Benthic invertebrates	Good	Good by 2015				
		Fish	Moderate	Good by 2027				
	Hydromorphology	**Hydrological regime**	Not assessed					
		River continuity	Not assessed					
		Morphological conditions	Not assessed					
	Physico-chemical	**General physico-chemical**	All good or high apart from phosphate and biochemical oxygen demand at moderate	Good by 2027				
		Specific pollutants:	Not assessed					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment					
		Priority substances	Does not require assessment					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**			
		Chemical	**Good**	**Good by 2015**	**N\A**			
		Overall	**Moderate**	**Good by 2027**	**N\A**			

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR101\WR101_Franklaw Z site_increased WTW capacity.docx
Abstraction license strategy (Lune and Wyre): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf

		Water body ID:		**GB112072065790**	**Scheme:**	**FRANKLAW Z SITE PLUS INCREASED FRANKLAW WTW TREATMENT CAPACITY**		
		Water body Name:		**New Draught Brook**	**Reference**	**WR101**		
		RBMP:		**North West**	**Scheme Phase**	**Construction**	**Operational**	
		Operational catchment:		**Brock and Trib**	**Impact potential**	**Direct**	**Direct**	
		Designation (and uses):		**No designation**				
		Relevant upstream water bodies:		**Barton (Westfield) Brook, Woodplumpton Brook**				
		Downstream water bodies:		**Brock**				
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity** Medium level of impact. Increased abstraction of 30 Ml/d (from approximately 98 Ml/d recent use, to approx. 128 Ml/d), split across several Franklaw and Broughton borehole sites. The increased abstraction quantity is within the current licence quantity for the borehole group (maximum aggregated daily peak of 190 Ml/d). The Abstraction Licensing Strategy (ALS) indicates that there is no water available for the groundwater body in which the abstraction boreholes are located. This means that more water has been abstracted based on recent amounts than the amount available. In this surface water body there is no surface water available at Q95, Q70 and Q50 but limited water available at Q30. The Environment Agency have classified these abstractions as Category 3 which means that based on full use of the abstraction licence deterioration is likely after 2027. The recent actual abstraction rates are not causing deterioration. It is not clear at which abstraction rate between recent actual and fully licenced deterioration would start to occur. Based on the evidence above, that there may be good hydraulic connections between the principal sandstone aquifer and water courses, and that the Franklaw K and J sites are within 500 m of the River Brock ad the Old River Brock, it is considered that there is the potential for widespread or prolonged effects on the hydrological regime of the surface water body, although this is associated with a number of uncertainties (such as if abstraction will increase at the Franklaw K and J sites).	**Low**
		Macrophytes	-	-					
		Macrophytes and phytobenthos	Poor	Good by 2027					
		Benthic invertebrates							
		Fish	Poor	Good by 2027					
	Hydromorphology	**Hydrological regime**	Supports good	Supports good by 2015					
		River continuity							
		Morphological conditions	Supports good	-					
	Physico-chemical	**General physico-chemical**	All good or high apart from dissolved oxygen and phosphate which are poor.	Good by 2027.					
		Specific pollutants:	Copper: high	High by 2015					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment	Does not require assessment					
		Priority substances	Does not require assessment	Does not require assessment					
Overall Status\ Potential		**Ecological**	**Poor**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR101\WR101_Franklaw Z site_increased WTW capacity.docx
Abstraction license strategy (Lune and Wyre): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf

		Water body ID:		**GB112072065800**	**Scheme:**	**FRANKLAW Z SITE PLUS INCREASED FRANKLAW WTW TREATMENT CAPACITY**			
		Water body Name:		**Barton (Westfield) Brook**	**Reference**	**WR101**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Brock and Trib**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		-					
		Downstream water bodies:		**New Draught Brook**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity** Medium level of impact. Increased abstraction of 30 Ml/d (from approximately 98 Ml/d recent use, to approx. 128 Ml/d), split across several Franklaw and Broughton borehole sites. The increased abstraction quantity is within the current licence quantity for the borehole group (maximum aggregated daily peak of 190 Ml/d). The Abstraction Licensing Strategy (ALS) indicates that there is no water available for the groundwater body in which the abstraction boreholes are located. This means that more water has been abstracted based on recent amounts than the amount available. In this surface water body there is no surface water available at Q95, Q70 and Q50 but limited water available at Q30. The Environment Agency have classified these abstractions as Category 3 which means that based on full use of the abstraction licence deterioration is likely after 2027. The recent actual abstraction rates are not causing deterioration. It is not clear at which abstraction rate between recent actual and fully licenced deterioration would start to occur. Based on the evidence above, that there may be good hydraulic connections between the principal sandstone aquifer and water courses, and that the Broughton G, E and D sites are within between 400 m and 700 m of the Barton Brook, it is considered that there is the potential for widespread or prolonged effects on the hydrological regime of the surface water body, although this is associated with a number of uncertainties (such as if abstraction will increase at the Broughton G, E and D sites).	**Low**
		Macrophytes							
		Macrophytes and phytobenthos	Poor	Good by 2027					
		Benthic invertebrates	Moderate	Good by 2027					
		Fish	Poor	Good by 2027					
	Hydromorphology	**Hydrological regime**	Does not support good	Supports good by 2027					
		River continuity							
		Morphological conditions	Supports good	-					
	Physico-chemical	**General physico-chemical**	All high or good apart from biochemical oxygen demand which is moderate and phosphate which is poor	Good by 2027					
		Specific pollutants:	Copper: high	High by 2015					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment	Does not require assessment					
		Priority substances	Does not require assessment	Does not require assessment					
Overall Status\ Potential		**Ecological**	**Poor**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR101\WR101_Franklaw Z site_increased WTW capacity.docx
Abstraction license strategy (Lune and Wyre): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf

		Water body ID:		**GB112072065760**	**Scheme:**	**FRANKLAW Z SITE PLUS INCREASED FRANKLAW WTW TREATMENT CAPACITY**			
		Water body Name:		**Woodplumpton Brook**	**Reference**	**WR101**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Brock and Trib**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**New Draught Brook**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity** Medium level of impact. Increased abstraction of 30 Ml/d (from approximately 98 Ml/d recent use, to approx. 128 Ml/d), split across several Franklaw and Broughton borehole sites. The increased abstraction quantity is within the current licence quantity for the borehole group (maximum aggregated daily peak of 190 Ml/d). The Abstraction Licensing Strategy (ALS) indicates that there is no water available for the groundwater body in which the abstraction boreholes are located. This means that more water has been abstracted based on recent amounts than the amount available. In this surface water body there is no surface water available at Q95, Q70 and Q50 but limited water available at Q30. The Environment Agency have classified these abstractions as Category 3 which means that based on full use of the abstraction licence deterioration is likely after 2027. The recent actual abstraction rates are not causing deterioration. It is not clear at which abstraction rate between recent actual and fully licenced deterioration would start to occur. Based on the evidence above, that there may be good hydraulic connections between the principal sandstone aquifer and water courses, and that the Broughton A site is within 200 m of the Woodplumpton Brook, it is considered that there is the potential for widespread or prolonged effects on the hydrological regime of the surface water body, although this is associated with a number of uncertainties (such as if abstraction will increase at the Broughton A site).	**Low**
		Macrophytes	-	-					
		Macrophytes and phytobenthos	Moderate	Good by 2027					
		Benthic invertebrates	Moderate	Good by 2027					
		Fish							
	Hydromorphology	**Hydrological regime**	Does not support good	Supports good by 2027					
		River continuity							
		Morphological conditions	Supports good	-					
	Physico-chemical	**General physico-chemical**	All high apart from amonia which is moderate, and biochemical oxygen demand and phosphate which are poor	Good by 2027					
		Specific pollutants:	-	Not assessed					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment	Does not require assessment					
		Priority substances	Does not require assessment	Does not require assessment					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR101\WR101_Franklaw Z site_increased WTW capacity.docx
Abstraction license strategy (Lune and Wyre): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf

		Water body ID:		**GB41201G100500**	**Scheme:**	**FRANKLAW Z SITE PLUS INCREASED FRANKLAW WTW TREATMENT CAPACITY**			
		Water body Name:		**Fylde Permo-Triassic Sandstone Aquifers**	**Reference**	**WR101**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Fylde Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** Minor level of impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity** Medium level of impact. Increased abstraction of 30 Ml/d (from approximately 98 Ml/d recent use, to approx. 128 Ml/d), split across several Franklaw and Broughton borehole sites. The increased abstraction quantity is within the current licence quantity for the borehole group (maximum aggregated daily peak of 190 Ml/d). The Abstraction Licensing Strategy (ALS) indicates that there is no water available for the groundwater body in which the abstraction boreholes are located. This means that more water has been abstracted based on recent amounts than the amount available. Therefore the increased abstraction could cause deterioration in the quantitative water balance of the aquifer. The Environment Agency have classified these abstractions as Category 3 which means that based on full use of the abstraction licence deterioration is likely after 2027. The recent actual abstraction rates are not causing deterioration. It is not clear at which abstraction rate between recent actual and fully licenced deterioration would start to occur. Based on the evidence above, it is considered that there is the potential for widespread or prolonged effects on WFD status, although this is associated with a number of uncertainties (such as the exact location of abstraction increases, and the abstraction rates at which deterioration would occur) **Use of water treatment works.** No or minimal impact.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	-						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2027**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR101\WR101_Franklaw Z site_increased WTW capacity.docx
Abstraction license strategy (Lune and Wyre): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf

		Water body ID:		**GB112069061210**	**Scheme:**	**ECCLESTON HILL BOREHOLE TO PRESCOT WTW**			
		Water body Name:		**Hardshaw (Windle) Brook**	**Reference**	**WR102d**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Sankey**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**N/A**					
		Downstream water bodies:		**Sankey Brook (Hardshaw Brook to Rainford Brook**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **New / modified water treatment works.** No or minimal impact. **Abstraction refurbishment.** No or minimal impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Minor level of impact. Increase in daily peak abstraction rates at Eccleston Hill borehole, but no change to overall annual licence quantity or other conditions. There may short term localised impacts on the hydrological regime of surface water courses due to increased daily abstraction rates but as the overall abstraction quantity is unchanged these should not have a long term impact on the status of the water body as a whole. **Use of pipelines.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Moderate						
		Fish	-						
	Hydromorphology	**Hydrological regime**	Does not support good						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemic	**General physico-chemical**	All high except Phosphate-moderate						
		Specific pollutants:	Triclosan is high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR102d\WR102d_Eccleston Hill BH to Prescot.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=5114
EA Historical Landfill: http://maps.environment-
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB41201G101700**	**Scheme:**	**ECCLESTON HILL BOREHOLE TO PRESCOT WTW**			
		Water body Name:		**Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers**	**Reference**	**WR102d**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Abstraction well refurbishment.** Minor level of impact **Abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Minor level of impact. Increase in daily peak abstraction rates at Eccleston Hill borehole, but no change to overall annual licence quantity or other conditions. The abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body. The may be localised temporary changes to the status of the groundwater body, but as the overall abstraction quantity is unchanged these should not have a long term impact on the status of the water body as a whole. **Use of pipeline.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Poor						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Poor						
		General Chemical Test	Good						
	Supporting Element	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\ Potential		**Quantitative**	**Poor**	**Good by 2027**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.

5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.

7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR102d\WR102d_Eccleston Hill BH to Prescot.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&scale=7
EA Historical Landfill: http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=waste&layerGroups=default&lang=_e&ep=map&scale=1&x=357682.99999999994&y=355133.99999999994#x=322374&y=497910&lg=1,2,3,10,&scale=7
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**170**	**Scheme:**	**Milwr Tunnel, Bagillt (Transfer to Huntington)**			
		Water body Name:		**Non reportable water body to north of River Mersey**	**Reference**	**WR047a**			
		RBMP:		**N/A**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Sankey**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N/A**					
		Downstream water bodies:		**N/A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	N/A			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **Abstraction well refurbishment.** No or minimal impact. **Abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Minor level of impact. New groundwater abstraction of 1.35 Ml/d annual average and 9 Ml/d peak capacity from the Bold Heath boreholes. A new abstraction licence would be required from the Environment Agency. The Abstraction Licensing Strategy (ALS) for Lower Mersey and Alt indicates that there is restricted water available in the groundwater body, but there is water available at all flows in the surface water body. Impacts on the hydrological regime of the surface water body are likely to be localised and temporary. **Transfer pipe line.** No or minimal impact.	**High**
		Macrophytes	N/A						
		Macrophytes and phytobenthos	N/A						
		Benthic invertebrates	N/A						
		Fish	N/A						
	Hydromorphology	**Hydrological regime**	N/A						
		River continuity	N/A						
		Morphological conditions	N/A						
	Physico-chemical	**General physico-chemical**	N/A						
		Specific pollutants:	N/A						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	N/A						
		Priority substances	N/A						
Overall Status\ Potential		**Ecological**	**N/A**	**N/A**	**N\A**				
		Chemical	**N/A**	**N/A**	**N\A**				
		Overall	**N/A**	**N/A**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=
EA Historical Landfill: http://maps.environment-
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB41201G101700**	**Scheme:**	**BOLD HEATH BOREHOLES TO PRESCOT WTW**			
		Water body Name:		**Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers**	**Reference**	**WR102e**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **Abstraction well refurbishment.** Minor level of impact. **Abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Minor level of impact. New groundwater abstraction of 1.35 Ml/d annual average and 9 Ml/d peak capacity from the Bold Heath boreholes. A new abstraction licence would be required from the Environment Agency. The Abstraction Licensing Strategy (ALS) for the Lower Mersey and Alt indicates that there is restricted water available in the groundwater body. Communication from the Environment Agency to UU indicates that there is 3 Ml/d of available resource in the Groundwater Management Unit (annual daily average volume) and that a peak abstraction rate of 9 Ml/d may be possible. The proposed annual average abstraction is less than the available resource so this new abstraction would not have have a widespread or prolonged impact on the WFD status of the groundwater body. **Transfer pipe line.** No or minimal impact.	**High**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Poor						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Poor						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\ Potential		**Quantitative**	**Poor**	**Good by 2027**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.

7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR102e\WR102e_Bold Heath BHs to Prescot.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&scale=7
EA Historical Landfill: http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=waste&layerGroups=default&lang=_e&ep=map&scale=1&x=357682.99999999994&y=355133.99999999994#x=322374&y=497910&lg=1,2,3,10,&scale=7
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy
Personal email communication email between the EA and UU 20/12/2016.

		Water body ID:		**GB112068060520**	**Scheme:**	**WALTON AND DARESBURY BOREHOLES**			
		Water body name:		**Keckwick Brook**	**Reference**	**WR106**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Lower**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**heavily modified**					
		Relevant upstream water bodies:		**n/a**					
		Downstream water bodies:		**Mersey**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Reinstate and refurbish abstraction boreholes.** No or Minimal Impact Expected. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact.	**High**	**New/increased groundwater abstraction quantity.** Minor level of impact. Reinstatement of boreholes at Daresbury. Maximum output of 4.5 Ml/d based on existing abstraction licence. The ALS does not identify a GWMU for this area, but does show that surface water is available across the full flow regime. Given that there is already an abstraction licence in place, the moderate size of the abstraction, the availability of surface water, and that there are unlikely to be strong dependencies between the secondary aquifer and the surface watercourses, the use of the boreholes is not expected to have a widespread or prolonged effect on the hydrological regime of this water body. **Use of new transfer pipe line.** No or minimal impact.	**Medium**
		Macrophytes							
		Macrophytes and phytobenthos							
		Benthic invertebrates	Bad	Good by 2027	N\A				
		Fish	Poor	Good by 2027	N\A				
	Hydromorphology	**Hydrological regime**	Supports Good	Supports Good by 2015	N\A				
		River continuity							
		Morphological conditions	Supports Good	Supports Good by 2015	N\A				
	Physico-chemical	**General physico-chemical**	Moderate	Good by 2027	N\A				
		Specific pollutants:	High	High by 2015	N\A				
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good	Good by 2015	N\A				
		Priority substances	Good	Good by 2015	N\A				
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR106
Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB169**	**Scheme:**	**WALTON AND DARESBURY BOREHOLES**			
		Water body Name:		**Non-reportable water b**	**Reference:**	**WR106**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Lower**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Reinstate and refurbish abstraction boreholes.** No or Minimal Impact Expected. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New water treatment works.** No or minimal impact.	**High**	**New/increased groundwater abstraction quantity.** Minor level of impact. Reinstatement of boreholes at Whalton. Maximum output of 3.9 Ml/d based on existing abstraction licence. The ALS does not identify a GWMU for this area, but does show that surface water is available across the full flow regime. Given that there is already an abstraction licence in place, the moderate size of the abstraction, the availability of surface water, and that there are unlikely to be strong dependencies between the secondary aquifer and the surface watercourses, the use of the boreholes is not expected to have a widespread or prolonged effect on the hydrological regime of the non reportable water body. **Use of new transfer pipe line and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	-						
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	-						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	-						
		Priority substances	-						
Overall Status\Potential		**Ecological**	-	-					
		Chemical	-	-					
		Overall	-	-					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR105b\WR105b - Lymm BHs (Hill Cliffe).xlsx
Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB41202G991700**	**Scheme:**	**WALTON AND DARESBURY BOREHOLES**			
		Water Body Name:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Reference**	**WR106**			
		RBMP:			**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver and Dane Quaternary Sand and Gravel Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative**	Good	Good by 2015	N/A	**New abstraction well drilling / refurbishment.** Minor level of impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact.	**High**	**New/increased groundwater abstraction quantity.** Minor level of impact. Reinstatement of boreholes at Whalton and Daresbury. Maximum output of 8.45 Ml/d based on existing abstraction licence. The ALS does not identify a GWMU for this area, but does show that surface water is available across the full flow regime. Given that there is already an abstraction licence in place, the moderate size of the abstraction, and the availability of surface water the use of the boreholes in expected to only have a minor localised and temporary effect on the quantitative status of the groundwater body. **Use of new transfer pipe line.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good	Good by 2015	N/A				
		Quantitative Saline Intrusion	Good	Good by 2015	N/A				
		Quantitative Water Balance	Good	Good by 2015	N/A				
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**							
		Chemical Drinking Water Protected Area	Good	Good by 2015	N/A				
		Chemical GWDTEs test	Poor	Good by 2027	N/A				
		Chemical Saline Intrusion	Good	Good by 2015	N/A				
		General Chemical Test	Poor	Good by 2027	N/A				
	Supporting Elements (groundwater)	**Prevent and Limit Objective**							
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR106
Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB112069060640**	**Scheme:**	**Aughton Park & Moss End Boreholes (Royal Oak WTW)**			
		Water body Name:		**Downholland (Lydiate/Cheshires Lines) Brook**	**Reference**	**WR107a**			
		RBMP:		**Alt and Crossens**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Alt**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Downholland Brook**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **Modified water treatment works.** No or minimal impact. **New abstraction well drilling / refurbishment.** No or minimal impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity to (44Ml/d to 54Ml/d).** Medium level of impact. New abstraction of 10 Ml/d from two refurbished boreholes at Aughton Park and Moss End. There may be effects on the quantitative water balance of the aquifer as the abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body. There is water available in the surface water body at Q30, Q50 and Q70. **Use of pipe lines and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Poor						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Does not support good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good excep: Phosphate- moderate						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Poor**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR107a\WR107a_Aughton Park_Moss End Boreholes (Royal Oak WTW).xltx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&
EA Historical Landfill: http://maps.environment-
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB41201G101700**	**Scheme:**	**Aughton Park & Moss End Boreholes (Royal Oak WTW)**			
		Water body Name:		**Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers**	**Reference**	**WR107a**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **Modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** Minor level of impact. **Abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Medium level of impact. New abstraction of 10 Ml/d from two refurbished boreholes at Aughton Park and Moss End. There may be effects on the quantitative water balance of the aquifer as the abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body. **Transfer pipe line and water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Poor						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Poor						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Poor						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Poor**	**Good by 2027**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR107a\WR107a_Aughton Park_Moss End Boreholes (Royal Oak WTW).xltx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=34470
EA Historical Landfill: http://maps.environment-
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB112069060640**	**Scheme:**	**Aughton Park & Moss End Boreholes (Royal Oak WTW)**			
		Water body Name:		**Downholland (Lydiate/Cheshires Lines) Brook**	**Reference**	**WR107ai**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Alt**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Downholland Brook**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **Modified water treatment works.** No or minimal impact. **New abstraction well drilling / refurbishment.** No or minimal impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity to (44Ml/d to 54Ml/d).** Medium level of impact. New abstraction of 10 Ml/d from two refurbished boreholes at Aughton Park and Moss End. There may be effects on the quantitative water balance of the aquifer as the abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body. There is water available in the surface water body at Q30, Q50 and Q70. **Use of pipe lines and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Poor						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Does not support good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good excep: Phosphate- moderate						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status|Potential		**Ecological**	**Poor**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR107a\WR107a_Au
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-stra

		Water body ID:		**GB41201G101700**	**Scheme:**	**Aughton Park & Moss End Boreholes (Royal Oak WTW)**			
		Water body Name:		**Basin and North Merseyside Permo-**	**Reference**	**WR107ai**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Lower and Merseyside North**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **Modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** Minor level of impact. **Abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** **M**edium level of impact. New abstraction of 10 Ml/d from two refurbished boreholes at Aughton Park and Moss End. There may be effects on the quantitative water balance of the aquifer as the abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body. **Transfer pipe line and water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Poor						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Poor						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Poor						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Poor**	**Good by 2027**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, ar
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR107a\WR107a_Aughton Park_Moss End Boreholes (Royal Oak WTW).xltx
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB112063060610**	**Scheme:**	**Randles Bridge, Knowsley, Primrose Hill**			
		Water body Name:		**Croxteth/ Knowsley Brook**	**Reference**	**WR107b**			
		RBMP:		**Alt and Crossens**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Alt**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Alt US Bull Bridge**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Abstraction well refurbishment.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **Modified water treatment works.** No or minimal impact.	**High**	**Reinstated groundwater abstraction quantity.** Minor level of impact. Reinstatement of boreholes at Randles Bridge, and Knowsley (Primrose Hill also reinstated but located approx. 14 km to the north). Maximum combined output of 8 Ml/d (at Randles Bridge, and Knowsley) based on exisiting abstraction licence. The ALS indicates that groundwater is limited in this area, but also shows that surface water is available across the full flow regime. Given that there is already an abstraction licence in place, and the availability of surface water, the use of the boreholes is not expected to have a widespread or prolonged effect on the hydrological regime of this water body. **Use of new transfer pipe line and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Poor						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- moderate						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR0
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3004

		Water body ID:		**GB112070064830**	**Scheme:**	**Randles Bridge, Knowsley, Primrose Hill**			
		Water body Name:		**Three Pool's Waterway**	**Reference**	**WR107b**			
		RBMP:		**Alt and Crossens**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Crossens System**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Back Drain and Sluice**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Abstraction well refurbishment.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **Modified water treatment works.** No or minimal impact.	**High**	**Reinstated groundwater abstraction quantity.** Minor level of impact. Reinstatement of boreholes at Primrose Hill (Randles Bridge and Knowsley also reinstated but located approx. 14 km to the south). Maximum output of 4 Ml/d (at Primrose Hill) based on exisiting abstraction licence. The ALS indicates that groundwater is limited in this area, but also shows that surface water is available across the full flow regime. Given that there is already an abstraction licence in place, and the availability of surface water, the use of the borehole is not expected to have a widespread or prolonged effect on the hydrological regime of this water body. **Use of new transfer pipe line and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	High						
		Benthic invertebrates	Moderate						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- moderate						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 St
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT

		Water body ID:		**GB41201G101700**	**Scheme:**	**Randles Bridge, Knowsley, Primrose Hill**			
		Water body Name:		**Lower Mersey Basin and North Merseyside Permo-Triassic Sanstone Aquifers**	**Reference**	**WR107b**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Abstraction well refurbishment.** Minor level of impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **Modified water treatment works.** No or minimal impact.	**High**	**Reinstated groundwater abstraction quantity.** Medium level of impact. Reinstatement of boreholes at Randles Bridge, Knowsley and Primrose Hill. Maximum combined output of 11 Ml/d based on exisiting abstraction licence. The ALS indicates that groundwater is limited in this area, but also shows that surface water is available across the full flow regime. Although there is an abstraction licence in place, it is assumed that the abstractions have not been used in recent time. The moderate size of the abstraction, and the limited availability of groundwater, means that there may be widespread or prolonged impacts on the on the quantitative status of the groundwater body. **Use of new transfer pipe line and water treatment works.** No or minimal impact.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Poor						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Poor						
		General Chemical Test	Good						
	Supporting Element	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\ Potential		**Quantitative**	**Poor**	**Good by 2027**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB112069061111**	**Scheme:**	**SWINESHAW BOREHOLES (BUCKTON CASTLE WTW)**			
		Water body name:		**Tame (Chew Brook to Swines**	**Reference**	**WR109**			
		RBMP:		**Mersey Upper**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**heavily modified**					
		Relevant upstream water bodies:		**Tame (Source to Chew Brook),Chew Brook**					
		Downstream water bodies:		**Tame (Swineshaw Brook to Mersey)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**New outfall to river.** Minor level of impact. **Transfer of water via river.** Minor level of impact. **New abstraction well drilling / refurbishment.** No or minimal impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Minor level of impact. New abstraction of 4 Ml/d from refurbished boreholes at Swineshaw. Previous abstraction licence revoked in 1992. The surface water body has water available across all flows, indicating that any reduction in surface water flow due to this new relatively small abstraction may not cause a deterioration in water body status. The abstracted water is discharged to the surface water system, further limiting any impacts of reduced baseflow.	**Medium**
		Macrophytes							
		Macrophytes and phytobenthos							
		Benthic invertebrates	Moderate	Good by 2027	N\A				
		Fish							
	Hydromorphology	**Hydrological regime**							
		River continuity							
		Morphological conditions			N\A				
	Physico-chemical	**General physico-chemical**	Good	Good by 2015	N\A				
		Specific pollutants:	High	High by 2015	N\A				
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment	Does not require assessment	N\A				
		Priority substances	Does not require assessment	Does not require assessment	N\A				
Overall Status\Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Moderate by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/publications/upper-mersey-abstraction-licensing-strategy

		Water body ID:		**GB41202G102900**	**Scheme:**	**SWINESHAW BOREHOLES (BUCKTON CASTLE WTW)**			
		Water Body Name:		**Manchester and East Cheshire Carboniferous Aquifers**	**Reference**	**WR109**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester and East Cheshire Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good	Good by 2015	N/A	**Abstraction well refurbishment.** Minor level of impact. **Abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Minor level of impact. New abstraction of 4 Ml/d from refurbished boreholes at Swineshaw. Previous abstraction licence revoked in 1992. There is no groundwater management unit defined in the ALS for this location. The surface water body has water available across all flows, indicating that groundwater may be available for this relatively small new licence. **Transfer pipe line.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good	Good by 2015	N/A				
		Quantitative Saline Intrusion	Good	Good by 2015	N/A				
		Quantitative Water Balance	Good	Good by 2015	N/A				
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**							
		Chemical Drinking Water Protected Area	Poor	Good by 2027	N/A				
		Chemical GWDTEs test	Good	Good by 2015	N/A				
		Chemical Saline Intrusion	Good	Good by 2015	N/A				
		General Chemical Test	Good	Good by 2015	N/A				
	Supporting Elements (groundwater)	**Prevent and Limit Objective**							
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/publications/upper-mersey-abstraction-licensing-strategy

		Water body ID:		**GB112068060180**	**Scheme:**	**Ruston Spencer Boreholes**			
		Water body Name:		**Dane (Clough Brook to Cow Brook)**	**Reference**	**WR110**			
		RBMP:		**Weaver Gowy**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Dane**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Clough Brook and Dane (Source to Clough Brook)**					
		Downstream water bodies:		**Dane (cow Brook to Wheelock)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**No construction activities.**	**High**	**Increased groundwater abstraction quantity.** Medium level of impact. Increase in groundwater abstraction of 2 Ml/d from Rushton Spencer boreholes. The ALS does not identify a groundwater management unit in this area, but the surface water body has limited water available at Q95 and Q50 (water available at Q70 and Q30), indicating there is some pressure on water resources in the area. However the new licence quantity is relatively small.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	High						
		Benthic invertebrates	Good						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high/good						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Poor**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
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6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=34
EA Historical Landfill: http://maps.environment-
Weaver and Dane ALS: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52dcff.pdf

		Water body ID:		**GB41202G102900**	**Scheme:**	**Ruston Spencer Boreholes**				
		Water body Name:		**Manchester and East Cheshire Carboniferous Aquifer**	**Reference**	**WR110**				
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Manchester and Cheshire East Carboniferous Aquifer**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**Not identified**						
		Downstream water bodies:		**Not identified**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**No construction activities.**	**High**	**Increased groundwater abstraction quantity.** Medium level of impact. Increase in groundwater abstraction of 2 Ml/d from Rushton Spencer boreholes. The ALS does not identify a groundwater management unit in this area, but the surface water body has limited water available at Q95 and Q50 (water available at Q70 and Q30), indicating there is some pressure on water resources in the area. However the new licence quantity is relatively small.	**Medium**	
		Quantitative GWDTEs test	Good							
		Quantitative Saline Intrusion	Good							
		Quantitative Water Balance	Good							
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good							
		Chemical Drinking Water Protected Area	Poor							
		Chemical GWDTEs test	Good							
		Chemical Saline Intrusion	Good							
		General Chemical Test	Good							
	Supporting Elements	**Prevent and Limit Objective**	Not provided							
		Trend Assessment	Upward trend							
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**					
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**					
		Overall	**Poor**	**Good by 2027**	**N/A**					

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Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=3
EA Historical Landfill: http://maps.environment-
Weaver and Dane ALS: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52dcff.pdf

		Water body ID:		**GB112069061360**	**Scheme:**	**WOODFORD BOREHOLE**			
		Water body name:		**Dean (Bollington to Bollin)**	**Reference**	**WR111**			
		RBMP:		**Mersey Upper**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Bollin Dean Mersey Upper**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**not designated artificial or heavily modified**					
		Relevant upstream water bodies:		**Dean (Lamaload to Bollington),Harrop Brook**					
		Downstream water bodies:		**Bollin (River Dean to Ashley Mill)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**New abstraction well drilling / refurbishment.** No or minimal impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Minor level of impact. Increase in abstraction quantity at Woodford borehole from current licensed quantity of 9 Ml/d to 12 Ml/d. ALS indicates restricted water available from the GWMU for this area. Surface water is available at high flows (Q30 and Q50, but has limited availability at lower flows (Q70 and Q95). Lower flows are likely to be dependent on baseflow from the underlying Permo-Triassic aquifer which could be reduced by additional abstraction. However, given that there is an existing abstraction licence, the additional volume required is relatively small, and that the ALS indicates there is some water available, it is unlikely that the increased abstraction would have widespread or prolonged effects on the hydrological regime of surface watercourses. A variation to the abstraction licence would be required from the Environment Agency.	**Medium**
		Macrophytes							
		Macrophytes and phytobenthos	Poor	Good by 2027	N\A				
		Benthic invertebrates	Moderate	Moderate by 2015	N\A				
		Fish	Good	Good by 2015	N\A				
	Hydromorphology	**Hydrological regime**	Supports Good	Supports Good by 2015	N\A				
		River continuity							
		Morphological conditions	Supports Good		N\A				
	Physico-chemical	**General physico-chemical**	Moderate	Good by 2027	N\A				
		Specific pollutants:			N\A				
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment	Does not require assessment	N\A				
		Priority substances	Does not require assessment	Does not require assessment	N\A				
Overall Status\Potential		**Ecological**	**Poor**	**Moderate by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Poor**	**Moderate by 2027**	**N\A**				

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5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
Abstraction Licensing Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB41201G101100**	**Scheme:**	**WOODFORD BOREHOLE**			
		Water Body Name:		**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	**Reference**	**WR111**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester and Cheshire East Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative**	Poor	Good by 2021	N/A	**New abstraction well drilling / refurbishment.** Minor level of impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Minor level of impact. Increase in abstraction quantity at Woodford borehole from current licensed quantity of 9 Ml/d to 12 Ml/d. ALS indicates restricted water available from the GWMU for this area. Surface water is available at high flows (Q30 and Q50, but has limited availability at lower flows (Q70 and Q95). Given the existing abstraction licence, the relatively small additional volume required, and that the ALS indicates there is some water available, it is unlikely that the increased abstraction would have widespread or prolonged effects on the quantitative water balance of the groundwater body as a whole. A variation to the abstraction licence would be required from the Environment Agency.	**Medium**
		Quantitative GWDTEs test	Good	Good by 2015	N/A				
		Quantitative Saline Intrusion	Poor	Good by 2021	N/A				
		Quantitative Water Balance	Good	Good by 2015	N/A				
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent**							
		Chemical Drinking Water Protected Area	Good	Good by 2015	N/A				
		Chemical GWDTEs test	Good	Good by 2015	N/A				
		Chemical Saline Intrusion	Poor	Good by 2021	N/A				
		General Chemical Test	Good	Good by 2015	N/A				
	Supporting Elements (groundwater)	**Prevent and Limit Objective**							
		Trend Assessment	Upward Trend						
Overall Status\Potential		**Quantitative**	**Poor**	**Good by 2021**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2021**	**N/A**				
		Overall	**Poor**	**Good by 2021**	**N/A**				

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7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
Abstraction Licensing Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112069061360**	**Scheme:**	**WOODFORD BOREHOLE**			
		Water body name:		**Dean (Bollington to Bollin)**	**Reference**	**WR111**			
		RBMP:		**Mersey Upper**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Bollin Dean Mersey Upper**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**not designated artificial or heavily modified**					
		Relevant upstream water bodies:		**Dean (Lamaload to Bollington),Harrop Brook**					
		Downstream water bodies:		**Bollin (River Dean to Ashley Mill)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Transfer pipe line on land.** No or minimal impact. **New abstraction well drilling.** No or minimal impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Medium level of impact. New groundwater abstraction from new borehole at Bramhall of 5 Ml/d. ALS indicates restricted water available from the GWMU for this area. Surface water is available at high flows (Q30 and Q50, but has limited availability at lower flows (Q70 and Q95). Given the limited water availability, particularly at low flows, and the moderate size of the proposed abstraction, there may be widespread or prolonged effects on the hydrological regime of the water body if baseflows are reduced (there are likely to be good connections between the principal Permo-Triassic aquifer and surface water bodies). A new abstraction licence would be required from the Environment Agency.	**Medium**
		Macrophytes							
		Macrophytes and phytobenthos	Poor	Good by 2027	N\A				
		Benthic invertebrates	Moderate	Moderate by 2015	N\A				
		Fish	Good	Good by 2015	N\A				
	Hydromorphology	**Hydrological regime**	Supports Good	Supports Good by 2015	N\A				
		River continuity							
		Morphological conditions	Supports Good		N\A				
	Physico-chemical	**General physico-chemical**	Moderate	Good by 2027	N\A				
		Specific pollutants:			N\A				
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment	Does not require assessment	N\A				
		Priority substances	Does not require assessment	Does not require assessment	N\A				
Overall Status\Potential		**Ecological**	**Poor**	**Moderate by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Poor**	**Moderate by 2027**	**N\A**				

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Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
Abstraction Licensing Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf
Aquifer designations: http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

		Water body ID:		**GB41201G101100**	**Scheme:**	**WOODFORD BOREHOLE**			
		Water Body Name:		**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	**Reference**	**WR111**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester and Cheshire East Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Poor	Good by 2021	N/A	**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New abstraction well drilling.** Minor level of impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Medium level of impact. New groundwater abstraction from new borehole at Bramhall of 5 Ml/d. ALS indicates restricted water available from the GWMU for this area. Surface water is available at high flows (Q30 and Q50, but has limited availability at lower flows (Q70 and Q95). Given the limited water availability, particularly at low flows, and the moderate size of the proposed abstraction, there may be widespread or prolonged effects on the quantitative water balance of the groundwater body or on dependent surface water bodies (there are likely to be good connections between the principal Permo-Triassic aquifer and surface water bodies. A new abstraction licence would be required from the Environment Agency.	**Medium**
		Quantitative GWDTEs test	Good	Good by 2015	N/A				
		Quantitative Saline Intrusion	Poor	Good by 2021	N/A				
		Quantitative Water Balance	Good	Good by 2015	N/A				
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**							
		Chemical Drinking Water Protected Area	Good	Good by 2015	N/A				
		Chemical GWDTEs test	Good	Good by 2015	N/A				
		Chemical Saline Intrusion	Poor	Good by 2021	N/A				
		General Chemical Test	Good	Good by 2015	N/A				
	Supporting Elements (Groundwater)	**Prevent and Limit Objective**							
		Trend Assessment	Upward Trend						
Overall Status\Potential		**Quantitative**	**Poor**	**Good by 2021**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2021**	**N/A**				
		Overall	**Poor**	**Good by 2021**	**N/A**				

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Engineers Proforma: Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
Abstraction Licensing Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf
Aquifer designations: http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

		Water body ID:		**GB112069061320**	**Scheme:**	**TYTHERINGTON BOREHOLES**			
		Water body name:		**Bollin (Source to Dean)**	**Reference**	**WR113**			
		RBMP:		**Mersey Upper**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Bollin Dean Mersey Upper**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**heavily modified**					
		Relevant upstream water bodies:		**n/a**					
		Downstream water bodies:		**Bollin (River Dean to Ashley Mill)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Transfer pipe line on land.** No or minimal impact. **Modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**Medium**	**Increased groundwater abstraction quantity.** Minor level of impact. Increased peak abstraction quantity of 3 Ml/d at refurbished Tytherington Boreholes. No changes to existing abstraction licence required. Any impacts of the status of the surface water body are likely to be temporary and localised as there is no overall increase in annual abstraction and the peak daily increase is relatively small. The abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body, but water is available in the surface water body across all flows. **Use of pipelines and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes							
		Macrophytes and phytobenthos	Moderate	Moderate by 2027	Moderate by 2027				
		Benthic invertebrates	Good	Good by 2027	N\A				
		Fish	Moderate	Moderate by 2027	Moderate by 2027				
	Hydromorphology	**Hydrological regime**							
		River continuity							
		Morphological conditions		Not assesed					
	Physico-chemic	**General physico-chemical**	Moderate	Moderate by 2027	Moderate by 2027				
		Specific pollutants:	High	High by 2027	N\A				
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment	Does not require assessment	N\A				
		Priority substances	Does not require assessment	N\A	N\A				
Overall Status\Potential		**Ecological**	**Moderate**	**Moderate by 2027**	**Moderate by 2027**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Moderate**	**Moderate by 2027**	**Moderate by 2027**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/publications/upper-mersey-abstraction-licensing-strategy

		Water body ID:		**GB41201G101100**	**Scheme:**	**TYTHERINGTON BOREHOLES**			
		Water Body Name:		**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	**Reference**	**WR113**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester and Cheshire East Permo-Triassic Sandstone Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative**	Poor	Good by 2027	N/A				
		Quantitative GWDTEs test	Good	Good by 2027	N/A				
		Quantitative Saline Intrusion	Poor	Good by 2027	N/A				
		Quantitative Water Balance	Good	Good by 2027	N/A				
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent**				**Transfer pipe line on land.** No or minimal impact. **Modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** Minor level of impact. **Abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Minor level of impact. Increased peak abstraction quantity of 3 Ml/d at refurbished Tytherington Boreholes. No changes to existing abstraction licence required. The abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body. However, any impacts of the status of the groundwater body are likely to be temporary and localised as there is no increase in the average annual abstraction and the peak daily increase is relatively small. **Transfer pipe line and treatment works.** No or minimal impact.	**Medium**
		Chemical Drinking Water Protected Area	Good	Good by 2027	N/A				
		Chemical GWDTEs test	Good	Good by 2027	N/A				
		Chemical Saline Intrusion	Poor	Good by 2027	N/A				
		General Chemical Test	Good	Good by 2027	N/A				
	Supporting Elements (groundwater)	**Prevent and Limit Objective**							
		Trend Assessment	Upward Trend	N/A					
Overall Status\Potential		**Quantitative**	**Poor**	**Good by 2027**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
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6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

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Engineers Proforma: Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/publications/upper-mersey-abstraction-licensing-strategy

		Water body ID:		**GB112069064720**	**Scheme:**	**PYTHON MILL BOREHOLE**			
		Water body name:		**Roch (Source to Spodden)**	**Reference**	**WR114**			
		RBMP:		**Irwell**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Roch Irk Medlock**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Beal**					
		Downstream water bodies:		**Roch (Spodden to Irwell)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Transfer pipe line on land.** No or minimal impact. **Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures**. No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Medium level of impact. New abstraction of up to 3 Ml/d from refurbished borehole at Python Mill. A new abstraction licence would be required from the Environment Agency. The ALS does not define a groundwater management unit for this area, but the surface water body has no water available across all flows, indicating there is pressure on water resources. The lack of water availability and the proximity of the borehole to the River Roch (approx. 150 m) means that there could be prolonged and widespread impacts on the surface water body. **Use of pipe line.** No or minimal impact.	**Low**
		Macrophytes							
		Macrophytes and phytobenthos	Moderate	Good by 2027	N\A				
		Benthic invertebrates	Good	Good by 2027	N\A				
		Fish	Moderate	Good by 2027	N\A				
	Hydromorphology	**Hydrological regime**							
		River continuity							
		Morphological conditions		Not assesed	N\A				
	Physico-chemical	**General physico-chemical**	High	Good by 2027	N\A				
		Specific pollutants:		High by 2027	High by 2027				
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good	Good by 2027	N\A				
		Priority substances	Good	Good by 2027	N\A				
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

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2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.
9 - A discharge license would need to be saught to meet environmental regulations for WFD for New discharge scour into Rochdale Canal

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/publications/northern-manchester-abstraction-licensing-strategy

		Water body ID:		**GB41202G101800**	**Scheme:**	**PYTHON MILL BOREHOLE**			
		Water Body Name:		**Northern Manchester Carboniferous Aquifers**	**Reference**	**WR114**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester Northern Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good	Good by 2027	N/A	**Transfer pipe line on land.** No or minimal impact. **New outfall to Rochdale Canal.** Minor level of impact. **Abstraction well refurbishment.** Minor level of impact **Abstraction well headworks / surface structures.** No or minimal impact	**High**	**New groundwater abstraction quantity.** Medium level of impact. New abstraction of up to 3 Ml/d from refurbished borehole at Python Mill. A new abstraction licence would be required from the Environment Agency. The ALS does not define a groundwater management unit for this area, but the surface water body has no water available across all flows, indicating there is pressure on water resources. **Transfer pipe line.** No or minimal impact. **Transfer of water via Rochdale Canal.** Minor level of impact.	**Low**
		Quantitative GWDTEs test	Good	Good by 2027	N/A				
		Quantitative Saline Intrusion	Good	Good by 2027	N/A				
		Quantitative Water Balance	Good	Good by 2027	N/A				
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**							
		Chemical Drinking Water Protected Area	Good	Good by 2027	N/A				
		Chemical GWDTEs test	Good	Good by 2027	N/A				
		Chemical Saline Intrusion	Good	Good by 2027	N/A				
		General Chemical Test	Good	Good by 2027	N/A				
	Supporting Element	**Prevent and Limit Objective**							
		Trend Assessment	Upward Trend	N/A					
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2027**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

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8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/publications/northern-manchester-abstraction-licensing-strategy

		Water body ID:		**GB112074069980**	**Scheme:**	**Egremont Boreholes (Existing)**			
		Water body Name:		**Ehen (lower)**	**Reference**	**WR119a**			
		RBMP:		**South West Lakes**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Ehen-Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Ehen (upper including Liza), Keekle (lower) and Kirk Beck (Ehen)**					
		Downstream water bodies:		**Cumbria Coastal Waters**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**No construction activities planned in this water body.** No or minimal impact.	**High**	**New groundwater abstraction.** Minor level of impact. Continuation of abstraction of 11 Ml/d from four existing boreholes at Merry Hill, Kellhead, Gully Flatts and Black Ling (only the Merry HIll and Gully Flatts boreholes are within this surface water body). The boreholes are planned for decommissioning in 2022 but this option would see abstraction continuing at current rates. The ALS states that there is groundwater available from the West Cumbria Groundwater Management Unit, but no water available across the flow regime in this surface water body. The ALS will take into account the effects of the current abstraction licence, so a continuation of abstraction is unlikely to reduce the availability of water further. It is assumed that the current abstraction would not have been recently licensed if it would cause a deterioration in WFD status, therefore it is unlikely that an extension to the licence would cause deterioration, however this cannot be guaranteed as the water environment may change between the recent licensing of the boreholes and 2022. A new abstraction licence would be required from the Environment Agency from 2022 onwards.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	High						
	Hydromorphology	**Hydrological regime**	Does not support good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high/good						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	All good						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

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3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
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5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR119b\WR119b Egre
Abstraction Licensing Strategies (CAMS process): https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

		Water body ID:		**GB353**	**Scheme:**	**Egremont Boreholes (Existing)**			
		Water body Name:		**Non reportable water bodies on St Bees Coast**	**Reference**	**WR119a**			
		RBMP:		**South West Lakes**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**-**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**-**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	N/A			**No construction activities planned in this water body.** No or minimal impact.	**High**	**New groundwater abstraction.** Minor level of impact. Continuation of abstraction of 11 Ml/d from four existing boreholes at Merry Hill, Kellhead, Gully Flatts and Black Ling (only the Kellhead and Black Ling boreholes are within this surface water body). The boreholes are planned for decommissioning in 2022 but this option would see abstraction continuing at current rates. The ALS states that there is groundwater available from the West Cumbria Groundwater Management Unit, and surface water available across the full flow regime in the surface water body. The ALS will take into account the effects of the current abstraction licence, so a continuation of abstraction is unlikely to reduce the availability of water further. It is assumed that the current abstraction would not have been recently licensed if it would cause a deterioration in WFD status, therefore it is unlikely that an extension to the licence would cause deterioration, however this cannot be guaranteed as the water environment may change between the recent licensing of the boreholes and 2022. A new abstraction licence would be required from the Environment Agency from 2022 onwards.	**Low**
		Macrophytes	N/A						
		Macrophytes and phytobenthos	N/A						
		Benthic invertebrates	N/A						
		Fish	N/A						
	Hydromorphology	**Hydrological regime**	N/A						
		River continuity	N/A						
		Morphological conditions	N/A						
	Physico-chemical	**General physico-chemical**	N/A						
		Specific pollutants:	N/A						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	N/A						
		Priority substances	N/A						
Overall Status\ Potential		**Ecological**	**N/A**	**N/A**	**N/A**				
		Chemical	**N/A**	**N/A**	**N/A**				
		Overall	**N/A**	**N/A**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
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6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR119b\WR119b Egremont Borehole
Abstraction Licensing Strategies (CAMS process): https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

		Water body ID:		**GB41201G102000**	**Scheme:**	**Egremont Boreholes (Existing)**			
		Water body Name:		**West Cumbria Permo-Triassic Sandstone Aquifers**	**Reference**	**WR119a**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**West Cumbria Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**No construction activities planned in this water body.** No or minimal impact.	**High**	**New groundwater abstraction.** Minor level of impact. Continuation of abstraction of 11 Ml/d from four existing boreholes at Merry Hill, Kellhead, Gully Flatts and Black Ling. The boreholes are planned for decommissioning in 2022 but this option would see abstraction continuing at current rates. The ALS states that there is groundwater available from the West Cumbria Groundwater Management Unit. There is surface water available across the flow regime in the water bodies associated with the Kellhead and Black Ling boreholes, but no water available across the flow regime in the surface water body associated with the Merry Hill and Gulley Flatts boreholes (River Ehen). The ALS will take into account the effects of the current abstraction licence, so a continuation of abstraction is unlikely to reduce the availability of water further. It is assumed that the current abstraction would not have been recently licensed if it would cause a deterioration in WFD status, therefore it is unlikely that an extension to the licence would cause deterioration, however this cannot be guaranteed as the water environment may change between the recent licensing of the boreholes and 2022. The boreholes are also located close to the coast so consideration should be given to the potential for saline intrusion into the aquifer with continued use. A new abstraction licence would be required from the Environment Agency from 2022 onwards.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwa	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	No trend						
Overall Status\ Potentia l		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
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Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\RZ\WR119b\WR119b Egremont Boreholes (New).xlsm
Abstraction Licensing Strategies (CAMS process): https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

		Water body ID:		**GB112074069980**	**Scheme:**	**Egremont Boreholes (New)**			
		Water body Name:		**Ehen (lower)**	**Reference**	**WR119b**			
		RBMP:		**South West Lakes**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Ehen-Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Ehen (upper including Liza), Keekle (lower) and Kirk Beck (Ehen)**					
		Downstream water bodies:		**Cumbria Coastal Waters**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New pumping station.** Minor level of impact. **Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Use of new transfer pipe line, and pumping station.** No or minimal impact. **New groundwater abstraction.** High level of impact. New abstraction of 2.5 Ml/d from a refurbished borehole at Catgill (plus a further 7.5 Ml/d from three new boreholes in other surface water bodies). The ALS states that there is groundwater available from the West Cumbria Groundwater Management Unit. There is no water available across the flow regime in the surface water body associated with the refurbished Catgill borehole (River Ehen). There is likely to be a strong hydraulic connection between the principal sandstone aquifer and the overlying surface courses. Although the proposed new abstraction from Catgill is relatively small, there is no water available from the River Ehen at any flows, and therefore there could be significant effects on the hydrological regime of the River Ehen, especially considering the close proximity of the borehole to the river (approx. 300 m), and when combined with the abstraction from the other boreholes. A new abstraction licence would be required from the Environment Agency.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	High						
	Hydromorphology	**Hydrological regime**	Does not support good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high/good						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	All good						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR119b\WR1
Abstraction Licensing Strategies (CAMS process): https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-pro

		Water body ID:		**GB353**	**Scheme:**	**Egremont Boreholes (New)**			
		Water body Name:		**Non reportable water bodies on St Bees Coast**	**Reference**	**WR119b**			
		RBMP:		**South West Lakes**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**-**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**-**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	N/A			**New abstraction well drilling / refurbishment.** No or minimal impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction.** Medium level of impact. New abstraction of 7.5 Ml/d from three new boreholes at Sandwith, Rottington and Moor Platts. The ALS states that there is groundwater available from the West Cumbria Groundwater Management Unit. There is surface water available across the flow regime in the non-reportable water bodies associated with the three new boreholes. Although there is water available in both the groundwater and surface water bodies, there is likely to be a strong hydraulic connection between the principal sandstone aquifer and the overlying surface water bodies. The water courses are small coastal streams, likely to be dependent on baseflow from the aquifer. Therefore the new moderately sized abstraction may have a widespread or prolonged effect on the hydrological regime of the water courses. A new abstraction licence would be required from the Environment Agency.	**Medium**
		Macrophytes	N/A						
		Macrophytes and phytobenthos	N/A						
		Benthic invertebrates	N/A						
		Fish	N/A						
	Hydromorphology	**Hydrological regime**	N/A						
		River continuity	N/A						
		Morphological conditions	N/A						
	Physico-chemical	**General physico-chemical**	N/A						
		Specific pollutants:	N/A						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	N/A						
		Priority substances	N/A						
Overall Status \Potential		**Ecological**	**N/A**	**N/A**	**N/A**				
		Chemical	**N/A**	**N/A**	**N/A**				
		Overall	**N/A**	**N/A**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR119b\WR119b Egremont Boreholes
Abstraction Licensing Strategies (CAMS process): https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

		Water body ID:		**GB41201G102000**	**Scheme:**	**Egremont Boreholes (New)**			
		Water body Name:		**West Cumbria Permo-Triassic Sandstone Aquifers**	**Reference**	**WR119b**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**West Cumbria Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **New abstraction well drilling / refurbishment.** Minor level of impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction.** Medium level of impact. New abstraction of 10 Ml/d from three new boreholes at Sandwith, Rottington and Moor Platts, plus a refurbished borehole at Catgill (2.5 Ml/d per borehole). The ALS states that there is groundwater available from the West Cumbria Groundwater Management Unit. There is surface water available across the flow regime in the water bodies associated with the three new boreholes, but no water available across the flow regime in the surface water body associated with the refurbished Catgill borehole (River Ehen). There is likely to be a strong hydraulic connection between the principal sandstone aquifer and the overlying surface water bodies, so while the new abstraction is unlikely to have a significant effect on the quantitative water balance of the groundwater body as a whole, it may have an impact on the quantitative status of dependent surface water bodies. The boreholes are also located close to the coast so consideration should be given to the potential for saline intrusion into the aquifer. A new abstraction licence would be required from the Environment Agency. **Use of new transfer pipe line, and pumping station.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Element	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	No trend						
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\RZ\WR119b\WR119b Egremont Boreholes (New).xlsm
Abstraction Licensing Strategies (CAMS process): https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

		Water body ID:		**GB112068060530**	**Scheme:**	**Cross Hill Boreholes, Wirral**			
		Water body Name:		**The Birket including Ar**	**Reference**	**WR120**			
		RBMP:		**Mersey Lower**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Wirral**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Mersey**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New water treatment works.** No or minimal impact. **New abstraction well drilling.** No or minimal impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity to 15Ml/d.** Medium level of impact. New 15 Ml/d abstraction licence from three new boreholes at Cross Hill. The abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body, but water available across all flows in the surface water body. The option includes revocation of existing licences at Hooton, Gorston and Spring Hill which may offset the impacts of the new abstraction. However only the Springhill abstraction is located within the same surface water body and all are some distance away (5 - 10 km). There may be strong connections between surface waters and the sandstone aquifer, meaning the change in abstraction patterns accross the aquifer may have an impact on the hydrological regime of the surface water body. **Use of water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Poor						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Ammonia- moderate, BOD- moderate, Dissolved oxygen- bad and Phosphate- poor						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR120\WR120_Cross Hill BHs.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&
EA Historical Landfill: http://maps.environment-
Abstraction Licensing Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		GB41101G202600	Scheme:	Cross Hill Boreholes, Wirral			
		Water body Name:		Permo-Triassic Sandstone Aquifers	Reference	WR120			
		RBMP:		North West GW	Scheme Phase	Construction		Operational	
		Operational catchment:		Cheshire Permo-Triassic Sandstone Aquifers	Impact potential	Direct		Direct	
		Designation (and uses):		No designation					
		Relevant upstream water bodies:		Not identified					
		Downstream water bodies:		Not identified					
		WFD Element *(Receptor)*	Status	RBMP objective	Alternate Objective if less than Good		Confidence		Confidence
WFD elements for Groundwater: Quantitative	Quantitative Status Element	Quantitative Dependent Surface Water Body Status	Good			**New water treatment works.** No or minimal impact. **New abstraction well drilling.** Minor level of impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Medium level of impact. New 15 Ml/d abstraction licence from three new boreholes at Cross Hill. The abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body (more water is licensed than the amount available, but recent actual abstractions are lower than the amount available). The option includes revocation of existing licences at Hooton, Gorston and Spring Hill. This will offset the impacts of the new abstraction on the quantitative water balance of the groundwater body as a whole. However, only one of these licences is within the same groundwater body as the Cross Hills site, and all are situated some distance away (5 to 10 km). There may therefore be prolonged or widespread impacts on the Quantitative Dependent Surface Water Body Status, or the Quantitative GWDTEs test status for example. **Water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	Chemical Status Element	Chemical Dependent Surface Water Body Status	Good						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	Prevent and Limit Objective	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		Quantitative	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR120\WR120_Cross Hill BHs.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=5114
EA Historical Landfill: http://maps.environment-
Abstraction Licensing Strategy(Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB112068060530**	**Scheme:**	**CROSS HILL BOREHOLES, WIRRAL**			
		Water body Name:		**The Birket including Ar**	**Reference:**	**WR120i**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Wirral**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Mersey**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New water treatment works.** No or minimal impact. **New abstraction well drilling.** No or minimal impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity to 15Ml/d.** Medium level of impact. New 15 Ml/d abstraction licence from three new boreholes at Cross Hill. The abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body, but water available across all flows in the surface water body. The option includes revocation of existing licences at Hooton, Gorston and Spring Hill which may offset the impacts of the new abstraction. However the exact location and the licenced quantities of these abstractions is unknown and there may be strong connections between surface waters and the sandstone aquifer, meaning this moderately sized new abstraction may have an impact on the hydrological regime of the surface water body. **Use of water treatment works.** No or minimal impact.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Poor						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Ammonia- moderate, BOD- moderate, Dissolved oxygen- bad and Phosphate- poor						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which wo
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR120\WR120_Cross Hill Boreholes, Wirral.docx
Abstraction Licensing Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB41101G202600**	**Scheme:**	**CROSS HILL BOREHOLES, WIRRAL**			
		Water body Name:		**Wirral and West Cheshire Permo-Triassic Sandstone Aquifers**	**Reference**	**WR120i**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Cheshire Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New water treatment works.** No or minimal impact. **New abstraction well drilling.** Minor level of impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Medium level of impact. New 15 Ml/d abstraction licence from three new boreholes at Cross Hill. The abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body, however the option includes revocation of existing licences at Hooton, Gorston and Spring HIll. This may offset the impacts of the new abstraction, but the exact location and the licenced quantities of these abstractions is unknown. **Water treatment works.** No or minimal impact.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estua
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR120\WR120_Cross Hill Boreholes, Wirral.docx
Abstraction Licensing Strategy(Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB112068055440**	**Scheme:**	**EATON BOREHOLES (Hollins Hill)**			
		Water body Name:		**Wettenhall Brook**	**Reference**	**WR121a**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Upper**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		-					
		Downstream water bodies:		**Ash Brook (Darley Brook to Weaver)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **New water treatment works.** No or minimal impact. **New pumping station.** No or minimal impact. **Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity** Minor level of impact. Restart abstraction from two refurbished boreholes at Eaton. Planned yield is 4.2 - 6.7 Ml/d, within the current abstraction licence of 7.3 Ml/d. No Groundwater Management Unit is defined in the ALS for this area, but surface water is available across the whole flow regime. Given the availability of surface water and that the boreholes are already licensed a widespread or prolonged impact on WFD status is unlikely. **New transfer pipe line, pumping station and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Poor						
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Supports Good						
		River continuity	-						
		Morphological conditions	Supports Good						
	Physico-chemical	**General physico-chemical**	Moderate						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR102a\WR102a_
Abstraction licensing strategy (Weaver and Dane): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52

		Water body ID:		**GB41202G9**	**Scheme:**	**EATON BOREHOLES (Hollins Hill)**				
		Water body Name:		**Weaver and**	**Reference**	**WR121a**				
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Weaver and**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**N\A**						
		Downstream water bodies:		**N\A**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good			**Transfer pipe line on land.** No or minimal impact. **New water treatment works.** No or minimal impact. **New pumping station.** No or minimal impact. **Abstraction well drilling refurbishment.** Minor level of impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity** Minor level of impact. Restart abstraction from two refurbished boreholes at Eaton. Planned yield is 4.2 - 6.7 Ml/d, within the current abstraction licence of 7.3 Ml/d. No Groundwater Management Unit is defined in the ALS for this area, but surface water is available across the whole flow regime. Given the availability of surface water and that the boreholes are already licensed a widespread or prolonged impact on WFD status is unlikely. **New transfer pipe line, pumping station and water treatment works.** No or minimal impact.	**Medium**	
		Quantitative GWDTEs test	Good							
		Quantitative Saline Intrusion	Good							
		Quantitative Water Balance	Good							
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Poor							
		Chemical Drinking Water Protected Area	Good							
		Chemical GWDTEs test	Poor							
		Chemical Saline Intrusion	Good							
		General Chemical Test	Poor							
	Supporting Elements	**Prevent and Limit Objective**	-							
		Trend Assessment	Upward trend							
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2027**	**N\A**					
		Chemical (GW)	**Good**	**Good by 2027**	**N\A**					
		Overall	**Good**	**Good by 2027**	**N\A**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR102a\WR102a_Widnes BHs to Prescot.do
Abstraction licensing strategy (Weaver and Dane): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52dcff.pdf

		Water body ID:		**GB112068055440**	**Scheme:**	**EATON BOREHOLES (Mid Cheshire Main)**			
		Water body Name:		**Wettenhall Brook**	**Reference**	**WR121b**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Upper**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Ash Brook (Darley Brook to Weaver)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **New water treatment works.** No or minimal impact. **New pumping station.** No or minimal impact. **Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity** Minor level of impact. Restart abstraction from two refurbished boreholes at Eaton. Planned yield is 4.2 - 6.7 Ml/d, within the current abstraction licence of 7.3 Ml/d. No Groundwater Management Unit is defined in the ALS for this area, but surface water is available across the whole flow regime. Given the availability of surface water and that the boreholes are already licensed a widespread or prolonged impact on WFD status is unlikely. **New transfer pipe line, pumping station and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Poor						
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Supports Good						
		River continuity	-						
		Morphological conditions	Supports Good						
	Physico-chemical	**General physico-chemical**	Moderate						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR102b\WR102
Abstraction licensing strategy (Weaver and Dane): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_

		Water body ID:		**GB41202G9**	**Scheme:**	**EATON BOREHOLES (Mid Cheshire Main)**				
		Water body Name:		**Weaver and**	**Reference**	**WR121b**				
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Weaver and**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**N\A**						
		Downstream water bodies:		**N\A**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good			**Transfer pipe line on land.** No or minimal impact. **New water treatment works.** No or minimal impact. **New pumping station.** No or minimal impact. **Abstraction well drilling refurbishment.** Minor level of impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity** Minor level of impact. Restart abstraction from two refurbished boreholes at Eaton. Planned yield is 4.2 - 6.7 Ml/d, within the current abstraction licence of 7.3 Ml/d. No Groundwater Management Unit is defined in the ALS for this area, but surface water is available across the whole flow regime. Given the availability of surface water and that the boreholes are already licensed a widespread or prolonged impact on WFD status is unlikely. **New transfer pipe line, pumping station and water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good							
		Quantitative Saline Intrusion	Good							
		Quantitative Water Balance	Good							
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Poor							
		Chemical Drinking Water Protected Area	Good							
		Chemical GWDTEs test	Poor							
		Chemical Saline Intrusion	Good							
		General Chemical Test	Poor							
	Supporting Elements	**Prevent and Limit Objective**	-							
		Trend Assessment	Upward trend							
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2027**	**N\A**					
		Chemical (GW)	**Good**	**Good by 2027**	**N\A**					
		Overall	**Good**	**Good by 2027**	**N\A**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR102b\WR102b_Widnes BHs to Liverpool a
Abstraction licensing strategy (Weaver and Dane): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52dcff.pdf

		Water body ID:		**GB112068060550**	**Scheme:**	**Newton Hollows Boreholes**			
		Water body Name:		**Crowton Brook**	**Reference**	**WR122**			
		RBMP:		**Weaver Gowy**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Lower**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**(Source to Crowton Brook)**					
		Downstream water bodies:		**Weaver (Dane to Frodsham)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Abstraction well refurbishment.** No or minimal impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact. **New water treatment works.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity.** Medium level of impact. Restart abstraction from three refurbished boreholes at Newton Hollows. Peak output of 9 Ml/d in line with existing abstraction licence. The abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater management unit, and surface water flow is not available for licensing at Q95 and Q50, and restricted at Q30 and Q70. The ALS will take the existing abstraction licence into account. Although there is an abstraction licence in place and a new licence would not be required from the Environment Agency, restarting the abstraction could have an impact on the hydrological regime of the surface water body as water courses are likely to have a good hydraulic connection with the underlying principal sandstone aquifer.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	Moderate						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	Does not support good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high except: Ammonia-moderate and Phosphate-poor						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	All good						
Overall Status\Potential		**Ecological**	**Poor**	**Moderate by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Poor**	**Moderate by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR122\WR12
Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/L

		Water body ID:		**GB41101G202600**	**Scheme:**	**Newton Hollows Boreholes**			
		Water body Name:		**Permo-Triassic Sandstone Aquifers**	**Reference**	**WR122**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good			**Abstraction well refurbishment.** Minor level of impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact. **New water treatment works.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity.** Medium level of impact. Restart abstraction from three refurbished boreholes at Newton Hollows. Peak output of 9 Ml/d in line with existing abstraction licence. The abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater management unit, and surface water flow is not available for licensing at Q95 and Q50, and restricted at Q30 and Q70. The ALS will take the existing abstraction licence into account. Although there is an abstraction licence in place and a new licence would not be required from the Environment Agency, restarting the abstraction could have an impact on the quantitative water balance of the aquifer or of dependent surface water bodies.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR122\WR122 - Newton Hollows BHs.xlsm
Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

Water body ID:			**GB109054055150**	**Scheme:**	**Bearstone Boreholes**			
Water body Name:			**Tern- source to conf Loggerheads Bk**	**Reference**	**WR125**			
RBMP:			**Severn Middle Shropshire**	**Scheme Phase**	**Construction**		**Operational**	
Operational catchment:			**North Shropshire**	**Impact potential**	**Direct**		**Direct**	
Designation (and uses):			**No designation**					
Relevant upstream water bodies:			**Not identified**					
Downstream water bodies:			**Tern- conf Loggerheads Bk to conf Bailey Bk**					
	WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided		**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **New / modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** Minor level of impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity.** Medium level of impact. Restart groundwater abstraction from two refurbished boreholes near Bearstone. Abstraction rates of 4.98 - 6.36 Ml/d, within the current abstraction licence quantity. The ALS identifies that water is not available from the groundwater management unit, and is limited at Q50, Q70 and Q95 (available at Q30) in the surface water body. The ALS will take the current abstraction licence into account. Given the restricted availability of water, and the proximity to the River Tern, restarting the moderately sized abstraction could have an impact on the hydrological regime of the surface water body. **Use of new transfer pipe line, pumping station, and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	Not provided					
		Macrophytes and phytobenthos	Moderate					
		Benthic invertebrates	High					
		Fish	Good					
	Hydromorphology	**Hydrological regime**	Does not support good					
		River continuity	Not provided					
		Morphological conditions	Supports good					
	Physico-chemical	**General physico-chemical**	All high except: Phospahte-poor					
		Specific pollutants:	Not provided					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment					
		Priority substances	Does not require assessment					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**			
		Chemical	**Good**	**Good by 2015**	**N/A**			
		Overall	**Moderate**	**Good by 2027**	**N/A**			

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR125\WR12
EA Abstraction Licence Strategy (Shropshire and Middle Severn): https://www.gov.uk/government/uploads/system/uploads/attachment_data/f

		Water body ID:		**GB40901G300100**	**Scheme:**	**Bearstone Boreholes**			
		Water body Name:		**Shropshire Middle Severn-PT Sandstone East Shropshire**	**Reference**	**WR125**			
		RBMP:		**Severn England GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Shropshire Middle Severn-PT Sandstone East Shropshire**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Poor			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New pumping station.** Minor level of impact. **New / modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** No or minimal impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity.** Medium level of impact. Restart groundwater abstraction from two refurbished boreholes near Bearstone. Abstraction rates of 4.98 - 6.36 Ml/d, within the current abstraction licence quantity. The ALS identifies that water is not available from the groundwater management unit, and is limited at Q50, Q70 and Q95 in the overlying surface water body. The ALS will take the current abstraction licence into account. Given the restricted availability of water restarting the moderately sized abstraction could have an impact on the quantitative water balance of the aquifer. Also given the proximity to the River Tern, it could also impact the quantitative dependent surface water body status. **Use of new transfer pipe line, pumping station, and water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Poor						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Poor**	**Poor by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2050**	**N\A**				
		Overall	**Poor**	**Poor by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR125\WR125_Bearstone Boreholes.xlsx
EA Abstraction Licence Strategy (Shropshire and Middle Severn): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291395/LIT_5393_7eeda4.pdf

		Water body ID:		**GB102076073910**	**Scheme:**	**TARN WOOD (NORTH EDEN TO CARLISLE)**			
		Water body Name:		**Pow Maughan Beck**	**Reference**	**WR128**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eden lower**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):							
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Eden - Eamont to tidal**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings**. Minor level of impact. **New pumping station.** Minor level of impact. **New abstraction well drilling / refurbishment**. No or minimal impact. **New / modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Minor level of impact. Increased groundwater abstraction from 2.3 Ml/d to 4 Ml/d from refurbished boreholes at Tarn Wood. It is unclear if an increase in annual licence quantity is required. The abstraction licensing strategy (ALS) indicates that there is water available in the groundwater body and the surface water body at all flows and the increases in daily quantity is relatively small. **Use of pipelines and pumping station.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	Good						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemic	**General physico-chemical**	Moderate (High for ph)						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Carlisle\WR128\WR128_Tarn Wood (North Eden to Carlisle).docx
Abstraction Licensing Strategy (Eden and Esk): https://www.gov.uk/government/publications/eden-and-esk-abstraction-licensing-strategy

		Water body ID:		**GB40201G1**	**Scheme:**	**TARN WOOD (NORTH EDEN TO CARLISLE)**			
		Water body Name:		**Eden Valley**	**Reference**	**WR128**			
		RBMP:			**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eden Valley**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **Abstraction well refurbishment.** Minor level of impact. **Abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Minor level of impact. Increased groundwater abstraction from 2.3 Ml/d to 4 Ml/d from refurbished boreholes at Tarn Wood. It is unclear if an increase in annual licence quantity is required. The abstraction licensing strategy (ALS) indicates that there is water available in the groundwater body and the increases in daily quantity is relatively small. **Transfer pipe line and raw water pumping station.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward Trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2027**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Carlisle\WR128\WR128 Tarn Wood (North Eden to Carlisle).doc
Abstraction Licensing Strategy (Eden and Esk): https://www.gov.uk/government/publications/eden-and-esk-abstraction-licensing-strategy

		Water body ID:		**GB102075073410**	**Scheme:**	**NORTH CUMBRIA BOREHOLES**			
		Water body Name:		**Wampool (Upper)**	**Reference**	**WR129**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Waver-Wampool**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**(Wampool), Wiza Beck**					
		Downstream water bodies:		**Pow Beck (Wampool)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New abstraction well drilling.** No or minimal impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity** Minor level of impact. New groundwater abstraction of 2 Ml/d from a new borehole at Thursby. This is part of a larger scheme of two new boreholes at Thursby and Waverton (2 Ml/d each), and continuation of abstraction from existing boreholes at Scales (6 Ml/d). Total scheme abstraction of 10 Ml/d, 6 Ml/d of which is licenced at Scales, but will expire in 2022. There is no groundwater management unit defined for the secondary aquifer in the ALS. The surface water body for the Thursby borehole has limited water availability at Q95 but water available at medium and higher flows. As the proposed abstraction is relatively small, surface water is generally available, and there may not be good hydraulic connections between the secondary aquifer and surface water courses, it is unlikely that the new abstraction would have a widespread or prolonged effect on the hydrological regime of the surface water body. A new abstraction licence will be required from the Environment Agency. **Use of new transfer pipe line.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	High						
		Benthic invertebrates	Good						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	Supports Good						
		River continuity	-						
		Morphological conditions	Supports Good						
	Physico-chemical	**General physico-chemical**	Moderate (High for ph)						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR129\WR12
EA Abstraction Licence Strategy (Eden and Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_
Aquifer designation map: http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

		Water body ID:		**GB102075073440**	**Scheme:**	**NORTH CUMBRIA BOREHOLES**			
		Water body Name:		**Waver**	**Reference**	**WR129**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Waver-Wampool**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Not desginated**					
		Relevant upstream water bodies:		**Holme Dub**					
		Downstream water bodies:		**Solway**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New abstraction well drilling.** No or minimal impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity** Minor level of impact. New groundwater abstraction of 2 Ml/d from a new borehole at Waverton. This is part of a larger scheme of two new boreholes at Thursby and Waverton (2 Ml/d each), and continuation of abstraction from existing boreholes at Scales (6 Ml/d). Total scheme abstraction of 10 Ml/d, 6 Ml/d of which is licenced at Scales, but will expire in 2022. There is no groundwater management unit defined for the secondary aquifer in the ALS. The surface water body for the Waterton borehole has water available at all flows. As the proposed abstraction is relatively small, surface water is available, and there may not be good hydraulic connections between the secondary aquifer and surface water courses, it is unlikely that the new abstraction would have a widespread or prolonged effect on the hydrological regime of the surface water body. A new abstraction licence will be required from the Environment Agency. **Use of new transfer pipe line**. No or minimal impact.	**Medium**
		Macrophytes							
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Moderate						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Supports Good						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	Good						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR129\WR129_North Cumbria Boreholes.docx
EA Abstraction Licence Strategy (Eden and Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_7889_1384b1.pdf
Aquifer designation map: http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

		Water body ID:		**GB102075073480**	**Scheme:**	**NORTH CUMBRIA BOREHOLES**			
		Water body Name:		**Dub**	**Reference**	**WR129**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Ellen and West Coast**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Holme Dub**					
		Downstream water bodies:		**Waver**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact.	**High**	**New / increased groundwater abstraction quantity** Minor level of impact. Continued abstraction from existing boreholes at Scales after 2022. This is part of a larger scheme of two new boreholes at Thursby and Waverton (2 Ml/d each), and continuation of abstraction from existing boreholes at Scales (6 Ml/d). Total scheme abstraction of 10 Ml/d, 6 Ml/d of which is licenced at Scales, but will expire in 2022. The ALS indicates that there is water available from this groundwater body. This surface water body has limited water available at Q95, but water available at medium and higher flows. Given that the sources are already licenced and currently in use (the ALS takes current abstractions into account) and that there is generally water available, it is unlikely that continuing abstraction from the scales boreholes would have a widespread or prolonged effect on the hydrological regime of the surface water body. A new abstraction licence would be required after 2022 from the Environment Agency. **Use of new transfer pipe line.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	Good						
		Fish	Bad						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	-						
		Morphological conditions	Supports Good						
	Physico-chemical	**General physico-chemical**	Moderate (High for ph)						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR129\WR129_Nor
EA Abstraction Licence Strategy (Eden and Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_7889_1

		Water body ID:		**GB40202G100900**	**Scheme:**	**NORTH CUMBRIA BOREHOLES**			
		Water body Name:		**Triassic and Jurassic Aquifers**	**Scheme Phase**	**Construction**		**Operational**	
		RBMP:		**Solway Tweed**	**Reference**	**WR129**			
		Operational catchment:		**Triassic and Jurassic Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**N\A**					
		Relevant upstream water body(ies)		**N\A**					
		Downstream water body(ies)		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good	**Good by 2015**		**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New abstraction well drilling.** Minor level of impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New / increased groundwater abstraction quantity** Minor level of impact. New groundwater abstraction of 2 Ml/d from a new borehole at Thursby and 2 Ml/d from a new borehole at Waverton. This is part of a larger scheme of two new boreholes at Thursby and Waverton (2 Ml/d each), and continuation of abstraction from existing boreholes at Scales (6 Ml/d). Total scheme abstraction of 10 Ml/d, 6 Ml/d of which is licenced at Scales, but will expire in 2022. There is no groundwater management unit defined for this secondary aquifer in the ALS. The surface water body for the Thursby borehole has limited water availability at Q95 but water available at medium and higher flows. The surface water body for the Waverton borehole has water available at all flows. As the proposed abstractions are relatively small, surface water is generally available, it is unlikely that the new abstractions would have a widespread or prolonged effect on the quantitative water balance of the groundwater body or on dependent surface water bodies. A new abstraction licence will be required from the Environment Agency. **New Transfer Pipe Line** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good	**Good by 2015**					
		Quantitative Saline Intrusion	Good	**Good by 2015**					
		Quantitative Water Balance	Good	**Good by 2015**					
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good	**Good by 2015**					
		Chemical Drinking Water Protected Area	Good	**Good by 2015**					
		Chemical GWDTEs test	Good	**Good by 2015**					
		Chemical Saline Intrusion	Good	**Good by 2015**					
		General Chemical Test	Good	**Good by 2015**					
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	n/a						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new waterco
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry workin
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feas
EA Abstraction Licence Strategy (xxx):

		Water body ID:		**GB40201G100400**	**Scheme:**	**NORTH CUMBRIA BOREHOLES**			
		Water body Name:		**Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers**	**Reference**	**WR129**			
		RBMP:		**Solway tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent**	Good						
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact.	**High**	**Use of new transfer pipe line.** No or minimal impact. **New / increased groundwater abstraction quantity** Minor level of impact. Continued abstraction from existing boreholes at Scales after 2022. This is part of a larger scheme of two new boreholes at Thursby and Waverton (2 Ml/d each), and continuation of abstraction from existing boreholes at Scales (6 Ml/d). Total scheme abstraction of 10 Ml/d, 6 Ml/d of which is licenced at Scales, but will expire in 2022. The ALS indicates that there is water available from this groundwater body. The overlying surface water body has limited water available at Q95, but water available at medium and higher flows. Given that the sources are already licenced and currently in use (the ALS takes current abstractions into account) and that there is generally water available, it is unlikely that continuing abstraction from the scales boreholes would have a widespread or prolonged effect on the quantitative water balance of the water body or the overlying dependent surface water body. A new abstraction licence would be required after 2022 from the Environment Agency.	**Medium**
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward Trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2027**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR129\WR129_North Cumbria Boreholes.docx
EA Abstraction Licence Strategy (Eden and Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_7889_1384b1.pdf

		Water body ID:		**GB112070064850**	**Scheme:**	**HORWICH WwTW – FINAL EFFLUENT REUSE**			
		Water body Name:		**Douglas - Upper**	**Reference:**	**WR140**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Douglas OC**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Buckhow (Hic Bibbi) Brook**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New surface water intake.** Minor level of impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New pumping station.** Minor level of impact. **Modified water treatment works.** No or minimal impact.	**High**	**New surface water abstraction quantity.** Medium level of impact. New surface water abstraction from Pearl Brook/River Douglas near Horwich of 5 Ml/d. In the ALS water is identified as available at all flows (Q30, Q50, Q70 and Q95) however the abstraction is moderate in size and could have a widespread or prolonged effect on the hydrological regime of the River Douglas. A new abstraction licence would be required to be issued by the Environment Agency. **New transfer pipe line, pumping station and water treatment works.** No or minimal impact.	**High**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	High						
		Benthic invertebrates	Moderate						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Ammonia-moderate and Phosphate-moderate.						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	All good						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which wo
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR140\WR14
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/f

		Water body ID:		**GB41202G100300**	**Scheme:**	**HORWICH WwTW – FINAL EFFLUENT REUSE**			
		Water body Name:		**Douglas, Darwen and Calder Caroboniferous Aquifers**	**Reference**	**WR140**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Douglas, Darwen and Calder Caroboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New surface water intake.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **Modified water treatment works.** No or minimal impact.	**High**	**New surface water abstraction quantity** Minor level of impact. New surface water abstraction from Pearl Brook/River Douglas near Horwich of 5 Ml/d. The ALS does not identify a groundwater management unit in the area. Due to the moderate size of the proposed abstraction there may be reductions in leakage from the river to the aquifer, however given the availability of water in the surface water body, these would likely be localised, and the secondary Carboniferous aquifer is unlikely to be highly dependent on leakage from surface water courses to maintain its quantitative water balance. **New transfer pipe line, pumping station and water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time whi
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line cro
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR140\
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment

		Water body ID:		**GB112069064641**	**Scheme:**	**Rossendale WwTW- Final Effluent Reuse**			
		Water body Name:		**Irwell (Cowpe Bk to Rossendale STW)**	**Reference**	**WR141**			
		RBMP:		**Irwell**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**			**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Brook), Limy Water and**					
		Downstream water bodies:		**Irwell (Rossendale STW to Roch)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact. **Modified water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, water treatment works, pumping station and surface water intake.** No or minimal impact. **New surface water abstraction quantity.** Medium level of impact. New abstraction from the River Irwell, downstream of Rossendale WwTW of 10 Ml/d. In the ALS water is identified as available at all flows (Q30, Q50, Q70 and Q95) however the abstraction is moderate in size and could have a widespread or prolonged effect on the hydrological regime of the River Irwell. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Good						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: pH- moderate and Phosphate- moderate						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
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Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR141\WR141 Ros
Abstraction Licensing Strategies (Northern Manchester): https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-proc

		Water body ID:		**GB41202G101800**	**Scheme:**	**Rossendale WwTW- Final Effluent Reuse**				
		Water body Name:		**Northern Manchester Carboniferous Aquifers**	**Reference**	**WR141**				
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Northern Manchester Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**Not identified**						
		Downstream water bodies:		**Not identified**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New surface water intake.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **Modified water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, water treatment works, pumping station and surface water intake.** No or minimal impact. **New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from the River Irwell, downstream of Rossendale WwTW of 10 Ml/d. The ALS does not identify a groundwater management unit for this area. Due to the moderate size of the proposed abstraction there may be reductions in leakage from the river to the aquifer. However due to the availability of water in the surface water body its likely that these would be localised, and the secondary aquifer is unlikely to be highly dependent on leakage from surface water courses to maintain its quantitative water balance.	**Medium**
		Quantitative GWDTEs test	Good							
		Quantitative Saline Intrusion	Good							
		Quantitative Water Balance	Good							
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor							
		Chemical Drinking Water Protected Area	Good							
		Chemical GWDTEs test	Good							
		Chemical Saline Intrusion	Good							
		General Chemical Test	Good							
	Supporting Element	**Prevent and Limit Objective**	Not provided							
		Trend Assessment	Upward trend							
Overall – Status \Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**					
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**					
		Overall	**Poor**	**Good by 2027**	**N/A**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
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6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
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Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR141\WR141 Rossendale_EFR.xlsx
Abstraction Licensing Strategies (Northern Manchester): https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

		Water body ID:		**GB112071065490**	**Scheme:**	**HYNDBURN WwTW – FINAL EFFLUENT REUSE**			
		Water body Name:		**Calder - Pendle Water to conf Ribble**	**Reference**	**WR142**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Green Brook, Hyndburn Brook - Lower, Pendle Water - Colne Water to**					
		Downstream water bodies:		**Ribble - conf Calder to tidal**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**New surface water intake.** Minor level of impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New pumping station.** Minor level of impact. **Modified water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station, and water treatment works.** No or minimal impact. **New surface water abstraction quantity.** Medium level of impact. New surface water abstraction from the River Calder downstream of Hyndburn of up to 10 Ml/d . In the ALS water is identified as available at all flows (Q30, Q50, Q70 and Q95) however the abstraction is moderate in size and could have a medium impact on the hydrological regime of the River Calder. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	Moderate						
		Specific pollutants:	High						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good						
		Priority substances	Good						
Overall Status|Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
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8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR142\WR142_Hyndburn_EF
EA Abstraction Licence Strategy (Aire and Calder): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB41202G100300**	**Scheme:**	**HYNDBURN WwTW – FINAL EFFLUENT REUSE**			
		Water body Name:		**Douglas, Darwen and Calder Caroboniferous Aquifers**	**Reference**	**WR142**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Douglas, Darwen and Calder Caroboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New surface water intake.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **Modified water treatment works.** No or minimal impact.	**High**	**New surface water abstraction quantity** Minor level of impact. New surface water abstraction from the River Calder downstream of Hyndburn of up to 10 Ml/d. The ALS does not identify a groundwater management unit in the area. Due to the moderate size of the proposed abstraction there may be reductions in leakage from the river to the aquifer, however given the availability of water in the surface water body, these would likely be localised, and the secondary Carboniferous aquifer is unlikely to be highly dependent on leakage from surface water courses to maintain its quantitative water balance. **New transfer pipe line, pumping station and water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time whi
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line cro
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR142\
EA Abstraction Licence Strategy (Aire and Calder): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT791

		Water body ID:		**GB112069061111**	**Scheme:**	Saddleworth and Mossley Top- Final Effluent Reuse			
		Water body Name:		**Tame (Chew Brook to S**	**Reference**	**WR144**			
		RBMP:		**Mersey Upper**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential**			**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**(Source to Chew**					
		Downstream water bodies:		**Tame (Swineshaw Brook to Mersey)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New pumping station.** Minor level of impact. **New / modified water treatment works.** Minor level of impact.	**Medium**	**New surface water abstraction quantity.** Minor level of impact. A new abstraction licence would be granted by the Environment Agency (assuming the proposed abstraction quantity would not have a detrimental effect on WFD status) of 5 Ml/d from the River Tame, downstream of Mossley Top WwTW, utilising discharges from both Mossley Top and Saddleworth WwTWs. The ALS (Abstraction Licensing Strategy) indicates that there is water available at all flow regimes (Q95, Q70, Q50 and Q30). **Use of new pipe line, pumping station and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Moderate						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Good						
Overall Status \ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.

7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR144\WR144 Saddleworth_Mossley Top.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&scale=7
EA Historical Landfill: http://maps.environment-
Abstraction Licensing Strategies (Upper Mersey): https://www.gov.uk/government/publications/upper-mersey-abstraction-licensing-strategy

		Water body ID:		**GB41202G102900**	**Scheme:**	**Saddleworth and Mossley Top- Final Effluent Reuse**				
		Water body Name:		**Manchester and East Cheshire Carboniferous Aquifers**	**Reference**	**WR144**				
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Manchester and Cheshire East Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**Not identified**						
		Downstream water bodies:		**Not identified**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **New / modified water treatment works.** No or minimal impact.	**High**	**New surface water abstraction quantity.** No or minimal impact. Increased surface water abstraction may result in localised minor reductions in leakage from rivers to the aquifer. However, these mainly secondary aquifers consisting of Coal Measures and Millstone Grit rocks are unlikely to be heavily reliant on river leakage to support water resources. The ALS also indicates that water is available in the surface water body across the flow regime (Q95, Q70, Q50 and Q30), indicating this relatively small proposed abstraction (5 Ml/d) is unlikely to reduce flows sufficiently to impact on leakage from the River Tame to the groundwater body. **Use of new pipe line, pumping station and water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good							
		Quantitative Saline Intrusion	Good							
		Quantitative Water Balance	Good							
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good							
		Chemical Drinking Water Protected Area	Poor							
		Chemical GWDTEs test	Good							
		Chemical Saline Intrusion	Good							
		General Chemical Test	Good							
	Supporting Elements	**Prevent and Limit Objective**	Not provided							
		Trend Assessment	Upward trend							
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**					
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**					
		Overall	**Poor**	**Good by 2027**	**N/A**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR144\WR144 Saddleworth_Mossley Top.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&scale
EA Historical Landfill: http://maps.environment-
Abstraction Licensing Strategies (Upper Mersey): https://www.gov.uk/government/publications/upper-mersey-abstraction-licensing-strategy

		Water body ID:		**GB112069061452**	**Scheme:**	**Davyhulme- Final Effluent Reuse**			
		Water body Name:		**Irwell/ Manchester Ship Canal (Irk to confluence with Upper Mersey)**	**Reference**	**WR146**			
		RBMP:		**Irwell**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**			**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Folly Brook and Salteye Brook, Irk (Wince to Irwell), Irwell (Croal to Irk) and Medlock (Lumb Brook to Irwell)**					
		Downstream water bodies:		**Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not assessed			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact.	**High**	**Use of new transfer pipe line.** No or minimal impact. **Decreased surface water discharge quantity.** Medium level of impact. Reduction of the existing Davyhulme WwTW discharge to the Manchester Ship Canal by up to 100 Ml/d. The ALS indicates that there is surface water is available at all flow regimes (Q90, Q70, Q50 and Q30). Although there is water availability (suggesting a surplus), given the large decrease in discharge to the canal there is the potential for widespread or prolonged effects on the hydrological regime.	**Medium**
		Macrophytes	Not assessed						
		Macrophytes and phytobenthos	Not assessed						
		Benthic invertebrates	Not assessed						
		Fish	Not assessed						
	Hydromorphology	**Hydrological regime**	Supports good	Supports good by 2015					
		River continuity	Not assessed						
		Morphological conditions	Not assessed						
	Physico-chemical	**General physico-chemical**	All high/ good except: Ammonia- poor, Dissolved oxygen- bad and Phosphate- poor.	Vairable					
		Specific pollutants:	All high	High by 2015					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good	Good by 2015					
		Priority substances	Good	Good by 2015					
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
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3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR146\WR146_Davyhulme_
Abstraction Licensing Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB41201G101100**	**Scheme:**	**Davyhulme- Final Effluent Reuse**			
		Water body Name:		**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	**Reference**	**WR146**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Poor	Good by 2021		**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New water treatment works.** No or minimal impact. **New storage reservoir.** No or minimal impact.	**High**	**Use of new transfer pipe line, water treatment works, and storage reservoir.** No or minimal impact. **Decreased surface water discharge quantity.** Minor level of impact. Reduction of the existing Davyhulme WwTW discharge to the Manchester Ship Canal by up to 100 Ml/d. The ALS indicates that there is limited groundwater availability. Given the large decrease in discharge to the canal there is the potential for reductions in leakage to the groundwater body. However, given the availability of surface water, that no changes to the wetted area of the canal are anticipated, and that groundwater - surface water interactions between the engineered canal and the aquifer are expected to be minimal, widespread or prolonged effects in the quantitative water balance of the aquifer are unlikely.	**Medium**
		Quantitative GWDTEs test	Good	Good by 2015					
		Quantitative Saline Intrusion	Poor	Good by 2021					
		Quantitative Water Balance	Good	Good by 2015					
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**							
		Chemical Drinking Water Protected Area	Good	Good by 2015					
		Chemical GWDTEs test	Good	Good by 2015					
		Chemical Saline Intrusion	Poor	Good by 2021					
		General Chemical Test	Good	Good by 2015					
	Supporting Element	**Prevent and Limit Objective**							
		Trend Assessment	Upward Trend						
Overall Status\ Potential		**Quantitative**	**Poor**	**Good by 2021**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2021**	**N/A**				
		Overall	**Poor**	**Good by 2021**	**N/A**				

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1- Application of standard best practice construction and pollution prevention methods.
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6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR146\WR146_Davyhulme_EFR.xlsx
Abstraction Licensing Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB102076073910**	**Scheme:**	**CUMWHINTON BOREHOLES PLUS CASTLE CARROCK LINK**			
		Water body Name:		**Pow Maughan Beck**	**Reference**	**WR148**			
		RBMP:		**Solway Tweed**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eden lower**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):							
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Eden - Eamont to tidal**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **New pumping station.** Minor level of impact. **New / modified water treatment works.** No or minimal impact. **New abstraction well drilling.** No or minimal of impact. **New abstraction well headworks / surface structures.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** Minor level of impact. New groundwater abstraction of 6.5 Ml/d from two new boreholes at Cumwhinton. The abstraction licensing strategy (ALS) indicates that there is water available in the groundwater body and the surface water body at all flows and the new licence quantity is relatively small. **Use of pipe lines, pumping station and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	Good						
		Fish	Poor						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemic	**General physico-chemical**	Moderate (High for ph)						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Good**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
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6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
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8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Carlisle\WR148\WR148_Cumwhinton BHs_Carrock link.docx
Abstraction Licensing Strategy (Eden and Esk): https://www.gov.uk/government/publications/eden-and-esk-abstraction-licensing-strategy

		Water body ID:		**GB40201G1**	**Scheme:**	**CUMWHINTON BOREHOLES PLUS CASTLE CARROCK LINK**			
		Water body Name:		**Eden Valley**	**Reference**	**WR148**			
		RBMP:			**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eden Valley**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **Modified water treatment works.** No or minimal impact **New abstraction well drilling.** Minor level of impact **New abstraction well headworks / surface structures.** No or minimal impact	**High**	**New groundwater abstraction quantity.** Minor level of impact. New groundwater abstraction of 6.5 Ml/d from two new boreholes at Cumwhinton. The abstraction licensing strategy (ALS) indicates that there is water available in the groundwater body and the new licence quantity is relatively small. **Transfer pipe line, pumping station and water treatment works.** No or minimal impact	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward Trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2027**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
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6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Carlisle\WR148\WR148_Cumwhinton BHs_Carrock link.docx
Abstraction Licensing Strategy (Eden and Esk): https://www.gov.uk/government/publications/eden-and-esk-abstraction-licensing-strategy

		Water body ID:		**GB112068060330**	**Scheme:**	**Simmonds Hill- increased WTW Capacity**			
		Water body Name:		**Peckmill Brook, Hoolpo**	**Reference**	**WR153**			
		RBMP:		**Weaver Gowy**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Gowy**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Mersey**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity** Medium level of impact. Increased abstraction from refurbished boreholes at Simmonds Hill. Abstraction licences are already in place and it is unclear how much additional quantity is required. There are likely to be moderate effects on water quantity as the abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body and limited water availability in the surface water body at Q95 and Q70. **Water treatment works.** No or minimal impact	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Poor						
		Benthic invertebrates	Not provided						
		Fish	Moderate						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Ammoonia-moderate and Phosphate-moderate						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status|Potential		**Ecological**	**Poor**	**Poor by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Poor**	**Poor by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR153\WR153 Simmonds Hill.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=5114
EA Historical Landfill: http://maps.environment-
Abstraction Licencing Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB112068060500**	**Scheme:**	**Simmonds Hill- increased WTW Capacity**			
		Water body Name:		**Weaver (Dane to Frods**	**Reference**	**WR153**			
		RBMP:		**Weaver Gowy**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Lower**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**(Wheelock to Weaver),**					
		Downstream water bodies:		**Mersey**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** No or minimal impact. **Modified abstraction well headworks / surface structures.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity** Medium level of impact. Increased abstraction from refurbished boreholes at Simmonds Hill. Abstraction licences are already in place and it is unclear how much additional quantity is required. There are likely to be moderate effects on water quantity as the abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body and limited water availability in the surface water body at Q95 and Q70. **Water treatment works.** No or minimal impact	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	Bad						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Ammonia- poor, BOD- poor and Phosphate- poor						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	All good						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR153\WR153 Simmonds Hill.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y
EA Historical Landfill: http://maps.environment-
Abstraction Licencing Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB41101G202600**	**Scheme:**	**Simmonds Hill- increased WTW Capacity**			
		Water body Name:		**Wirral and West Cheshire Permo-Triassic Sandstone Aquifers**	**Reference**	**WR153**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Cheshire West Permo-Triassic Sandstone Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good						
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good			**Modified water treatment works.** No or minimal impact. **Abstraction well refurbishment.** No or minimal impact **Abstraction well headworks / surface structures.** No or minimal impact	**High**	**Increased groundwater abstraction quantity** Medium level of impact. Increased abstraction from refurbished boreholes at Simmonds Hill. Abstraction licences are already in place and it is unclear how much additional quantity is required. There are likely to be moderate effects on water quantity as the abstraction licensing strategy (ALS) indicates that there is restricted water available in the groundwater body. **Water treatment works.** No or minimal impact	**Low**
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR153\WR153 Simmonds Hill.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344
EA Historical Landfill: http://maps.environment-
Abstraction Licencing Strategy (Lower Mersey and Alt): https://www.gov.uk/government/publications/lower-mersey-and-alt-abstraction-licensing-strategy

		Water body ID:		**GB112068060450**	**Scheme:**	**SANDIFORD – INCREASED WTW CAPACITY**			
		Water body Name:		**Darley Brook**	**Reference**	**WR154**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Lower**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**heavily modified**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Ash Brook (Darley Brook to Weaver)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Modified water treatment works.** No or minimal impact. **New abstraction well refurbishment.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Minor level of impact. Refurbishment of boreholes at Organsdale, Delamere, Cotebrook and Sandiford. Maximum combined increase in abstraction of 10 Ml/d within exisiting abstraction licence constraints. The ALS indicates that there is restricted groundwater is available for the groundwater management unit in which the boreholes are located. Surface water is available at all flows in this surface water body. The size of the current abstraction licence is unknown, but given the availability of surface water, there is unlikely to be widespread or prolonged effects on the hydrological regime of this water body.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	-						
		Fish	Bad						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	Moderate						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**					
		Chemical	**Good**	**-**					
		Overall	**Moderate**	**Good by 2027**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers' Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR154\WR1
EA Abstraction Licence Strategy (Weaver and Dane): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52dcff.pdf
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB41101G202600**	**Scheme:**	**SANDIFORD – INCREASED WTW CAPACITY**			
		Water body Name:		**Wirral and West Cheshire Permo-Triassic Sandstone Aquifers**	**Reference**	**WR154**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Wirral and Cheshire West Permo-Triassic Sandstone Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Modified water treatment works.** No or minimal impact. **New abstraction well refurbishment.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Medium llevel of impact. Refurbishment of boreholes at Organsdale, Delamere, Eddisbury, Cotebrook and Sandiford. Maximum combined increase in abstraction of 10 Ml/d within exisiting abstraction licence constraints. The ALS indicates that there is restricted groundwater is available for the groundwater management unit in which the boreholes are located. Surface water restricted or not available accross all flows in the surface water body that includes the Eddisbury BH, but available at all flows in the surface water body that includes the remaining BH. The size of the current abstraction licence is unknown, but given the restricted groundwater availability and that some surface water bodies have no water available, there maybe widespread or prolonged effects on the quantitative status of the groundwater body if abstractions are increased by 10 Ml/d.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upper Trend						
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers' Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR154\WR154_
EA Abstraction Licence Strategy (Weaver and Dane): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52dcff.pdf
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB112068060480**	**Scheme:**	**SANDIFORD – INCREASED WTW CAPACITY**			
		Water body Name:		**Cuddington Brook (Source to Crowton Brook)**	**Reference**	**WR154**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Lower**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Not designated**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Crowton Brook**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Modified water treatment works.** No or minimal impact. **New abstraction well refurbishment.** No or minimal impact.	**High**	**Increased groundwater abstraction quantity.** Minor level of impact. Refurbishment of boreholes at Eddisbury. Maximum combined increase in abstraction of 10 Ml/d (accross multiple sites) within exisiting abstraction licence constraints. The ALS indicates that there is restricted groundwater is available for the groundwater management unit in which the boreholes are located. Surface water is not available at Q95 and Q50, and is restricted at Q30 and Q70. The size of the current abstraction licence is unknown. There is poor water availability of both groundwater and surface water, but as only a small proportion of the additional 10 Ml/d is likely to be sourced from this surfacewater body, and the increase will be within existing licence constraints, there is unlikely to be widespread or prolonged effects on the hydrological regime of this water body.	**Low**
		Macrophytes	-						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Good						
		Fish	-						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	-						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high except Ammonia- moderate, Phosphate- poor						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2021**					
		Chemical	**Good**	**Good by 2015**					
		Overall	**Moderate**	**Good by 2021**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers' Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR154\WR1
EA Abstraction Licence Strategy (Weaver and Dane): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52dcff.pdf
EA Abstraction Licence Strategy (Lower Mersey and Alt): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB112071065040**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2**			
		Water body Name:		**Hyndburn**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Calder**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**None**					
		Downstream water bodies:		**Hyndburn Brook - Lower**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Mitchells House 1 and Mitchells House 2 reservoirs from 0.4 Ml/d to 0.3 Ml/d, a reduction of 0.1 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that most of the surface water body has water available at all flows, however the relatively small part of the water body that contains the two reservoirs has water available at Q95 but no water available at medium to high flows (Q70, Q50 and Q30). It is likely the compensation flow from the reservoir that maintains the water availability at Q95, and as such a reduction in the compensation flow could effect the hydrological regime of the surface water body and cause a reduction in ecological status. However given the small reduction in compensation releases, that water is available across most of the surface water body at all flows, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	**Not assessed**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Good**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	**Supports Good**	**Supports Good by 2015**					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112074069790**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK**			
		Water body Name:		**Mill Beck (Poaka Beck)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Duddon**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:		**Morecambe Bay**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Poaka Beck and Harlock reservoirs from 2.9 Ml/d to 2.6 Ml/d, a reduction of 0.3 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has no water available at all flows and as such a reduction in the compensation flow could effect the hydrological regime of the surface water body and cause a reduction in ecological status. However given the small reduction in compensation releases, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	**Not assessed**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Bad**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (South Cumbria): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf

		Water body ID:		**GB112073071160**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK**			
		Water body Name:		**Dragley Beck**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Leven**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**not designated artificial or heavily modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:		**Leven**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	**-**			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Pennington reservoir from 2.9 Ml/d to 2.6 Ml/d, a reduction of 0.3 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has no water available at high and low flows (Q30 and Q95 respectively), and that limited water is available at medium flows (Q50 and Q70), and as such a reduction in the compensation flow could effect the hydrological regime of the surface water body and cause a reduction in ecological status. However given the small reduction in compensation releases, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	**-**						
		Macrophytes and phytobenthos	**Moderate**	**Good by 2027**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**-**	**-**					
	Hydromorphology	**Hydrological regime**	**Does Not Support Good**	**Supports Good by 2027**					
		River continuity							
		Morphological conditions	**Supports Good**						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	**-**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112073071210**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – LEVERS WATER**			
		Water body Name:		**Yewdale/Church Beck**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Crake**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**not designated artificial or heavily modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:		**Crake**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	**-**			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Levers Water reservoir from 2.9 Ml/d to 2.6 Ml/d, a reduction of 0.3 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that most of the surface water body has water available at all flows, however the part of the water body that contains the reservoir and its upstream catchment has no water available at any flows, and the part of the water body immediately downstream of the reservoir has no water available at all flows other than Q30. As such a reduction in the compensation flow may effect the hydrological regime of the surface water body and cause a reduction in ecological status. However, given the small reduction in compensation releases, that water is available across most of the surface water body at all flows, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	**-**						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**High**	**Good by 2015**					
		Fish	**Moderate**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	**Supports Good**	**Supports Good by 2015**					
		River continuity							
		Morphological conditions	**Supports Good**						
	Physico-chemical	**General physico-chemical**	**High**	**Good by 2015**					
		Specific pollutants:	**-**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112071065270**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – FISHMOOR TOTAL**			
		Water body Name:		**Darwen - conf Davy Field Bk to conf Blakewater**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Darwen**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**Field Bk, Davyfield Brook**					
		Downstream water bodies:		**Darwen- conf Blakewater to conf Roddlesworth**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Fishmoor (Total) reservoir from 2.0 Ml/d to 1.7 Ml/d, a reduction of 0.3 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that all of the surface water body has water available at all flows (Q95, Q70, Q50 and Q30). Given the small reduction in compensation releases, that water is available across the surface water body at all flows, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	**Not assessed**					
		Benthic invertebrates	**Moderate**	**Good by 2027**					
		Fish	**Good**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	**Supports Good**	**Supports Good by 2015**					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112069061320**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK**			
		Water body Name:		**Bollin (Source to Dean)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Bollin Dean Mersey Upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:		**Bollin (River Dean to Ashley Mill)**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Ridgegate and Trentabank reservoirs from 2.1 Ml/d to 1.8 Ml/d, a reduction of 0.3 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the part of the surface water body which contains the reservoirs and their upstream catchments has no water available at any flows. Downstream of the reservoirs, the water body has water available at all flows. Given the small reduction in compensation releases, the water availability downstream of the reservoirs, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Moderate**	**Moderate by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Moderate**	**Moderate by 2015**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Moderate by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112069060650**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – LAMALOAD**			
		Water body Name:		**Dean (Lamaload to Bollington)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Bollin Dean Mersey Upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:		**Dean (Bollinton to Bollin)**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Lamaload reservoir from 2.1 Ml/d to 1.8 Ml/d, a reduction of 0.3 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the part of the surface water body which contains the reservoir and its upstream catchment has no water available Q30 to Q70, and limited water available at Q95. Downstream of the reservoir, the water body has limited water available at all flows. Given the small reduction in compensation releases, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	**Not assessed**					
		Benthic invertebrates	-	-					
		Fish	-	-					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB102076070690**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – WET SLEDDALE**			
		Water body Name:		**Lowther (Upper)**	**Scheme Phase:**	**WR159**			
		RBMP:		**Solway Tweed**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Eden and Esk**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**Swindale Beck (Lowther)**					
		Downstream water bodies:		**Lowther (Lower)**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Wet Sleddale reservoir from 7.8 Ml/d to 7.4 Ml/d, a reduction of 0.4 Ml/d. The ALS shows that the surface water body has no water available at any flow. However, the reduction is small compared to the total compensation release, and the heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	**Not assessed**					
		Benthic invertebrates	**High**	**Good by 2015**					
		Fish	**High**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	-	**Not assessed**					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**All high**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2021**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2021**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Eden and Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_7889_1384b1.pdf

		Water body ID:		**GB112069064580**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES**			
		Water body Name:		**Bradshaw Brook**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:		**Tonge**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Wayoh, Entwistle and Jumbles reservoirs from 24.3 Ml/d to 23.6 Ml/d, a reduction of 0.7 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the part of the surface water body which contains the Turton and Entwistle Reservoir and the Wayoh Reservoir and the reservoirs upstream catchments has no water available at any flows. The part of the water body downstream of the Wayoh reservoir (including the Jumbles reservoir) has water available at low flows (Q95 and Q70), but no water available at high flows (Q50 and Q30). It is likely the compensation flows from the reservoirs help to maintain water availability at low flows, and as such a reduction in the compensation flow could effect the hydrological regime of the surface water body and cause a reduction in ecological status. However given the small reduction in compensation releases compared to the total volume, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Moderate**	**Good by 2027**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Good**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112069064570**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – DELPH & SPRINGS DINGLE**			
		Water body Name:		**Eagley Brook**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water body(ies)							
		Downstream water body(ies)		**Tonge**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Delph and Springs Dingle reservoirs from 24.3 Ml/d to 23.6 Ml/d, a reduction of 0.7 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that: The part of the surface water body that contains the Springs reservoir and its upstream catchment has no water available at any flows. The part of the surface water body that contains the Dingle reservoir and its upstream catchment has water available at low flows (Q95 and Q70), limited water available at medium flows (Q50), and no water available at high flows (Q30). The part of the surface water body that contains the Delph reservoir and its upstream catchment has water available at low flows (Q95 and Q70), and no water available at higher flows (Q50 and Q30). The remaining part of the catchment, downstream of the reservoirs has water available at low flows (Q95 and Q70), limited water available at medium flows (Q50), and no water available at high flows (Q30). It is likely the compensation flows from the reservoirs help to maintain water availability at low flows, and as such a reduction in the compensation flow could effect the hydrological regime of the surface water body and cause a reduction in ecological status. However given the small reduction in compensation releases compared to the total volume, the availability of water at lower flows, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Moderate**	**Moderate by 2015**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112069064710**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – ASHWORTH MOOR, GREENBOOTH, LOWER NADEN AND MIDDLE NADEN**			
		Water body Name:		**Naden Brook**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Roch Irk Medlock**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Roch (Spodden to Irwell)**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	**-**			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Ashworth Moor, Greenbooth, Lower and Middle Naden reservoirs from 18.9 Ml/d to 18.0 Ml/d, a reduction of 0.9 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that: The part of the surface water body that contains the Ashworth Moor reservoir and its immediate catchment has no water available at any flows. The part of the surface water body that contains the Greenboth and Naden reservoirs and their upstream catchments has water available at low flows (Q95 and Q70), and no water available at higher flows (Q50 and Q30). The remaining part of the catchment, downstream of the reservoirs has water available at low flows (Q95 and Q70), limited water available at higher flows (Q50 and Q30). It is likely the compensation flows from the reservoirs help to maintain water availability at low flows, and as such a reduction in the compensation flow could effect the hydrological regime of the surface water body and cause a reduction in ecological status. However given the small reduction in compensation releases compared to the overall compensation release, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	**-**						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**-**	**-**					
	Hydromorphology	**Hydrological regime**	**-**	**-**					
		River continuity							
		Morphological conditions	**-**						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	**-**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112069064730**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – SPRING MILL & COWM**			
		Water body Name:		**Spodden**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Roch Irk Medlock**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Roch (Spodden to Irwell)**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	**-**			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Spring Mill and Cown reservoirs from 18.9 Ml/d to 18.0 Ml/d, a reduction of 0.9 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that: The part of the surface water body that contains the Spring Mill reservoir and its upstream catchment has no water available at lower flows (Q95 and Q70), and limited water available at higher flows (Q50 and Q30). The part of the surface water body that contains the Cowm reservoir and its upstream catchment has no water available at low flows (Q95 and Q70), but water available at higher flows (Q50 and Q30). The remaining part of the catchment, downstream of the reservoirs has no water available at low flows (Q95 and Q70), but water available at higher flows (Q50 and Q30). A reduction in the compensation flow could effect the hydrological regime of the surface water body and cause a reduction in ecological status. However given the small reduction compared to the overall compensation release, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	**-**						
		Macrophytes and phytobenthos	**Moderate**	**Good by 2027**					
		Benthic invertebrates	**-**	**-**					
		Fish	**Moderate**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	**-**	**-**					
		River continuity							
		Morphological conditions	**-**						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	**-**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

Water body ID:			**GB112069064720**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – WATERGROVE & BLACKSTONE EDGE**				
Water body Name:			**Roch (Source to Spodden)**	**Scheme Phase:**	**WR159**				
RBMP:			**North West**	**Reference:**	**Construction**		**Operational**		
Operational catchment:			**Roch Irk Medlock**	**Impact potential:**	**Direct**		**Direct**		
Designation (and uses):			**Heavily Modified**						
Relevant upstream water bodies:			**-**						
Downstream water bodies:			**Roch (Spodden to Irwell)**						
	WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	**-**		**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Watergrove Reservoir from 18.9 Ml/d to 18.0 Ml/d, plus reduction of compensation flow from Blackstone Edge Reservoir from 16.8 Ml/d to 15.7 Ml/d. Total combined reduction of 2 Ml/d. (Note: Total reduction for the reservoir Aquator groups assumed to take place in this water body.) The ALS shows that the surface water body has no water available at any flow. However, the heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**	
		Macrophytes	**-**						
		Macrophytes and phytobenthos	**Moderate**	**Good by 2027**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Moderate**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	**-**	**-**					
		River continuity							
		Morphological conditions	**-**						
	Physico-chemical	**General physico-chemical**	**High**	**Good by 2015**					
		Specific pollutants:	**-**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112071065090**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – HURSTWOOD, CANT CLOUGH, SWINDEN 1 & 2**			
		Water body Name:		**Brun - headwaters to conf Don**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Calder**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		-					
		Downstream water bodies:		**Brun - conf Don to conf Calder**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Hurstwood, Cat Clough, and Swinden reservoirs from 9.1 Ml/d to 8.1 Ml/d, a reduction of 1.0 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that: The part of the surface water body that contains the Swinden reservoirs and their upstream catchment has no water available at any flows. The part of the surface water body that contains the Hurstwood and Cant Clough reservoirs and their upstream catchments has water available at low flows (Q95 and Q70), but no water available at higher flows (Q50 and Q30). The remaining part of the catchment, downstream of the reservoirs has water available at low flows (Q95), limited water available at medium flows (Q70), and no water available at higher flows (Q50 and Q30). It is likely that compensation flows from the reservoirs are supporting the low flow water availability. A reduction in the compensation flow is could effect the hydrological regime of the surface water body and cause a reduction in ecological status, however given the availability of water at low flows, the impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	-	-					
		Fish	**Good**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**High**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112071065210**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – LANESHAW**			
		Water body Name:		**Colne Water (Laneshaw)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Colne Water**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Colne Water - Laneshaw to Trawden Bk**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	**-**			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Laneshaw reservoir from 9.1 Ml/d to 8.1 Ml/d, a reduction of 1.0 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that: The part of the surface water body that contains the Laneshaw reservoir and its upstream catchment has water available at all flows apart from Q70 when there is limited water available. The remaining part of the catchment, downstream of the reservoir has no water available at low flows (Q95 and Q70), limited water available at medium flows (Q50), and water available at high flows (Q30). The heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**
		Macrophytes	**-**						
		Macrophytes and phytobenthos	**High**	**Good by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Moderate**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	**-**	**-**					
		River continuity							
		Morphological conditions	**-**						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	**-**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112071065130**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER**			
		Water body Name:		**Walverden Water**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Colne Water**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Calder - Pendle Water to conf Ribble**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Coldwell Upper and Lower reservoirs from 9.1 Ml/d to 8.1 Ml/d, a reduction of 1.0 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that: The part of the surface water body that contains the Coldwell Upper reservoir and its upstream catchment has water available at all flows. The part of the surface water body that contains the Coldwell Lower reservoir and its upstream catchment has water available at low flows (Q95), but restricted water availability at medium to high flows (Q70 to Q30). The remaining part of the catchment, downstream of the reservoirs has water available at all flows. Given the availability of water in the downstream catchment, and assuming low flow compensation flows would be maintained, any impacts of the hydrological regime of the water body would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Moderate**	**Good by 2027**					
		Benthic invertebrates	-	-					
		Fish	**Good**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112071065230**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER**			
		Water body Name:		**Pendle Water - headwaters to Colne Water**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Colne Water**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**not designated artificial or heavily modified**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Pendle Water - Colne Water to Walverden Water**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	**-**			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Ogden Upper and Lower reservoirs from 9.1 Ml/d to 8.1 Ml/d, a reduction of 1.0 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that: The part of the surface water body that contains the Ogden Reservoirs and their immediate catchment has no water available at all flows. Most of the remaining part of the catchment, downstream of the reservoirs has water available at the lowest flows (Q95), no water available at low flows (Q70), restricted water available at medium flows (Q50), and water available at high flows (Q30). It is likely that the compensation flows from the Ogden reservoirs are supporting the water availability at the lowest flows. In addition there is water available at all flows in areas associated with the headwaters of the water body. The heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**
		Macrophytes	**-**						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**High**	**Good by 2015**					
		Fish	**Good**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	**Supports Good**	**Supports Good by 2015**					
		River continuity							
		Morphological conditions	**Supports Good**						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	**-**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112071065140**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – CHURN CLOUGH**			
		Water body Name:		**Sabden Brook**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Calder**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**not designated artificial or heavily modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Churn Clough reservoir from 9.1 Ml/d to 8.1 Ml/d, a reduction of 1.0 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body generally has water available at all flows, (Q95, Q70, Q50 and Q30). A small part of the water body which includes the reservoir and its upstream catchment has limited water at high flows (Q30), but water available at low and medium flows. Given the small reduction in compensation releases, that water is available across the surface water body downstream of the reservoir at all flows, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	-	-					
	Hydromorphology	**Hydrological regime**	**Supports Good**	**Supports Good by 2015**					
		River continuity							
		Morphological conditions	**Supports Good**						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112071065390**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – STOCKS**			
		Water body Name:		**Hodder- Stocks Reservoir to conf Croasdale Bk**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Ribble**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Bottoms Beck and Hodder-headwaters to Stocks Reservoir**					
		Downstream water bodies:		**Hodder- conf Croasdale Bk to conf Easington Bk**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Stocks reservoir from 19.2 Ml/d to 18.1 Ml/d, a reduction of 1.1 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has water available at low flows (Q95), but no water available at medium and high flows (Q70, Q50 and Q30). It is likely that the compensation release from the reservoir is supporting the water availability at low flows. However, the reduction is relatively small compared to the total compensation release, and the heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**
		Macrophytes	-						
		Macrophytes and phytobenthos	**High**	**Good by 2015**					
		Benthic invertebrates	**High**	**Good by 2015**					
		Fish	-	**Not assessed**					
	Hydromorphology	**Hydrological regime**	-	**Not assessed**					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**All high**	**Good by 2015**					
		Specific pollutants:	**All high**	**High by 2015**					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2021**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2021**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112069064690**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW, HANGING LEES & ROODEN**			
		Water body Name:		**Beal**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Roch Irk Medlock**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Piethorne, Norman Hill, Kitcliffe, Ogden Milnrow, Hanging Lees and Rooden reservoirs from 16.8 Ml/d to 15.7 Ml/d, a reduction of 1.1 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has no water available at all flows (Q95, Q70, Q50 and Q30). However, the heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Moderate**	**Good by 2027**					
		Benthic invertebrates	**Moderate**	**Moderate by 2015**					
		Fish	**Moderate**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB104027062600**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – WARLAND, WHITE HOLME, AND LIGHT HAZZLES**			
		Water body Name:		**Walsden Water from Source to River Calder**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Calder Upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Warland, White Holme and Light Hazzles reservoirs from 16.8 Ml/d to 15.7 Ml/d, a reduction of 1.1 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the part of the surface water body that contains the reservoirs and their upstream catchments has no water available at lower flows (Q95 and Q70), limited water available at medium flows (Q50), and water available at high flows (Q30). Most of the remaining part of the catchment, downstream of the reservoirs has water available at all flows (there is a small area in the west of the waterbody associated with another reservoir not included in this assessment that has limited water availability at all flows). A reduction in the compensation flow could effect the hydrological regime of the surface water body and cause a reduction in ecological status. However, give the relatively small size of the reduction compared to the overall compensation release, the availability of water in the surface water body as a whole, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Good**	**Good by 2027**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Good**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	-						
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**All high, except Phosphate which is Moderate**	**Good by 2027**					
		Specific pollutants:	**High**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Aire and Calder): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297445/LIT_7862_7e45bb.pdf

		Water body ID:		**GB112069064741**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – CASTLESHAW UPPER & LOWER, READYCON DEAN, CROOKGATE, DOWRY AND NEW YEARS BRIDGE**			
		Water body Name:		**Tame (Source to Chew Brook)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Castleshaw Upper and Lower, Readycon Dean, Crookgate, Dowry and New Years Bridge reservoirs from 16.8 Ml/d to 15.7 Ml/d, a reduction of 1.1 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that: The part of the surface water body that contains the Readycon Dean, Crookgate, Dowry and New Years Bridge reservoirs and their upstream catchment has no water available at any flows. The part of the surface water body that contains the Castleshaw Upper and Lower reservoirs and their upstream catchment has water available at low flows (Q95 and Q70), but no water available at medium to high flows (Q50 to Q30). The remaining part of the catchment, downstream of the reservoirs has water available at low and medium flows (Q95. Q70, and Q50) but no water available at high flows (Q30). It is likely that compensation flows from the reservoirs maintain the low and medium flows. The reduction in compensation flows could have an impact on the hydrological regime of the river, however given that water is generally available across the surface water body, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Moderate**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112069061300**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – GREENFIELD, YEOMAN HEY, DOVESTONE & CHEW**			
		Water body Name:		**Chew Brook**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Greenfield, Yeoman Hey, Dovestone, and Chew reservoirs from 20.7 Ml/d to 19.5 Ml/d, a reduction of 1.2 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the at medium and high flows (Q70, Q50 and Q30), there is no water available across the surface water body. At Q95 there is no water available in the part of the catchment that includes the Greenfield and Yeoman Hay reservoirs and their upstream catchment, but water is available in the downstream part of the water body and the tributary that includes the Chew Reservoir. It is likely that compensation releases from the reservoirs support the water availability at low flows. The heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. Fish passage was identified as an issue but this option is not making any changes to fish pass arrangements. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	-					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Moderate**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112069061111**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER & LOWER**			
		Water body Name:		**Tame (Chew Brook to Swineshaw Brook)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Brushes, Walkerwood, Swineshaw Higher and Lower reservoirs from 20.7 Ml/d to 19.5 Ml/d, a reduction of 1.2 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has water available at all flows (Q95, Q70, Q50 and Q30). Given the relatively small reduction compared to the total compensation release, that water is available across the surface water body at all flows, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	-					
		Benthic invertebrates	**Moderate**	**Good by 2027**					
		Fish	-	-					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Good**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112069060970**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – KINDER**			
		Water body Name:		**Sett**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**not designated artificial or heavily modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Kinder reservoir from 16.9 Ml/d to 15.5 Ml/d, a reduction of 1.4 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that the part of the surface water body that contains the Kinder Reservoir and its upstream catchment has no water available at any flows. The remainder of the water body has water available at high and medium flows (Q30 and Q50), but no water available at low flows (Q95 and Q70). However, the heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Moderate**	**Good by 2027**					
		Benthic invertebrates	**High**	**Good by 2015**					
		Fish	-	-					
	Hydromorphology	**Hydrological regime**	**Does Not Support Good**	**Supports Good by 2027**					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**High**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112069060850**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – ERRWOOD & FERNILEE**			
		Water body Name:		**Goyt (Source to Randall Carr Brook)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Errwood and Fernilee reservoirs from 16.9 Ml/d to 15.5 Ml/d, a reduction of 1.4 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that the part of the surface water body that contains the Errwood Reservoir and its upstream catchment has no water available at any flows. The remainder of the water body (which includes the Fernilee Reservoir) has water available at low flows (Q95 and Q70), but no water available high and medium flows (Q30 and Q50). It is likely that the availability of water at low flows is supported by compensation releases from both reservoirs. A reduction in the compensation flow could have an effect the hydrological regime of the surface water body. However, given the size of the reduction compared to the overall compensation release, and that water is available at low flows, effects of the hydrological regime are not expected to be prolonged or widespread.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Moderate**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**High**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112069060920**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE**			
		Water body Name:		**Micker (Norbury) Brook**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Bollin Dean Mersey Upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Bollinhurst and Horse Coppice reservoirs from 16.9 Ml/d to 15.5 Ml/d, a reduction of 1.4 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has no water available at all flows (Q95, Q70, Q50 and Q30). However, the heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	**Not assessed**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Bad**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112069064650**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN & HOLDEN WOOD**			
		Water body Name:		**Ogden**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Calf Hey, Ogden and Holden Wood reservoirs from 11.3 Ml/d to 9.8 Ml/d, a reduction of 1.5 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that the part of the surface water body that contains the Calf Hay Reservoir and its upstream catchment has no water available at any flows. The remainder of the water body (which includes the Ogden and Holden Wood Reservoirs) has water available at all flows. A reduction in the compensation flow could have an effect the hydrological regime of the surface water body. However, given the size of the reduction compared to the overall compensation release, and that water is available across the flow regime, effects on the hydrological regime are not expected to be prolonged or widespread.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	-					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Good**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112069064660**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – COWPE & CRAGG HOLES**			
		Water body Name:		**Irwell (Source to Whitewell Brook)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Cowpe and Cragg Holes reservoirs from 11.3 Ml/d to 9.8 Ml/d, a reduction of 1.5 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body generally has water available at all flows (Q95, Q70, Q50 and Q30). The only exception to this is the small area of the water body that contains the Cowpe Reservoir and its upstream catchment which has water available at low flows, but not at high and medium flows (Q30 and Q50). Given the location of the reservoir of a small downstream tributary of the Irwell, that water is available across most of the surface water body at all flows, and the relatively small reduction compared to the total compensation release, effects of the hydrological regime of the water body would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**Moderate**	**Good by 2027**					
		Fish	**Moderate**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112069064620**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – SCOUT MOOR**			
		Water body Name:		**Irwell (Rossendale STW to Roch)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Scout Moor reservoir from 11.3 Ml/d to 9.8 Ml/d, a reduction of 1.5 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body generally has water available at all flows (Q95, Q70, Q50 and Q30). The only exception to this is the small area of the water body that contains the Scout Moor Reservoir and its upstream catchment which has water available at low and medium flows, but limited water available at high flows (Q30). A reduction in compensation flow could have an impact of the hydrological regime of the water body, however, given the availability of water throughout the catchment, and the relatively small reduction compared to the total compensation release and the size of the water body as a whole, any effects of the hydrological regime of the water body would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Moderate**	**Moderate by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	-	-					
	Hydromorphology	**Hydrological regime**	**Supports Good**	**Supports Good by 2015**					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Moderate by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

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Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112069064670**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – CLOUGH BOTTOM**			
		Water body Name:		**Whitewell Brook**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Clough Bottom reservoir from 11.3 Ml/d to 9.8 Ml/d, a reduction of 1.5 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that the part of the surface water body that contains the Clough Bottom Reservoir and its upstream catchment has no water available at any flows. The remainder of the water body downstream of the reservoir has water available at all flows. A reduction in the compensation flow could have an effect the hydrological regime of the surface water body. However, given the size of the reduction compared to the overall compensation release, and that water is available across the flow regime, effects of the hydrological regime are not expected to be prolonged or widespread.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-	-					
		Benthic invertebrates	**Moderate**	**Good by 2027**					
		Fish	**Good**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
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EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112069064680**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – CLOWBRIDGE**			
		Water body Name:		**Limy Water**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Clowbridge reservoir from 11.3 Ml/d to 9.8 Ml/d, a reduction of 1.5 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that the part of the surface water body that contains the Clow Bridge Reservoir and its upstream catchment has water available at low flows (Q95), but no water available at medium and high flows (Q70 to Q30). The remainder of the water body downstream of the reservoir has water available at all flows. A reduction in the compensation flow could have an effect the hydrological regime of the surface water body. However, given the size of the reduction compared to the overall compensation release, and that water is available across the flow regime, effects of the hydrological regime are not expected to be prolonged or widespread.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Moderate**	**Good by 2027**					
		Benthic invertebrates	-	-					
		Fish	-	-					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112069060780**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD, VALEHOUSE, BOTTOMS & ARNFIELD)**			
		Water body Name:		**Etherow (Woodhead Res. to Glossop Bk.)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Londendale (Woodhead, Torside, Rhodeswood, Valehouse, Bottoms and Arnfield) reservoirs from 48.6 Ml/d to 45.4 Ml/d, a reduction of 3.2 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has no water available at all flows (Q95, Q70, Q50 and Q30). However, the heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**Poor**	**Moderate by 2027**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**High**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112069061060**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – AUDENSHAW 1, 2 & 3**			
		Water body Name:		**Platt Brook (Source to Fallowfield Bk)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Bollin Dean Mersey Upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Chorlton Brook (Princess Parkway to Mersey)**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	**-**			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Audenshaw 1, 2 and 3 reservoirs from 48.6 Ml/d to 45.4 Ml/d, a reduction of 3.2 Ml/d. It is not clear which WFD water body would be effected by the release (this water body or Tame (Swineshaw Brook to Mersey). (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has water available at all flows (Q95, Q70, Q50 and Q30). Given the small reduction compared to the total compensation release, that water is available across most of the surface water body at all flows, and assuming low flow compensation flows would be maintained, any impacts on the hydrological regime of the surface water body would be localised and temporary.	**Medium**
		Macrophytes	**-**						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**Bad**	**Good by 2027**					
		Fish							
	Hydromorphology	**Hydrological regime**	**Supports good**	**Supports good by 2015**					
		River continuity							
		Morphological conditions							
	Physico-chemical	**General physico-chemical**	**All high apart from phosphate which is poor and ammonia which is moderate**	**#REF!**					
		Specific pollutants:	**Triclosan: high**	**High by 2015**					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Does not require assessment**	**Does not require assessment**					
		Priority substances	**Does not require assessment**	**Does not require assessment**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

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EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112069061112**	**Scheme:**	**Group 1 - Improved reservoir compensation release control – AUDENSHAW 1, 2 & 3**			
		Water body Name:		**Tame (Swineshaw Brook to Mersey)**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Audenshaw 1, 2 and 3 reservoirs from 48.6 Ml/d to 45.4 Ml/d, a reduction of 3.2 Ml/d. It is not clear which WFD water body would be effected by the release (this water body or Platt Brook (Source to Fallowfield Bk). (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has water available at all flows (Q95, Q70, Q50 and Q30). Given the small reduction compared to the total compensation release, that water is available across most of the surface water body at all flows, and assuming low flow compensation flows would be maintained, any impacts on the hydrological regime of the surface water body would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**Moderate**	**Moderate by 2015**					
		Benthic invertebrates	**Moderate**	**Moderate by 2015**					
		Fish	**Poor**	**Good by 2027**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Moderate by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300491/LIT_7883_7c60f1.pdf

		Water body ID:		**GB112075070430**	**Scheme:**	**Group 2 - Improved reservoir compensation release control – Thirlmere**			
		Water body Name:		**St John's Beck**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Derwent**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Thirlmere reservoir from 15.0 Ml/d to 13.6 Ml/d, a reduction of 1.4 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has no water available at all flows (Q95, Q70, Q50 and Q30). However, the heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**
		Macrophytes	-						
		Macrophytes and phytobenthos	**High**	**Good by 2015**					
		Benthic invertebrates	**High**	**Good by 2015**					
		Fish	**High**	**Good by 2015**					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**High**	**Good by 2015**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Derwent and West Cumbria): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300487/LIT_7890._cb5a1e.pdf

		Water body ID:		**GB112070064850**	**Scheme:**	**Group 2 - Improved reservoir compensation release control – RIVINGTON**			
		Water body Name:		**Douglas - Upper**	**Scheme Phase:**	**WR159**			
		RBMP:		**North West**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Douglas OC**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Rivington Reservoirs from 26.6 Ml/d to 24.7 Ml/d, a reduction of 1.9 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS states that: The part of the surface water body that contains Rivington Reservoirs and their immediate catchment, and the headwater catchment to the east have limited water available at low flows (Q95), water available at Q70, and no water available at medium and high flows (Q50 ad Q30). The southern, lowest most part of the water body, and the headwaters above the Rivington Reservoir have water available at all flows. A reduction in the compensation flow could effect the hydrological regime of the surface water body. However given the small size of the reduction compared to the total compensation release, and that the water body downstream of the Rivington Reservoirs has water available across all flows, and assuming low flow compensation flows would be maintained, any impacts would be localised and temporary.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	**High**	**Good by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	-	-					
	Hydromorphology	**Hydrological regime**	-	-					
		River continuity							
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	**Moderate**	**Good by 2027**					
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB102076070720**	**Scheme:**	**Group 2 - Improved reservoir compensation release control – HAWESWATER**			
		Water body Name:		**Haweswater Beck**	**Scheme Phase:**	**WR159**			
		RBMP:		**Solway Tweed**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Eamont**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**Lowther (Lower)**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	**-**			**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	**Reduction in compensation flows due to new penstock arrangements.** Minor level of impact. Reduction of compensation flow from Haweswater reservoir from 24.0 Ml/d to 21.8 Ml/d, a reduction of 2.2 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has no water available at all flows (Q95, Q70, Q50 and Q30). However, the heavily modified water body (HMWB) investigations undertaken by UU and the EA on this water body have not identified any problems with fish passage, downstream flow, downstream habitat/morphology, or downstream water quality, taking both actual and consented compensation flows into account. As such, the reduction in flows are unlikely to have prolonged or widespread effects of the hydrological regime of the surface water body.	**High**
		Macrophytes	**-**						
		Macrophytes and phytobenthos	**Good**	**Good by 2015**					
		Benthic invertebrates	**Good**	**Good by 2015**					
		Fish	**-**						
	Hydromorphology	**Hydrological regime**	**-**						
		River continuity							
		Morphological conditions	**-**						
	Physico-chemical	**General physico-chemical**	**All high, except Phosphate which is Moderate**	**Good by 2027**					
		Specific pollutants:	**High**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	**Good**	**Good by 2015**					
		Priority substances	**Good**	**Good by 2015**					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Eden and Esk): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300486/LIT_7889_1384b1.pdf

		Water body ID:		**GB109054049880**	**Scheme:**	**Group 2 - Improved reservoir compensation release control – VYRNWY**			
		Water body Name:		**Vrynwy - Lake Vrynwy to conf Afon Cownwy**	**Scheme Phase:**	**WR159**			
		RBMP:		**Severn**	**Reference:**	**Construction**		**Operational**	
		Operational catchment:		**Severn Uplands**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**Afon Nadroedd - source to Lake Vyrnwy, Afon Cedig - source to Lake Vyrnwy, Eunant - source to Lake Vyrnwy (Pont Eunant)**					
		Downstream water bodies:		**Afon Vyrnwy - conf Afon Cownwy to conf Afon Banwy**					
		WFD Element *(Receptor)*	**Status**	**RBMP Objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Installation of new automatic penstock arrangements.** No or minimal impact.	**High**	Reduction in compensation flows due to new penstock arrangements. Minor level of impact. Reduction of compensation flow from Vyrnwy reservoir from 48.4 Ml/d to 45.0 Ml/d, a reduction of 3.4 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that the surface water body has water available at medium and high flows (Q30, Q50 and Q70), and limited water available at low flows (Q95). A reduction in the compensation flow could effect the hydrological regime of the surface water body, however due to the small size of the reduction compared to the total compensation release, the general water availability, and assuming that low flow compensation is maintained, any impacts of the hydrological regime of the water body would be localised and minor.	**Medium**
		Macrophytes							
		Macrophytes and phytobenthos							
		Benthic invertebrates							
		Fish	**High**						
	Hydromorphology	**Hydrological regime**	-						
		River continuity							
		Morphological conditions							
	Physico-chemical	**General physico-chemical**	**All high or good**						
		Specific pollutants:	**Moderate**						
WFD elements for Rivers: Chemical		**Priority hazardous substances**							
		Priority substances	**Good**						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2021**					
		Chemical	**Good**	**Good by 2015**					
		Overall	**Moderate**	**Good by 2021**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Licensed compensation flows have been set to maintain flows at or above the environmental flow index (EFI).

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\war-fs1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Regional\WR159\WR159_Compensation control - Group 1.docx
EA Abstraction Licence Strategy (Sever Corridor): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291406/LIT_7848_c0b50e.pdf

		Water body ID:		**GB112073071070**	**Scheme:**	**River Bela to Thirlmere Aqueduct**			
		Water body Name:		**Bela**	**Reference**	**WR800**			
		RBMP:		**Kent and Leven**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Bela**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Holme Beck, Peasey Beck and Stainton Beck**					
		Downstream water bodies:		**Kent**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact.	**High**	**Use of new transfer pipe line, pumping station and surface water intake.** No or minimal impact. **New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from the River Bela near Milnthorpe of 4.5 Ml/d. In the ALS, water is identified as available at all of the flow ranges. The abstraction is relatively small in size and the new abstraction would be obtained through abstraction licence trading. It is assumed that the trading licence is located on the same reach of river, minimising any changes to the hyrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Good						
		Fish	High						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	All good						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stock
EA Abstraction Licence Strategy (South Cumbria): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT

		Water body ID:		**GB41202G102100**	**Scheme:**	**River Bela to Thirlmere Aqueduct**			
		Water body Name:		**Palaeozoic and Carboniferous Aquifers**	**Reference**	**WR800**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Cumbria South Lower Palaeozoic and Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New surface water intake.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station and surface water intake** No or minimal impact. **New surface water abstraction quantity.** No or minimal impact. New surface water abstraction from the River Bela near Milnthorpe of 4.5 Ml/d. In the ALS, no groundwater management unit is defined for this area. For the surface water body, water is identified as available accross the flow regime. The abstraction is relatively small in size, and is unlikely to cause any changes to the wetted area of the River Bela. This secondary aquifer is unlikely to be hightly dependent on surface water courses to sustain its quantitiative status. Given the minor level of impact expected for the surface water body, no or minimal impact is expected for the groundwater body.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	No trend						
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Abstraction Licence Strategy (South Cumbria): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf

		Water body ID:		**GB30328860**	**Scheme:**	**THIRD PARTY OPTION: Cow Green IR to Haweswater via Heltondale aqueduct**			
		Water body Name:		**Cow Green Reservoir**	**Reference:**	**WR810**			
		RBMP:		**Northumbria**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Tees Upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Lakes\Reservoirs: Ecological	**Biology**	**Phytoplankton**	High			**New surface water intake.** Minor level of impact.	**High**	**New surface water abstraction quantity.** No or minimal impact. New abstraction of 40 Ml/d from Cow Green Reservoir, transfer via pipeline to Haweswater Reservoir via Heltondale Aqueduct. It is assumed that the Cow Green Reservoir has capacity for the new abstraction, the volume and surface area of the reservoir will not be significantly changed, and that compensation flows will be maintained to the River Tees. A new abstraction licence would be required to be granted by the Environment Agency.	**Low**
		Macrophytes	-						
		Phytobenthos	-						
		Macrophytes and phytobenthos	-						
		Chironomids (CPET)	-						
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
	Physico-chemical	**Morphological conditions**	-						
		General physico-chemical	Salinity - High Total Phosphorus - Good						
		Specific pollutants:	Copper - High						
WFD elements for Lakes\ Reservoirs: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR810\WR81
EA Abstraction Licence Strategy (Tees): https://www.gov.uk/government/publications/tees-abstraction-licensing-strategy

		Water body ID:		**GB103025076080**	**Scheme:**	**THIRD PARTY OPTION: Cow Green IR to Haweswater via Heltondale aqueduct**			
		Water body Name:		**Tees from Trout Beck t**	**Reference:**	**WR810**			
		RBMP:		**Northumbria**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Tees Upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact.	**High**	**New surface water abstraction quantity.** No or minimal impact. New abstraction of 40 Ml/d from Cow Green Reservoir, transfer via pipeline to Haweswater Reservoir via Heltondale Aqueduct. Abstraction is from the reservoir, rather than a water course in the surface water body. It is assumed that the Cow Green Reservoir has capacity for the new abstraction, the volume and surface area of the reservoir will not be significantly changed, and that compensation flows will be maintained to the River Tees. A new abstraction licence would be required to be granted by the Environment Agency.	**Low**
		Macrophytes							
		Macrophytes and phytobenthos							
		Benthic invertebrates							
		Fish							
	Hydromorphology	**Hydrological regime**							
		River continuity							
		Morphological conditions							
	Physico-chemical	**General physico-chemical**							
		Specific pollutants:							
WFD elements for Rivers: Chemical		**Priority hazardous substances**							
		Priority substances							
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which wo
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR810\W
EA Abstraction Licence Strategy (Tees): https://www.gov.uk/government/publications/tees-abstraction-licensing-strategy

		Water body ID:		**GB40302G700300**	**Scheme:**	**THIRD PARTY OPTION: Cow Green IR to Haweswater via Heltondale aqueduct**			
		Water body Name:		**Tees Carb Limestone & Millstone Grit**	**Reference**	**WR810**			
		RBMP:		**Northumbria**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Tees Carb Limestone & Millstone Grit**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New surface water intake.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New pumping station.** No or minimal impact.	**High**	**New surface water abstraction quantity** No or minimal impact. New abstraction of 40 Ml/d from Cow Green Reservoir, transfer via pipeline to Haweswater Reservoir via Heltondale Aqueduct. The abstraction is from the reservoir, not a natural water course within the water body. It is assumed that Cow Green Reservoir has capacity for the new abstraction, the volume and surface area of the reservoir will not be significantly changed, and that compensation flows will be maintained to the River Tees. Therefore significant changes in the status of the groundwater body are unlikely. A new abstraction licence would be required to be granted by the Environment Agency. **New Transfer Pipe Line and Pumping Station** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Poor by 2015**	**N/A**				
		Overall	**Poor**	**Poor by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't hav
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of est
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR810\WR810_Th
EA Abstraction Licence Strategy (Tees): https://www.gov.uk/government/publications/tees-abstraction-licensing-strategy

		Water body ID:		**GB30327698**	**Scheme:**	**THIRD PARTY OPTION: Kielder Water IR transfer**			
		Water body Name:		**Kielder Water**	**Reference:**	**WR812**			
		RBMP:		**Northumbria**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**North Tyne Upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**(reservoir)**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Lakes\Reservoirs: Ecological	**Biology**	**Phytoplankton**	Not assessed			**New surface water intake.** Minor level of impact.	**High**	**New surface water abstraction quantity.** No or minimal impact. New abstraction of 100 Ml/d from Kielder Water. Transfer via pipe line to Haweswater Reservoir via Heltondale Aqueduct. It is assumed that Kielder Water has capacity for the new abstraction, the volume and surface area of the reservoir will not be significantly changed, and that compensation flows will be maintained to the River North Tyne. A new abstraction licence would be required to be granted by the Environment Agency. The surface water body catchment for Kielder Reservoir has not been assessed separately as the reservoir forms part of several river surface water bodies. For brevity the river surface water body assessment is described here. All river surface water bodies that intersect Kielder Reservoir have water available across all flows, as do all river water bodies directly downstream of the reservoir. No or minimal impact is anticipated on river surface water bodies, assuming that Kielder Water has capacity for the new abstraction, the volume and surface area of the reservoir will not be significantly changed, and that compensation flows will be maintained to the River North Tyne.	**Low**
		Macrophytes	Not assessed						
		Phytobenthos	Not assessed						
		Macrophytes and phytobenthos	Not assessed						
		Chironomids (CPET)	Not assessed						
		Littoral Invertebrates	Not assessed						
	Hydromorphology	**Hydrological regime**	Not assessed						
		River continuity	Not assessed						
	Physico-chemical	**Morphological conditions**	Not assessed						
		General physico-chemical	Not assessed						
		Specific pollutants:	Not assessed						
WFD elements for Lakes\ Reservoirs: Chemical		**Expert Judgement**	Moderate	Good by 2027					
		Mitigation Measures Assessment	Moderate or less	Good by 2027					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR812\W
EA Abstraction Licence Strategy (Tyne): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307287/lit_7873_84be79.pdf

		Water body ID:		**GB40302G702700**	**Scheme:**	**THIRD PARTY OPTION: Kielder Water IR transfer**			
		Water body Name:		**Tyne Carboniferous Limestone**	**Reference**	**WR812**			
		RBMP:		**Northumbria**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Tyne Carboniferous Limestone**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New /modified surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**New surface water abstraction quantity** No or minimal impact. New abstraction of 100 Ml/d from Kielder Water. Transfer via pipe line to Haweswater Reservoir via Heltondale Aqueduct. The abstraction is from the reservoir, not a natural water course within the water body. It is assumed that Kielder Water has capacity for the new abstraction (the ALS indicates that the River North Tyne has water available for abstraction licencing across all flows), the volume and surface area of the reservoir will not be significantly changed, and that compensation flows will be maintained to the River North Tyne. Therefore significant changes in the status of the groundwater body are unlikely. A new abstraction licence would be required to be granted by the Environment Agency. **Use of new transfer pipe line and pumping station** No or minimal impact.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR812\WF
EA Abstraction Licence Strategy (Tyne): https://www.gov.uk/government/publications/tyne-abstraction-licensing-strategy

	Water body ID:		**GB30431243 - GB112073071100**	**Scheme:**	**THIRD PARTY OPTION: Scammonden IR to Buckton Castle via Huddersfield Narrows Canal**			
	Water body Name:		**Scammonden Water**	**Reference:**	**WR813**			
	RBMP:		**Humber**	**Scheme Phase:**	**Construction**		**Operational**	
	Operational catchment:		**Calder Middle**	**Impact potential:**	**Direct**		**Direct**	
	Designation (and uses):		**heavily modified**					
	Relevant upstream water bodies:		**-**					
	Downstream water bodies:		**-**					
	WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Lakes\Reservoirs: Ecological – **Biology**	**Phytoplankton**	-			**New surface water intake.** Minor level of impact.	**High**	**New surface water abstraction quantity** No or minimal impact. New abstraction of 5 Ml/d from Scammonden Reservoir, transfer via the Huddersfield Narrow Canal for re-abstraction at Buckton Castle WTW. It is assumed that Scammonden Reservoir has capacity for the new relatively small abstraction, the volume and surface area of the reservoir will not be significantly changed, and that compensation flows will be maintained to the Black Brook. A new abstraction licence would be required to be granted by the Environment Agency.	**Low**
	Macrophytes	-						
	Phytobenthos	-						
	Macrophytes and phytobenthos	-						
	Chironomids (CPET)	-						
	Fish	-						
Hydromorphology	**Hydrological regime**	-						
	River continuity	-						
Physico-chemical	**Morphological conditions**	-						
	General physico-chemical	-						
	Specific pollutants:	-						
WFD elements for Lakes\Reservoirs: Chemical	**Priority hazardous substances**	Does not require assessment						
	Priority substances	Does not require assessment						
Overall Status\ Potential	**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
	Chemical	**Good**	**Good by 2015**	**N/A**				
	Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR813\WR813_TPO_Scammonden IR to Buckton Castle.docx
EA Abstraction Licence Strategy (Aire and Calder): https://www.gov.uk/government/publications/abstraction-licensing-aire-and-calder-strategy

		Water body ID:		**GB104027062570**	**Scheme:**	**THIRD PARTY OPTION: Scammonden IR to Buckton Castle via Huddersfield Narrows Canal**			
		Water body Name:		**Black Brook from Source to River Calder**	**Reference:**	**WR813**			
		RBMP:		**Humber**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Calder Middle**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**heavily modified**					
		Relevant upstream water bodies:		**None.**					
		Downstream water bodies:		**Calder from Ryburn Confluence to River Colne**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New /modified surface water intake.** Minor level of impact. **New/modified pumping station.** Minor level of impact.	**High**	**Use of new transfer pipe line and pumping station.** No or minimal impact. **New surface water abstraction quantity** No or minimal impact. New abstraction of 5 Ml/d from Scammonden Reservoir, transfer via the Huddersfield Narrow Canal for re-abstraction at Buckton Castle WTW. The abstraction is from the reservoir within this surface water body, not a natural water course within the water body. It is assumed that Scammonden Reservoir has capacity for the new relatively small abstraction (the ALS indicates that the Black Brook as water available for abstraction licencing across all flows), the volume and surface area of the reservoir will not be significantly changed, and that compensation flows will be maintained to the Black Brook. A new abstraction licence would be required to be granted by the Environment Agency.	**Low**
		Macrophytes	-						
		Macrophytes and phytobenthos	Good	Good by 2015					
		Benthic invertebrates	Good	Good by 2015					
		Fish	Good	Good by 2015					
	Hydromorphology	**Hydrological regime**	Not assessed						
		River continuity	Not assessed						
		Morphological conditions	Not assessed						
	Physico-chemical	**General physico-chemical**	All high apart from phosphate which is moderate	Good by 2015, apart from phosphate which is moderate by 2015.					
		Specific pollutants:	Not assessed						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estua
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR813\WR813_TP
EA Abstraction Licence Strategy (Aire and Calder): https://www.gov.uk/government/publications/abstraction-licensing-aire-and-calder-strategy

		Water body ID:		**GB71210268**	**Scheme:**	**THIRD PARTY OPTION: Scammonden IR to Buckton Castle via Huddersfield Narrow Canal**			
		Water body Name:		**Huddersfield Narrow Canal west section**	**Reference:**	**WR813**			
		RBMP:		**Humber**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Calder canals**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Artificial**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**New surface water intake.** Minor level of impact.	**High**	**Transfer of water via canal.** Minor level of impact. **New surface water abstraction quantity.** Minor level of impact. New abstraction of 5 Ml/d from Huddersfield Narrow Canal near Buckton WTW (water is abstracted from Scammonden Reservoir, and transferred via the Huddersfield Narrow Canal for re-abstraction at Buckton Castle WTW). The abstraction is of water that has been discharged upstream in the canal. It is assumed the canal will be managed to maintain flows which support the hydrological regime, so no long term or widespread impacts on the status of the canal are anticipated. A new abstraction licence would be required to be granted by the Environment Agency.	**Low**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	-						
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	-						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estua
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR813\WR813_TF
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/publications/upper-mersey-abstraction-licensing-strategy

		Water body ID:		**GB112069061111**	**Scheme:**	**THIRD PARTY OPTION: Scammonden IR to Buckton Castle via Huddersfield Narrows Canal**			
		Water body Name:		**Tame (Chew Brook to Swineshaw Brook)**	**Reference:**	**WR813**			
		RBMP:		**Humber**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Goyt Etherow Tame**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**heavily modified**					
		Relevant upstream water bodies:		**Chew Brook, Tame (Source to Chew Brook)**					
		Downstream water bodies:		**Tame (Swineshaw Brook to Mersey)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **New pumping station.** Minor level of impact.	**High**	**Use of new transfer pipe line and pumping station.** No or minimal impact. **Transfer of water via canal.** No or minimal impact. **New surface water abstraction quantity.** No or minimal level of impact. New abstraction of 5 Ml/d from Huddersfield Narrow Canal near Buckton WTW (water is abstracted from Scammonden Reservoir, and transferred via the Huddersfield Narrow Canal for re-abstraction at Buckton Castle WTW). The abstraction is from the canal, a managed water course within this water body. It is assumed that there is limited interaction between the canal and the "natural" water courses, so there will not by any significant change to the status of the surface water body. A new abstraction licence would be required to be granted by the Environment Agency.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	Moderate	Good by 2017					
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	All high apart from phosphate which is good	Good by 2015					
		Specific pollutants:	Triclosan - high	High by 2015					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't ha
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of e
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR813\WR813
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/publications/upper-mersey-abstraction-licensing-strategy

		Water body ID:		**GB40402G700400**	**Scheme:**	**THIRD PARTY OPTION: Scammonden IR to Buckton Castle via Huddersfield Narrows Canal**			
		Water body Name:		**Aire and Calder Carb Limestone - Millstone Grit Coal - Measures**	**Reference**	**WR813**			
		RBMP:		**Humber**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Aire and Calder Carb Limestone - Millstone Grit Coal - Measures**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact. **New outfall to canal.** No or minimal impact.	**High**	**New surface water abstraction quantity** No or minimal impact. New abstraction of 5 Ml/d from Scammonden Reservoir, transfer via the Huddersfield Narrow Canal for re-abstraction at Buckton Castle WTW. The abstraction is from the reservoir, not a natural water course within the water body. It is assumed that Scammonden Reservoir has capacity for the new relatively small abstraction (the ALS indicates that the Black Brook as water available for abstraction licencing across all flows), the volume and surface area of the reservoir will not be significantly changed, and that compensation flows will be maintained to the Black Brook. Therefore significant changes in the status of the groundwater body are unlikely. A new abstraction licence would be required to be granted by the Environment Agency. **Use of new transfer pipe line, pumping station, surface water intake, and outfall** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Poor by 2015**	**N/A**				
		Overall	**Poor**	**Poor by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't ha
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of e
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR813\WR813_
EA Abstraction Licence Strategy (Aire and Calder): https://www.gov.uk/government/publications/abstraction-licensing-aire-and-calder-strategy

		Water body ID:		**GB41202G102900**	**Scheme:**	**THIRD PARTY OPTION: Scammonden IR to Buckton Castle via Huddersfield Narrow Canal**			
		Water body Name:		**Manchester and East Cheshire Carboniferous Aquifers**	**Reference**	**WR813**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester and East Cheshire Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good	Good by 2015		**New /modified surface water intake.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **New pumping station.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station, surface water intake, and transfer of water via canal.** No or minimal impact. **New surface water abstraction quantity.** No or minimal level of impact. New abstraction of 5 Ml/d from Huddersfield Narrow Canal near Buckton WTW (water is abstracted from Scammonden Reservoir, and transferred via the Huddersfield Narrow Canal for re-abstraction at Buckton Castle WTW). The abstraction is from the canal, a managed water course within this water body. It is assumed that there is limited interaction between the canal and the secondary aquifers in the groundwater body, so there will not by any significant change to the status of the groundwater body. A new abstraction licence would be required to be granted by the Environment Agency.	**Medium**
		Quantitative GWDTEs test	Good	Good by 2015					
		Quantitative Saline Intrusion	Good	Good by 2015					
		Quantitative Water Balance	Good	Good by 2015					
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good	Good by 2015					
		Chemical Drinking Water Protected Area	Poor	Good by 2027					
		Chemical GWDTEs test	Good	Good by 2015					
		Chemical Saline Intrusion	Good	Good by 2015					
		General Chemical Test	Good	Good by 2015					
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't ha
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of e
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR813\WR813_
EA Abstraction Licence Strategy (Upper Mersey): https://www.gov.uk/government/publications/upper-mersey-abstraction-licensing-strategy

		Water body ID:		**GB41101G202400**	**Scheme:**	**Increased Abstraction Capacity At Heronbridge**			
		Water body Name:		**Dee Permo-Triassic Sandstone**	**Reference**	**WR814a**			
		RBMP:		**Dee GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Gee Permo-Triassic Sandstone**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Modified water treatment works.** No or minimal impact.	**High**	**Modified water treatment works.** No or minimal impact. **Changed surface water abstraction quantity.** No or minimal impact. Increase abstraction for Huntington WTW by 24 Ml/d. Additional licence volume is a result of a proposed licence trade from an existing industrial use abstraction located at Heron Bridge of 35 Ml/d. The licence trade results in an overall reduction in abstraction quantity from the River Dee of 11 Ml/d. The Dee AMS indicates there is no new water available for abstraction but it may be possible to trade water with an existing abstractor. Given the short distance between the old and new abstraction locations, there will be no significant change in groundwater - surface water interactions between the River Dee and the groundwater body.	**High**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Element	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	No trend						
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=3
EA Historical Landfill: http://maps.environment-
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html
Dee Catchment Abstraction Management Strategy: https://naturalresources.wales/media/674759/dee_cams_2015_english.pdf

		Water body ID:		**GB111067057080**	**Scheme:**	**Increased Abstraction Capacity At Heronbridge**			
		Water body Name:		**Dee- Chester Weir to Ceiriog**	**Reference**	**WR814a**			
		RBMP:		**Dee**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Dee**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified water body**					
		Relevant upstream water bodies:		**Ceiriog - confluence Dee to Teirw, Dee - Ceiriog to Alwen, Shell Brook, Dungrey Brook, Worthenbury Brook - lower, Clywedog - Dee to Gwenfro, Alyn - Hope to Dee, Pulford Brook, Aldford Brook, Henlake Brook**					
		Downstream water bodies:		**N/A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Good			**Modified water treatment works.** No or minimal impact.	**High**	**Modified water treatment works.** No or minimal impact. **Changed surface water abstraction quantity.** No or minimal impact. Increase abstraction for Huntington WTW by 24 Ml/d. Additional licence volume is a result of a proposed licence trade from an existing industrial use abstraction located at Heron Bridge of 35 Ml/d. The licence trade results in an overall reduction in abstraction quantity from the River Dee of 11 Ml/d. The Dee AMS indicates there is no new water available for abstraction but it may be possible to trade water with an existing abstractor. Given the short distance between the old and new abstraction locations, no significant change in water body status will occur. The reduced overall licence quantity may have a positive benefit on the hydrological regime of the lower reaches of the water body.	**High**
		Macrophytes	Poor						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	Moderate						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	N/A						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All reported elements high or good						
		Specific pollutants:	All reported elements high or good						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All reported elements good apart form Tributyltin Compounds Nonylphenol which fail						
		Priority substances	All reported elements good						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2021**	**N\A**				
		Chemical	**Fail**	**Good by 2021**	**N\A**				
		Overall	**Moderate**	**Good by 2021**	**N\A**				

Assumptions

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=ma
EA Historical Landfill: http://maps.environment-
Dee Catchment Abstraction Management Strategy: https://naturalresources.wales/media/674759/dee_cams_2015_english.pdf

		Water body ID:		**GB111067052060**	**Scheme:**	**Increased treatment capacity at Hurleston WTW via Canal**			
		Water body Name:		**Dee - Ceiriog to Alwen**	**Reference**	**WR814b**			
		RBMP:		**Dee**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Dee**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**Dee - Alwen to Llyn Tegid, Alwen - Dee to Ceirw, Camddwr, Eglwyseg, Trefnant Brook, Eitha**					
		Downstream water bodies:		**Dee - Chester Weir to Ceiriog**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Good			**Transfer of water via canal.** No or minimal impact, no construction necessary.	**High**	**Transfer of water via canal.** Minor level of impact. Increased flow in canal likely to be balanced by reduction in the Canal and River Trust abstraction. **Increased quantity of surface water abstraction.** Medium level of impact. Increase in licenced quantity of abstraction from 50 Ml/d to 74 Ml/d from the River Dee at Llantisilio. Additional licence volume a result of a proposed licence trade from an existing industrial use abstraction located at Heron Bridge of 35 Ml/d. The licence trade results in an overall reduction in abstraction quantity from the River Dee of 11 Ml/d, but relocates 24 Ml/d of abstraction into the upper reaches of the river. The Dee AMS indicates there is no new water available for abstraction but it may be possible to trade water with an existing abstractor. It is unclear if 24 Ml/d would be available at Llantisilio, or if flow restrictions would apply. Flows in the River Dee are regulated to allow public water supply abstraction. The increase in abstraction at Llantisilio may be balanced by a reduction in abstraction by the Canal and River Trust.	**Low**
		Macrophytes	Good						
		Macrophytes and phytobenthos	Not applicable						
		Benthic invertebrates	High						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All reported substances good or high.						
		Specific pollutants:	All reported substances good or high.						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All reported substances good or high apart from Tributyltin Compounds which Fail						
		Priority substances	All reported substances good or high.						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Fail**	**Good by 2021**	**N/A**				
		Overall	**Moderate**	**Good by 2021**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&scale=7
EA Historical Landfill: http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=waste&layerGroups=default&lang=_e&ep=map&scale=1&x=357682.99999999994&y=355133.99999999994#x=322374&y=497910&lg=1,2,3,10,&scale=7
Dee Catchment Abstraction Management Strategy: https://naturalresources.wales/media/674759/dee_cams_2015_english.pdf

		Water body ID:		**GB41102G200200**	**Scheme:**	**Increased treatment capacity at Hurleston WTW via Canal**				
		Water body Name:		**Dee Silurian/Ordovician**	**Reference**	**WR814b**				
		RBMP:		**Dee**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Dee Silurian/Ordovician**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**Not identified**						
		Downstream water bodies:		**Not identified**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer of water via canal.** No or minimal of impact, no construction necessary.	**High**	**Transfer of water via canal.** No or minimal impact. No change in the interaction between the canal and groundwater body expected. **Increased quantity of surface water abstraction.** Minor level of impact. Change in flow regime in the River Dee may have an impact on interactions between surface water and groundwater (i.e. leakage of river water to groundwater). However as the River Dee is regulated to support abstraction and environmental needs, and the increase in abstraction may be balanced by a reduction in other abstractions, there is likely to be a significant impact on the groundwater body. Also Silurian and Ordovician strata are not typically primary aquifers or have high permeability and transmissivity, reducing the sensitivity of the groundwater body.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Not provided						
Overall Status \ Potential		**Quantitative**	**Good**	**N/A**	**N/A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&scale=7
EA Historical Landfill: http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=waste&layerGroups=default&lang=_e&ep=map&scale=1&x=357682.999999999994&y=355133.99999999994#x=322374&y=497910&lg=1,2,3,10,&scale=7
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html
Dee Catchment Abstraction Management Strategy: https://naturalresources.wales/media/674759/dee_cams_2015_english.pdf

		Water body ID:		**GB111067052060**	**Scheme:**	**Increased treatment capacity at Hurleston WTW via Canal**			
		Water body Name:		**Dee - Ceiriog to Alwen**	**Reference**	**WR814b**			
		RBMP:		**Dee**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Dee**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**Dee - Alwen to Llyn Tegid, Alwen - Dee to Ceirw, Camddwr, Eglwyseg, Trefnant Brook, Eitha**					
		Downstream water bodies:		**Dee - Chester Weir to Ceiriog**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact.	**High**	**Transfer of water via canal.** Minor level of impact. Increased flow in canal likely to be balanced by reduction in the Canal and River Trust abstraction. **Increased quantity of surface water abstraction.** Medium level of impact. Increase in licenced quantity of abstraction from 50 Ml/d to 74 Ml/d from the River Dee at Llantisilio. Additional licence volume a result of a proposed licence trade from an existing industrial use abstraction located at Heron Bridge of 35 Ml/d. The licence trade results in an overall reduction in abstraction quantity from the River Dee of 11 Ml/d, but relocates 24 Ml/d of abstraction into the upper reaches of the river. The Dee AMS indicates there is no new water available for abstraction but it may be possible to trade water with an existing abstractor. It is unclear if 24 Ml/d would be available at Llantisilio, or if flow restrictions would apply. Flows in the River Dee are regulated to allow public water supply abstraction. The increase in abstraction at Llantisilio may be balanced by a reduction in abstraction by the Canal and River Trust.	**Low**
		Macrophytes	Good						
		Macrophytes and phytobenthos	Not applicable						
		Benthic invertebrates	High						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All reported substances good or high.						
		Specific pollutants:	All reported substances good or high.						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All reported substances good or high apart from Tributyltin						
		Priority substances	All reported substances good or high.						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N/A**				
		Chemical	**Fail**	**Good by 2021**	**N/A**				
		Overall	**Moderate**	**Good by 2021**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR814c\WR814c_Increased treatment capacity at Hurleston WTW via pipeline.docx
Dee Catchment Abstraction Management Strategy: https://naturalresources.wales/media/674759/dee_cams_2015_english.pdf

		Water body ID:		**GB41102G200200**	**Scheme:**	**Increased treatment capacity at Hurleston WTW via Canal**			
		Water body Name:		**Dee Silurian/Ordovician**	**Reference**	**WR814b**			
		RBMP:		**Dee**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Dee Silurian/Ordovician**	**Impact potential**	**Direct**		**Direct**	
		Designation (uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact.	**High**	**Transfer of water via canal.** No or minimal impact. No change in the interaction between the canal and groundwater body expected. **Increased quantity of surface water abstraction.** Minor level of impact. Change in flow regime in the River Dee may have an impact on interactions between surface water and groundwater (i.e. leakage of river water to groundwater). However as the River Dee is regulated to support abstraction and environmental needs, and the increase in abstraction may be balanced by a reduction in other abstractions, there is likely to be a significant impact on the groundwater body. Also Silurian and Ordovician strata are not typically primary aquifers or have high permeability and transmissivity, reducing the sensitivity of the groundwater body.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Not provided						
Overall Status \ Potential		**Quantitative**	**Good**	**N/A**	**N/A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N/A**				
		Overall	**Good**	**Good by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR814c\WR814c_Increased treatment capacity at Hurleston WTW via pipeline.docx
BGS Geology Mapping: http://mapapps.bgs.ac.uk/geologyofbritain/home.html
Dee Catchment Abstraction Management Strategy: https://naturalresources.wales/media/674759/dee_cams_2015_english.pdf

		Water body ID:		**GB112069060840**	**Scheme:**	**THIRD PARTY OPTION: Manchester Bolton Bury Canal to integrated zone**			
		Water body Name:		**Irwell (Roch to Croal)**	**Reference:**	**WR816**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**heavily modified**					
		Relevant upstream water bodies:		**Irwell (Rossendale STW to Roch), Roch (Spodden to Irwell)**					
		Downstream water bodies:		**Irwell (Croal to Irk)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**New surface water intake.** Minor level of impact. **New water treatment works.** No or minimal impact **New pumping station.** Minor level of impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact.	**High**	**New surface water abstraction quantity** No or minimal level of impact. New surface water abstraction from the Manchester, Bolton and Bury Canal near Elton Reservoir of 10 Ml/d. The abstraction is from the canal (assumed to be supplied by Elton Reservoir), rather than from rivers within the surface water body. It is assumed the canal will be managed to maintain flows which support the hydrological regime, so no long term or widespread impacts on the status of the surface water body as a whole are anticipated. A new abstraction licence would be required to be issued by the Environment Agency. **Use of new transfer pipe line, pumping station, surface water intake, and water treatment works** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Poor						
		Fish	-						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	Moderate						
		Specific pollutants:	High						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessement						
		Priority substances	Does not require assessement						
Overall Status\Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a sign
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries o
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR816\WR8
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB71210501**	**Scheme:**	**THIRD PARTY OPTION: Manchester Bolton Bury Canal to integrated zone**			
		Water body Name:		**Manchester, Bolton and Bury Canal (North)**	**Reference:**	**WR816**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell Canals**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**artificial**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**New surface water intake.** Minor level of impact.	**High**	**New surface water abstraction quantity** Minor level of impact. New surface water abstraction from the Manchester, Bolton and Bury Canal near Elton Reservoir of 10 Ml/d. It is assumed that the canal is supplied with water from Elton Reservoir, therefore the new abstraction would be matched by a corresponding discharge from the reservoir. It is assumed the canal will be managed to maintain flows which support the hydrological regime, so no long term or widespread impacts on the status of the canal are anticipated. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	-						
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	-						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Moderate by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't hav
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of est
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR8
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**Groundwater**	**Scheme:**	**THIRD PARTY OPTION: Manchester Bolton Bury Canal to integrated zone**				
		Water body Name:		**Northern Manchester Carboniferous Aquifers**	**Reference**	**WR816**				
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**Northern Manchester Carboniferous Aquifers**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:								
		Downstream water bodies:								
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New surface water intake.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **New water treatment works.** No or minimal impact.	**High**	**New surface water abstraction quantity** No or minimal level of impact. New surface water abstraction from the Manchester, Bolton and Bury Canal near Elton Reservoir of 10 Ml/d. The abstraction is from the canal (assumed to be supplied by Elton Reservoir), rather than from rivers within the surface water body. The canal and the groundwater body are unlikely to by hydraulically connected, and this secondary aquifer is unlikely to be heavily dependent on surface water bodies to maintain its quantitative water balance. Therefore there are unlikely to be widespread or prolonged effects on the status of the groundwater body. A new abstraction licence would be required to be issued by the Environment Agency. **Use of new transfer pipe line, pumping station, surface water intake, and water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good							
		Quantitative Saline Intrusion	Good							
		Quantitative Water Balance	Good							
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor							
		Chemical Drinking Water Protected Area	Good							
		Chemical GWDTEs test	Good							
		Chemical Saline Intrusion	Good							
		General Chemical Test	Good							
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-							
		Trend Assessment	Upward trend							
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**					
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**					
		Overall	**Poor**	**Good by 2027**	**N/A**					

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't h
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of e
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WF
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pd

		Water body ID:		**GB112069061230**	**Scheme:**	**THIRD PARTY OPTION: Carr Mill Dam to Integrated Resource Zone**			
		Water body Name:		**Black Brook (Mersey Estuary)**	**Reference:**	**WR817**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Sankey**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily Modified**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**to Mersey)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**New surface water intake.** Minor level of impact. **New water treatment works.** No or minimal impact. **New pumping station.** Minor level of impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact.	**High**	**New surface water abstraction quantity.** No or minimal impact. New surface water abstraction from the St Helens Canal near Carr Mill Dam of 23 Ml/d. The abstraction is from the canal (assumed to be supplied by Carr Mill Dam), rather than from rivers within the surface water body. It is assumed the canal will be managed to maintain flows which support the hydrological regime, so no long term or widespread impacts on the status of the surface water body as a whole are anticipated. A new abstraction licence would be required to be issued by the Environment Agency. **Use of new transfer pipe line, pumping station, surface water intake, and water treatment works** No or minimal impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	Moderate						
		Fish	Moderate						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	Good						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuari
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR817\
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pdf

		Water body ID:		**GB71210088**	**Scheme:**	**THIRD PARTY OPTION: Carr Mill Dam to Integrated Resource Zone**			
		Water body Name:		**St Helens Canal**	**Reference:**	**WR817**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Sankey Canals**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**heavily modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**New surface water intake.** Minor level of impact.	**High**	**New surface water abstraction quantity** Minor level of impact. New surface water abstraction from the St Helens Canal near Carr Mill Dam of 23 Ml/d. It is assumed that the canal is supplied with water from Carr Mill Dam, therefore the new abstraction would be matched by a corresponding discharge from the reservoir. It is assumed the canal will be managed to maintain flows which support the hydrological regime, so no long term or widespread impacts on the status of the canal are anticipated. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	-						
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	-						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which wo
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Option
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3

		Water body ID:		**GB41202G100100**	**Scheme:**	**THIRD PARTY OPTION: Carr Mill Dam to Integrated Resource Zone**			
		Water body Name:		**Sankey and Glaze Carboniferous aquifers**	**Reference**	**WR817**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Sankey and Glaze Carboniferous aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**-**					
		Downstream water bodies:		**-**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New surface water intake.** No or minimal impact. **Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New pumping station.** No or minimal impact. **New water treatment works.** No or minimal impact.	**High**	**New surface water abstraction quantity** No or minimal impact. New surface water abstraction from the St Helens Canal near Carr Mill Dam of 23 Ml/d. The abstraction is from the canal (assumed to be supplied by Carr Mill Dam), rather than from rivers within the surface water body. The canal and the groundwater body are unlikely to by hydraulically connected, and this secondary aquifer is unlikely to be heavily dependent on surface water bodies to maintain its quantitative water balance. Therefore there are unlikely to be widespread or prolonged effects on the status of the groundwater body. A new abstraction licence would be required to be issued by the Environment Agency. **Use of new transfer pipe line, pumping station, surface water intake, and water treatment works.** No or minimal impact.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Poor by 2015**	**N/A**				
		Overall	**Poor**	**Poor by 2015**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't ha
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of es
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300490/LIT_7881_35d3ed.pd

		Water body ID:		**GB71210133**	**Scheme:**	**THIRD PARTY OPTION: Shropshire Union Canal to Integrated Resource Zone**			
		Water body Name:		**Shropshire Union Canal, Market Drayton to Ellesm**	**Reference:**	**WR820**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Upper Canals**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**Artificial (Canal)**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Modified surface water intake.** Minor level of impact.	**High**	**Transfer of water via canal.** Minor level of impact. **Increased surface water abstraction quantity.** Minor level of impact. Increased abstraction of 15.5. Ml/d from existing pumps on the Shropshire Union Canal. It is assumed that water will be transferred from elsewhere on the canal system to support this abstraction (although the source is not clear in the engineering pro forma). It is assumed that flows within the canal will be maintained, mitigating any impact on the hydrological regime of the canal. A new abstraction licence would be required to be issued by the Environment Agency.	**Low**
		Macrophytes	-						
		Macrophytes and phytobenthos	-						
		Benthic invertebrates	-						
		Fish	-						
	Hydromorphology	**Hydrological regime**	-						
		River continuity	-						
		Morphological conditions	-						
	Physico-chemical	**General physico-chemical**	High						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact o
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal water
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR820\WR820_THIRD PA
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52dcff.pdf

		Water body ID:		**GB112068055340**	**Scheme:**	**THIRD PARTY OPTION: Shropshire Union Canal to Integrated Resource Zone**			
		Water body Name:		**Rookery Brook, Burland and Brindley Bk. to**	**Reference:**	**WR820**			
		RBMP:		**North West**	**Scheme Phase:**	**Construction**		**Operational**	
		Operational catchment:		**Weaver upper**	**Impact potential:**	**Direct**		**Direct**	
		Designation (and uses):		**modified**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	-			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **Modified water treatment works.** No or minimal impact.	**High**	**Increased surface water abstraction quantity.** Minor level of impact. Increased abstraction of 15.5. Ml/d from existing pumps on the Shropshire Union Canal. The abstraction will be on the canal, a managed water course and not directly from the Rookery Brook. **New transfer pipe line and modified water treatment works** No or minimal impact. **Transfer of water via canal.** Minor level of impact.	**Medium**
		Macrophytes	-						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Moderate						
		Fish	-						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	-						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	Moderate						
		Specific pollutants:	-						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by by 2021**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by by 2021**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant ir
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coasta
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party Options\WR820\WR820_TH
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_52dcff.pdf

		Water body ID:		**GB41202G991700**	**Scheme:**	**THIRD PARTY OPTION: Shropshire Union Canal to Integrated Resource Zone**			
		Water body Name:		**Weaver and Dane Qu**	**Reference**	**WR820**			
		RBMP:		**North West GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver and Dane Qu**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:							
		Downstream water bodies:							
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitive	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **Modified water treatment works.** No or minimal impact.	**High**	**Use of transfer pipe line, surface water intake, water treatment works, transfer of water via a canal** No or minimal impact. **Increased surface abstraction quantity.** No or minimal level of impact. Increased abstraction of 15.5. Ml/d from existing pumps on the Shropshire Union Canal. It is assumed that flows will be maintained at or above current levels within the canal. As interaction between the canal and the groundwater body are likely to be limited, only minimal impacts on the groundwater body are likely to occur. There are no groundwater management units defined in the ALS.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	-						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time whic
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line cros
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\Third Party O
EA Abstraction Licence Strategy (xxx): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319959/lit_7884_5

		Water body ID:		**GB112068055340**	**Scheme:**	**Shropshire Union Canal**			
		Water body Name:		**Rookery Brook, Burland and Brindley Bk. To Weaver**	**Reference**	**WR821**			
		RBMP:		**Weaver Gowy**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Upper**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Burland and Brindley Brook and Rookery Brook, Source to Burland and Brindley Bk**					
		Downstream water bodies:		**Weaver (Marbury Brook to Dane)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **Modified surface water intake.** Minor level of impact. **New / modified water treatment works.** Minor level of impact.	**High**	**New surface water abstraction quantity and transfer of water via the canal.** No or minimal impact. New asbtraction of 30 Ml/d from the Shropshire Union Canal, Middlewich branch. A new abstraction licence would be required. It is assumed the canal does not interact hydrologically with the Rookery Brook and so there would be no or minimal impacts on WFD status of this water body. The ALS (Abstraction Licensing Strategy) indicates that there is water available at all flow regimes (Q95, Q70, Q50 and Q30). **Use of new pipe lines, surface water intake and water treatment works.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Moderate						
		Fish	Not provided						
	Hydro-morphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2021**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Moderate**	**Good by 2021**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.

7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&s
EA Historical Landfill: http://maps.environment-
Abstraction Licensing Strategies (Weaver and Dane): https://www.gov.uk/government/publications/weaver-and-dane-abstraction-licensing-strategy

		Water body ID:		**GB71210133**	**Scheme:**	**Shropshire Union Canal**			
		Water body name:		**Shropshire Union Canal, Mar**	**Reference**	**WR821**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Weaver Upper Canals**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Artificial**					
		Relevant upstream water bodies:		**N/A**					
		Downstream water bodies:		**N/A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**				**Modified surface water intake.** Minor level of impact.	**High**	**New surface water abstraction quantity and transfer of water via the canal.** Minor level of impact. New asbtraction of 30 Ml/d from the Shropshire Union Canal, Middlewich branch. A new abstraction licence would be required. It is unclear from the information provided, but it is likely the abstraction would be supported by water sourced from elsewhere (i.e. the canal is used as a transfer) and flows within the canal managed, so there would only be minor change in the flow regime of the canal.	**Low**
		Macrophytes							
		Macrophytes and phytobenthos							
		Benthic invertebrates							
		Fish							
	Hydro-morphology	**Hydrological regime**							
		River continuity							
		Morphological conditions							
	Physico-chemical	**General physico-chemical**	High						
		Specific pollutants:							
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2027**	**N\A**				
		Overall	**Good**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice pollution prevention methods e.g. the GPPs
2- Small scale shallow dewatering would take place
3- Stockpiling of resources or spoil near watercourse maybe required
4- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required
5- Assumed all over ground pipelay will be along roads and over water crossings along exsisting bridges
6- An abstraction licence can be granted that will ensure there is no significant environmental impact from the abstraction
7- A discharge license would need to be saught to meet environmental regulations for WFD for New discharge scour into Rochdale Canal

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR049b
EA Abstraction Licence Strategy (Ribble, Douglas & Crossens)

		Water body ID:		**GB41202G9**	**Scheme:**	**Shropshire Union Canal**				
		Water body Name:		**and Dane Quaternary**	**Reference**	**WR821**				
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**		
		Operational catchment:		**and Dane**	**Impact potential**	**Direct**		**Direct**		
		Designation (and uses):		**No designation**						
		Relevant upstream water bodies:		**Not identified**						
		Downstream water bodies:		**Not identified**						
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Modified surface water intake.** No or minimal impact. **New / modified water treatment works.** No or minimal impact.	**High**	**New surface water abstraction quantity and use of canal for water transfer.** No or minimal impact. A new abstraction licence of up to 30 Ml/d from the Shropshire Union Canal. It is unclear from the information provided, but it is likely the abstraction would be supported by water sourced from elsewhere (i.e. the canal is used as a transfer). Overall significant reductions in flow are unlikely so impacts on surface water - groundwater interactions will be minimal. **Use of new pipe lines, surface water intake and water treatment works.** No or minimal impact.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&
EA Historical Landfill: http://maps.environment-
Abstraction Licensing Strategies (Weaver and Dane): https://www.gov.uk/government/publications/weaver-and-dane-abstraction-licensing-strategy

		Water body ID:		**GB103023075580**	**Scheme:**	**Third Party Option: Blenkinsopp Mine**			
		Water body Name:		**Tipalt Burn from Source to South Tyne**	**Reference**	**WR824**			
		RBMP:		**Tyne**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**South Tyne Lower**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**South Tyne from Tipalt Burn to Allen**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** **No or minimal impact.** **Transfer pipe line with water course crossings.** **Minor level of impact.**	**High**	**New groundwater abstraction quantity.** Minor level of impact. New abstraction of 2.2 Ml/d from Blenkinsopp Mine. The abstraction licensing strategy (ALS) indicates that there is water available in the groundwater body, and in the surface water body across all flows. Although the abstraction is from groundwater (mine water), this is already discharging to the Tipalt Burn, so impacts would be see the hydrological regime of the surface water body rather than the quantitative status of the groundwater body. **Transfer pipe line.** No or minimal impact.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Poor						
		Benthic invertebrates	High						
		Fish	High						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemi	**General physico-chemical**	All high						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good						
		Priority substances	All good						
Overall Status\ Potential		**Ecological**	**Poor**	**Good by 2027**	**N/A**				
		Chemical	**Good**	**Good by 2015**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.

7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y=511476&lg=1,2,10,&scale=
EA Historical Landfill: http://maps.environment-
Abstraction Licencing Strategy (Tyne): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307287/lit_7873_84be79.pdf

		Water body ID:		**GB40201G100400**	**Scheme:**	**Third Party Option: Blenkinsopp Mine**			
		Water body Name:		**Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers**	**Reference**	**WR824**			
		RBMP:		**Solway Tweed GW**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Eden Valley and Carlisle Basin Permo-Triassic sandstone aquifers**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Not identified**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact.	**High**	**New groundwater abstraction quantity.** No or minimal impact. New abstraction of 2.2 Ml/d from Blenkinsopp Mine. The abstraction licensing strategy (ALS) indicates that there is water available in the groundwater body, and the abstracted water would be discharging from the mine without the abstraction. **Transfer pipe line.** No or minimal impact	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Good						
		Chemical Drinking Water Protected Area	Poor						
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Element	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N/A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N/A**				
		Overall	**Poor**	**Good by 2027**	**N/A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.
8- Construction, refurbishment, and testing of groundwater abstraction wells will be undertaken under consent from the EA/NRW. Wells will be designed, constructed, and tested in such a way as to prevent groundwater becoming polluted, and in line with best practice.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Feasible Options\IRZ\WR075\WR075 Stocks Reservior.xlsx
EA Flood Maps (WIYBY): http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=floodmap#x=344705&y
EA Historical Landfill: http://maps.environment-
Abstraction Licencing Strategy (Tyne): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307287/lit_7873_84be79.pdf

Appendix D
Summary of Level 1 Screening and Level 2 Detailed Assessments for Resilience Options

Option			WFD Water Body Information												Option Detail							Impacts				
Ref	Solutions	Option Description	ID	Type	Hydro - morphological Designation	Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line and associated infrastructure on land	Pipe line with water course crossings	New tunnel/tunnel works (inc shafts)	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New / increased surface water abstraction quantity	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Confidence	Combined Screening Result
3	C	HA to Raw: 2 Stage filtration Woodgate Hill	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	N	N	N	N	Y	N	No or minimal impact	N		High	No or minimal impact
37-38	B	Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)	GB112069064641	River	heavily modified	Irwell (Cowpe Bk to Rossendale STW)	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-38	B	Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)	GB112069064620	River	heavily modified	Irwell (Rossendale STW to Roch)	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-38	B	Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)	GB112069064600	River	heavily modified	Roch (Spodden to Irwell)	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-38	B	Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)	GB41202G101800	GroundWaterBod	not applicable	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-38	B	Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)	GB112071065490	River	heavily modified	Calder - Pendle Water to conf Ribble	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-38	B	Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)	GB112071065040	River	heavily modified	Hyndburn	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-38	B	Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)	GB112069064650	River	heavily modified	Ogden	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-38	B	Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)	GB41202G100300	GroundWaterBod	not applicable	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112069064641	River	heavily modified	Irwell (Cowpe Bk to Rossendale STW)	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112069064620	River	heavily modified	Irwell (Rossendale STW to Roch)	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112069064600	River	heavily modified	Roch (Spodden to Irwell)	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G101800	GroundWaterBod	not applicable	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065490	River	heavily modified	Calder - Pendle Water to conf Ribble	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065040	River	heavily modified	Hyndburn	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112069064650	River	heavily modified	Ogden	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G100300	GroundWaterBod	not applicable	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065520	River	not designated artificial or h	Bashall Brook	Ribble Middle - Settle to Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112072066050	River	not designated artificial or h	Hindburn	Wenning	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065420	River	not designated artificial or h	Whitendale river	Hodder and Loud	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065560	River	not designated artificial or h	Hodder - conf Easington Bk to conf Ribble	Hodder and Loud	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G103000	GroundWaterBod	not applicable	Ribble Carboniferous Aquifers	Ribble Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071090	River	heavily modified	Peasey Beck	Bela	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112072071690	River	not designated artificial or h	Lune - conf Rawthey to conf Greta	Lune - Rawthey to Greta	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071080	River	not designated artificial or h	Lupton (Farleton) Beck	Bela	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G102100	GroundWaterBod	not applicable	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G102700	GroundWaterBod	not applicable	Lune and Wyre Carboniferous Aquifers	Lune and Wyre Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071370	River	not designated artificial or h	Mint	Kent	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071340	River	not designated artificial or h	Flodder Beck	Kent	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071100	River	not designated artificial or h	Stainton Beck	Bela	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
46	A, E	WELM Uprate to 150Ml/day	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	N	N	N	N	N	N	No or minimal impact	N	-	High	No or minimal impact
112	B, D	HA Outage (4 weeks) for installation of connections	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	N	N	No or minimal impact	N	-	High	No or minimal impact
212	C	HA to Raw: Fober Barn	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
213	C	HA to Raw: Martholme	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
214	C	HA to Raw: Townsend Fold	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
215	E	Alternative Supply: Raw water transfer and WTW at Martholme BSP	GB112071065500	River	heavily modified	Ribble - conf Calder to tidal	Big Ribble	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	Y	Y	Y	Y	Medium level of impact	Y	Medium level of impact	Medium	Medium level of impact
215	E	Alternative Supply: Raw water transfer and WTW at Martholme BSP	GB41202G103000	GroundWaterBod	not applicable	Ribble Carboniferous Aquifers	Ribble Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	Y	N	Y	Y	Y	Y	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
216	A, E	Alternative Supply: Raw water abstraction and WTW at Townsend Fold BSP	GB112069064641	River	heavily modified	Irwell (Cowpe Bk to Rossendale STW)	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	Y	Y	Y	Y	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
216	A, E	Alternative Supply: Raw water abstraction and WTW at Townsend Fold BSP	GB41202G101800	GroundWaterBod	not applicable	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	Y	Y	Y	Y	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
217	E	Alternative Supply: Raw water transfer and WTW at Fober Barn BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	N	N	N	Y	N	Minor level of impact	N	-	High	Minor level of impact
218	E	Alternative Supply: Raw water transfer and WTW at Mill Lane	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	N	N	N	Y	N	Minor level of impact	N	-	High	Minor level of impact
238	B	Metals & UV treatment of bulk supply points (BSPs): Woodgate Hill	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
260	A	Ribblesdale South Well Isolation	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	N	N	N	N	N	N	No or minimal impact	N	-	High	No or minimal impact
261	A	Townsend Fold South Well Isolation	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	N	N	N	N	N	N	No or minimal impact	N	-	High	No or minimal impact
296	A	T05 targeted repair 2025	GB112069064641	River	heavily modified	Irwell (Cowpe Bk to Rossendale STW)	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	Y	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
296	A	T05 targeted repair 2025	GB41202G101800	GroundWaterBod	not applicable	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
297	A	T06 targeted repair 2025	GB112069064620	River	heavily modified	Irwell (Rossendale STW to Roch)	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	Y	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
297	A	T06 targeted repair 2025	GB112069064600	River	heavily modified	Roch (Spodden to Irwell)	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	Y	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
297	A	T06 targeted repair 2025	GB41202G101800	GroundWaterBod	not applicable	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	Y	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
301	C	Lunesdale Siphon BSPs North	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	N	N	N	N	N	Minor level of impact	N	-	High	Minor level of impact
303	C	Lunesdale Siphon BSPs South	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	N	N	N	N	N	Minor level of impact	N	-	High	Minor level of impact
306	C	Ribblesdale Siphon BSPs North	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	N	N	N	N	N	Minor level of impact	N	-	High	Minor level of impact
348	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Mansergh BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
349	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Casterton BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
350	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Parkside Farm BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
351	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Jacksons Pasture BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
352	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Lowgill BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
353	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Lunesdale Siphon, Birks Farm BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
354	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Hodder Siphon, Fober Barn BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
355	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Waddington BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
356	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Bashall Town BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
357	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Spring Wood BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
358	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Martholme BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
359	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Ribblesdale Siphon, Brown Birks BSP	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
360	B	Metals & UV Treatment of Bulk Supply Points (BSPs): Haslingden Walmsley Tunnel (Townsend Fold BSP)	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	Y	N	No or minimal impact	N	-	High	No or minimal impact
382	C	HA to Raw: Watchgate WTW reduced flow	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	N	N	N	Y	N	Minor level of impact	N	-	High	Minor level of impact

Appendix E
Level 2 Detailed Assessments for Resilience Options

		Water body ID:		**GB112069064641**	**Scheme:**	**Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)**		
		Water body Name:		**Irwell (Cowpe Bk to Rossendale STW)**	**Reference**	**Option - 37-38**		
		RBMP:		**North West**	**Scheme Phase**	**Construction**	**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**	**Direct**	**Direct**	
		Designation (and uses):		**Heavily modified**				
		Relevant upstream water bodies:		**Irwell (Source to Whitewell Brook), Limy Water and Whitewell Brook**				
		Downstream water bodies:		**Irwell (Rossendale STW to Roch)**				
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G101800). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Good by 2027					
		Benthic invertebrates	Good	Good by 2015					
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good	Supports good by 2015					
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Phosphate-moderate and pH- moderate	Phosphate and pH good by 2027					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunne
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html

		Water body ID:		**GB112069064620**	**Scheme:**	**Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)**			
		Water body Name:		**Irwell (Rossendale STW to Roch)**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Irwell (Cowpe Bk to Rossendale STW), Kirklees Brook and Ogden**					
		Downstream water bodies:		**Irwell (Roch to Croal)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised to the vicinity of the shaft locations, and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G101800). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Moderate by 2015					
		Benthic invertebrates	Good	Good by 2015					
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good	Supports good by 2015					
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor	Phosphate poor by 2015					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Moderate by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tun
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html

		Water body ID:		**GB112069064600**	**Scheme:**	**Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)**			
		Water body Name:		**Roch (Spodden to Irwell)**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Roch Irk Medlock**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Naden Brook, Roch (Source to Spodden), Spodden and Whittle Brook (Irwell)**					
		Downstream water bodies:		**Irwell (Roch to Croal)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. The option includes a conduit bridge over the Gypsy Brook. In channel works may reduce the chemical status due to deterioration in water quality due to disturbance of soils and sediments, particularly if contaminated, or due to accidental spillage or leakage of fuels, oils and other chemicals associated with construction machinery. The ecological status may reduce due to smothering of habitats or reduction in light due to release of sediments, or changes to in hydrological regime, river continuity or morphological conditions due to impoundments or changes to the structure of the channel. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G101800). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Moderate	Good by 2027					
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor	Phosphate poor by 2015					
		Specific pollutants:	Iron- High						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Pentachlorophenol- good						
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Moderate by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunne
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html

		Water body ID:		**GB41202G101800**	**Scheme:**	**Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)**			
		Water body Name:		**Northern Manchester Carboniferous Aquifers**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester Northern Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good	Good by 2015		**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, but this would be localised and temporary. Accidental leakages or spills from construction machinery may affect the chemical status of the groundwater body, but construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the groundwater body. **Construction of new tunnel.** Medium level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Temporary shafts every 3 km. Solid geology is Carboniferous Millstone Grit, and Pennine Lower Coal Measures, a secondary A aquifer. Quantitative Status: Dewatering of the tunnel and shafts may affect groundwater levels and flows and the quantitative water balance of the groundwater body. Although temporary in nature, due to the length of the tunnel, and number and depth of shafts, the impacts could be widespread. Chemical status: There is the potential for the interception of shallow contaminated land or deeper coal mine workings in the Carboniferous strata. The option information indicates a landfill at the surface, and information from The Coal Authority shows mine entries and abandoned mine workings close to the route of the tunnel. Interception of these features may result in vertical or lateral migration of contaminated groundwater or mine waters into previously unaffected parts of the groundwater body. Leakages or spillages from construction machinery could affect the chemical status of the groundwater body. While construction best practice and pollution prevention measures would limit the occurrence of spillages and help mitigate their impact, any uncontrolled leak could rapidly transmit to the saturated zone. Although the construction phase is temporary, the effects of a deterioration in groundwater quality could be prolonged. Impacts would be localised, but could occur in several locations.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Solid geology is Carboniferous Millstone Grit, and Pennine Lower Coal Measures, a secondary A aquifer. Quantitative Status: No dewatering of the tunnel or shafts would take place post construction, and groundwater ingress is expected to be minimal (the tunnels would be designed and maintained to prevent groundwater ingress in order to protect raw water quality). The tunnel will be constructed within the saturated zone of the aquifer and the presence of a low permeability linear structure may alter groundwater flows and levels, particularly where the tunnel is shallower and within the zone of active groundwater flow, or if the orientation of the tunnel is perpendicular to the direction of groundwater flow. In addition disturbance of the strata surrounding the tunnels and shafts may result in altered or preferential groundwater flow pathways. Changes in shallow groundwater levels and flow may affect surface water bodies and groundwater dependent terrestrial ecosystems (i.e. reductions in baseflow). Chemical Status: The tunnel would be used to transfer raw water of potable standard. Any leakages from the tunnel to the groundwater body would locally alter the groundwater chemistry, but it is assumed the potable standard water would be free from hazardous and priority hazardous substances and other pollutants, and would therefore not have a significant negative effect on the chemical status of the groundwater body.	**Low**
		Quantitative GWDTEs test	Good	Good by 2015					
		Quantitative Saline Intrusion	Good	Good by 2015					
		Quantitative Water Balance	Good	Good by 2015					
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor	Good by 2027					
		Chemical Drinking Water Protected Area	Good	Good by 2015					
		Chemical GWDTEs test	Good	Good by 2015					
		Chemical Saline Intrusion	Good	Good by 2015					
		General Chemical Test	Good	Good by 2015					
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/att
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

Water body ID:			**GB112071065490**	**Scheme:**	**Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)**				
Water body Name:			**Calder - Pendle Water to conf Ribble**	**Reference**	**Option - 37-38**				
RBMP:			**North West**	**Scheme Phase**	**Construction**		**Operational**		
Operational catchment:			**Calder**	**Impact potential**	**Direct**		**Direct**		
Designation (and uses):			**Heavily modified**						
Relevant upstream water bodies:			**Calder- conf Brun to Pendle Water, Green Brook, Hyndburn Brook- Lower, Pendle Water - Colne Water to Walverden Water, Sabden Brook and Walverden Water**						
Downstream water bodies:			**Ribble- conf Calder to tidal**						
	WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided						
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Good by 2027					
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor	Phosphate good by 2027					
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good						
		Priority substances	Good						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

New connections to Haweswater Aqueduct.
Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel.

Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection.

Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated.
However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.

Construction of new tunnel.
Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime.

Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated.

Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.

Low

New connections to Haweswater Aqueduct.
Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised.

Presence and operation of new tunnel.
Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km.

Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G100300). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.

Low

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunne
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB112071065040**	**Scheme:**	**Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)**			
		Water body Name:		**Hyndburn**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not provided**					
		Downstream water bodies:		**Hyndburn Brook - Lower**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G100300). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Phosphate-moderate	Phosphate good by 2027					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tu
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LI
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB112069064650**	**Scheme:**	**Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)**			
		Water body Name:		**Ogden**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not provided**					
		Downstream water bodies:		**Irwell (Rossendale STW to Roch)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Disruption of groundwater flows and levels may occur (see tab '37 - GB41202G101800). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Phosphate-moderate	Good by 2027					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tun
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB41202G100300**	**Scheme:**	**Haweswater Aqueduct section T05 to T06 (Ribblesdale SW to Woodgate Hill)**			
		Water body Name:		**Douglas, Darwen and Calder Carboniferous Aquifer**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Douglas Darwen and Calder Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, but this would be localised and temporary. Accidental leakages or spills from construction machinery may affect the chemical status of the groundwater body, but construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the groundwater body. **Construction of new tunnel.** Medium level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Temporary shafts every 3 km. Solid geology is Carboniferous Millstone Grit, and Pennine Lower Coal Measures, a secondary A aquifer. Quantitative Status: Dewatering of the tunnel and shafts may affect groundwater levels and flows and the quantitative water balance of the groundwater body. Although temporary in nature, due to the length of the tunnel, and number and depth of shafts, the impacts could be widespread. Chemical status: There is the potential for the interception of shallow contaminated land or deeper coal mine workings in the Carboniferous strata. Information from The Coal Authority shows mine entries and abandoned mine workings close to the route of the tunnel. Interception of these features may result in vertical or lateral migration of contaminated groundwater or mine waters into previously unaffected parts of the groundwater body. Leakages or spillages from construction machinery could affect the chemical status of the groundwater body. While construction best practice and pollution prevention measures would limit the occurrence of spillages and help mitigate their impact, any uncontrolled leak could rapidly transmit to the saturated zone. Although the construction phase is temporary, the effects of a deterioration in groundwater quality could be prolonged. Impacts would be localised, but could occur in several locations.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft, 12.5 m diameter, 6 m deep. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Ribblesdale South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 19.2 km. Solid geology is Carboniferous Millstone Grit, and Pennine Lower Coal Measures, a secondary A aquifer. Quantitative Status: No dewatering of the tunnel or shafts would take place post construction, and groundwater ingress is expected to be minimal (the tunnels would be designed and maintained to prevent groundwater ingress in order to protect raw water quality). The tunnel will be constructed within the saturated zone of the aquifer and the presence of a low permeability linear structure may alter groundwater flows and levels, particularly where the tunnel is shallower and within the zone of active groundwater flow, or if the orientation of the tunnel is perpendicular to the direction of groundwater flow. In addition disturbance of the strata surrounding the tunnels and shafts may result in altered or preferential groundwater flow pathways. Changes in shallow groundwater levels and flow may affect surface water bodies and groundwater dependent terrestrial ecosystems (i.e. reductions in baseflow). Chemical Status: The tunnel would be used to transfer raw water of potable standard. Any leakages from the tunnel to the groundwater body would locally alter the groundwater chemistry, but it is assumed the potable standard water would be free from hazardous and priority hazardous substances and other pollutants, and would therefore not have a significant negative effect on the chemical status of the groundwater body.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor	Good by 2027					
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\ Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/at
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB112069064641**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**		
		Water body Name:		**Irwell (Cowpe Bk to Rossendale STW)**	**Reference**	**Option - 37-38**		
		RBMP:		**North West**	**Scheme Phase**	**Construction**	**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**	**Direct**	**Direct**	
		Designation (and uses):		**Heavily modified**				
		Relevant upstream water bodies:		**Irwell (Source to Whitewell Brook), Limy Water and Whitewell Brook**				
		Downstream water bodies:		**Irwell (Rossendale STW to Roch)**				
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regimes. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G101800). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Good by 2027					
		Benthic invertebrates	Good	Good by 2015					
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good	Supports good by 2015					
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Phosphate-moderate and pH- moderate	Phosphate and pH good by 2027					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunne
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html

		Water body ID:		**GB112069064620**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Irwell (Rossendale STW to Roch)**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Irwell (Cowpe Bk to Rossendale STW), Kirklees Brook and Ogden**					
		Downstream water bodies:		**Irwell (Roch to Croal)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of new tunnel. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised to the vicinity of the shaft locations, and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G101800). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Moderate by 2015					
		Benthic invertebrates	Good	Good by 2015					
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good	Supports good by 2015					
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor	Phosphate poor by 2015					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Moderate by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tun
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html

		Water body ID:		**GB112069064600**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Roch (Spodden to Irwell)**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Roch Irk Medlock**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Naden Brook, Roch (Source to Spodden), Spodden and Whittle Brook (Irwell)**					
		Downstream water bodies:		**Irwell (Roch to Croal)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. The option includes a conduit bridge over the Gypsy Brook. In channel works may reduce the chemical status due to deterioration in water quality due to disturbance of soils and sediments, particularly if contaminated, or due to accidental spillage or leakage of fuels, oils and other chemicals associated with construction machinery. The ecological status may reduce due to smothering of habitats or reduction in light due to release of sediments, or changes to in hydrological regime, river continuity or morphological conditions due to impoundments or changes to the structure of the channel. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G101800). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Moderate	Good by 2027					
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor	Phosphate poor by 2015					
		Specific pollutants:	Iron- High						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Pentachlorophenol- good						
Overall Status/ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Moderate by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunne
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html

		Water body ID:		**GB41202G101800**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Northern Manchester Carboniferous Aquifers**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester Northern Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good	Good by 2015		**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, but this would be localised and temporary. Accidental leakages or spills from construction machinery may affect the chemical status of the groundwater body, but construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the groundwater body. **Construction of new tunnel.** Medium level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. Solid geology is Carboniferous Millstone Grit, and Pennine Lower Coal Measures, a secondary A aquifer. Quantitative Status: Dewatering of the tunnel and shafts may affect groundwater levels and flows and the quantitative water balance of the groundwater body. Although temporary in nature, due to the length of the tunnel, and number and depth of shafts, the impacts could be widespread. Chemical status: There is the potential for the interception of shallow contaminated land or deeper coal mine workings in the Carboniferous strata. The option information indicates a landfill at the surface, and information from The Coal Authority shows mine entries and abandoned mine workings close to the route of the tunnel. Interception of these features may result in vertical or lateral migration of contaminated groundwater or mine waters into previously unaffected parts of the groundwater body. Leakages or spillages from construction machinery could affect the chemical status of the groundwater body. While construction best practice and pollution prevention measures would limit the occurrence of spillages and help mitigate their impact, any uncontrolled leak could rapidly transmit to the saturated zone. Although the construction phase is temporary, the effects of a deterioration in groundwater quality could be prolonged. Impacts would be localised, but could occur in several locations.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Solid geology is Carboniferous Millstone Grit, and Pennine Lower Coal Measures, a secondary A aquifer. Quantitative Status: No dewatering of the tunnel or shafts would take place post construction, and groundwater ingress is expected to be minimal (the tunnels would be designed and maintained to prevent groundwater ingress in order to protect raw water quality). The tunnel will be constructed within the saturated zone of the aquifer and the presence of a low permeability linear structure may alter groundwater flows and levels, particularly where the tunnel is shallower and within the zone of active groundwater flow, or if the orientation of the tunnel is perpendicular to the direction of groundwater flow. In addition disturbance of the strata surrounding the tunnels and shafts may result in altered or preferential groundwater flow pathways. Changes in shallow groundwater levels and flow may affect surface water bodies and groundwater dependent terrestrial ecosystems (i.e. reductions in baseflow). Chemical Status: The tunnel would be used to transfer raw water of potable standard. Any leakages from the tunnel to the groundwater body would locally alter the groundwater chemistry, but it is assumed the potable standard water would be free from hazardous and priority hazardous substances and other pollutants, and would therefore not have a significant negative effect on the chemical status of the groundwater body.	**Low**
		Quantitative GWDTEs test	Good	Good by 2015					
		Quantitative Saline Intrusion	Good	Good by 2015					
		Quantitative Water Balance	Good	Good by 2015					
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor	Good by 2027					
		Chemical Drinking Water Protected Area	Good	Good by 2015					
		Chemical GWDTEs test	Good	Good by 2015					
		Chemical Saline Intrusion	Good	Good by 2015					
		General Chemical Test	Good	Good by 2015					
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/att
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

Water body ID:			**GB112071065490**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**				
Water body Name:			**Calder - Pendle Water to conf Ribble**	**Reference**	**Option - 37-38**				
RBMP:			**North West**	**Scheme Phase**	**Construction**		**Operational**		
Operational catchment:			**Calder**	**Impact potential**	**Direct**		**Direct**		
Designation (and uses):			**Heavily modified**						
Relevant upstream water bodies:			**Calder- conf Brun to Pendle Water, Green Brook, Hyndburn Brook- Lower, Pendle Water - Colne Water to Walverden Water, Sabden Brook and Walverden Water**						
Downstream water bodies:			**Ribble- conf Calder to tidal**						
	WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**	
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided						
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Good by 2027					
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor	Phosphate good by 2027					
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Good						
		Priority substances	Good						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

New connections to Haweswater Aqueduct.
Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel.

Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection.

Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated.
However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.

Construction of new tunnel.
Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime.

Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated.

Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.

Low

New connections to Haweswater Aqueduct.
Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised.

Presence and operation of new tunnel.
Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km.

Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G100300). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.

Low

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunn
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB112071065040**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Hyndburn**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not provided**					
		Downstream water bodies:		**Hyndburn Brook - Lower**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-38 - GB41202G100300). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Phosphate-moderate	Phosphate good by 2027					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tun
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB112069064650**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Ogden**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Not provided**					
		Downstream water bodies:		**Irwell (Rossendale STW to Roch)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab '37 - GB41202G101800). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Not provided						
		Benthic invertebrates	Good						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Phosphate-moderate	Good by 2027					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tun
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB41202G100300**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Douglas, Darwen and Calder Carboniferous Aquifer**	**Reference**	**Option - 37-38**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Douglas Darwen and Calder Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, but this would be localised and temporary. Accidental leakages or spills from construction machinery may affect the chemical status of the groundwater body, but construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the groundwater body. **Construction of new tunnel.** Medium level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. Solid geology is Carboniferous Millstone Grit, and Pennine Lower Coal Measures, a secondary A aquifer. <u>Quantitative Status:</u> Dewatering of the tunnel and shafts may affect groundwater levels and flows and the quantitative water balance of the groundwater body. Although temporary in nature, due to the length of the tunnel, and number and depth of shafts, the impacts could be widespread. <u>Chemical status</u>: There is the potential for the interception of shallow contaminated land or deeper coal mine workings in the Carboniferous strata. Information from The Coal Authority shows mine entries and abandoned mine workings close to the route of the tunnel. Interception of these features may result in vertical or lateral migration of contaminated groundwater or mine waters into previously unaffected parts of the groundwater body. Leakages or spillages from construction machinery could affect the chemical status of the groundwater body. While construction best practice and pollution prevention measures would limit the occurrence of spillages and help mitigate their impact, any uncontrolled leak could rapidly transmit to the saturated zone. Although the construction phase is temporary, the effects of a deterioration in groundwater quality could be prolonged. Impacts would be localised, but could occur in several locations.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft, 12.5 m diameter, 6 m deep. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Solid geology is Carboniferous Millstone Grit, and Pennine Lower Coal Measures, a secondary A aquifer. <u>Quantitative Status</u>: No dewatering of the tunnel or shafts would take place post construction, and groundwater ingress is expected to be minimal (the tunnels would be designed and maintained to prevent groundwater ingress in order to protect raw water quality). The tunnel will be constructed within the saturated zone of the aquifer and the presence of a low permeability linear structure may alter groundwater flows and levels, particularly where the tunnel is shallower and within the zone of active groundwater flow, or if the orientation of the tunnel is perpendicular to the direction of groundwater flow. In addition disturbance of the strata surrounding the tunnels and shafts may result in altered or preferential groundwater flow pathways. Changes in shallow groundwater levels and flow may affect surface water bodies and groundwater dependent terrestrial ecosystems (i.e. reductions in baseflow). <u>Chemical Status:</u> The tunnel would be used to transfer raw water of potable standard. Any leakages from the tunnel to the groundwater body would locally alter the groundwater chemistry, but it is assumed the potable standard water would be free from hazardous and priority hazardous substances and other pollutants, and would therefore not have a significant negative effect on the chemical status of the groundwater body.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
	Chemical Status Element	**Chemical Dependent Surface Water Body Status**	Poor	Good by 2027					
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/at
Coal Authority: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB112071065520**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Bashall Brook**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Ribble Middle - Settle to Calder**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Not designated**					
		Relevant upstream water bodies:		**Not provided**					
		Downstream water bodies:		**Ribble DS Stock Beck**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available at all flows. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. Impacts are likely to be temporary and localised however, and the availability of water in the water body indicates that temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-42-GB412025G103000). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that the surface water body has water available at all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Good by 2015					
		Benthic invertebrates	Not provided						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor	Phosphate good by 2027					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Author http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		GB112072066050	Scheme:	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)			
		Water body Name:		Hindburn	Reference	Option - 37-42			
		RBMP:		North West	Scheme Phase	Construction		Operational	
		Operational catchment:		Wenning	Impact potential	Direct		Direct	
		Designation (and uses):		Not designated					
		Relevant upstream water bodies:		Roeburn					
		Downstream water bodies:		Wenning- Lower					
		WFD Element *(Receptor)*	Status	RBMP objective	Alternate Objective if less than Good		Confidence		Confidence
WFD elements for Rivers: Ecological	Biology	Phytobenthos	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct, Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available at high flows (Q30), but limited water availability at low and medium flows (Q95 - Q50). Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. Impacts are likely to be temporary and localised however, and the of availability of water in the water body indicates that temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. The option includes a conduit bridge over the Wellbeck and Millbeck. In channel works may reduce the chemical status due to deterioration in water quality due to disturbance of soils and sediments, particularly if contaminated, or due to accidental spillage or leakage of fuels, oils and other chemicals associated with construction machinery. The ecological status may reduce due to smothering of habitats or reduction in light due to release of sediments, or changes to in hydrological regime, river continuity or morphological conditions due to impoundments or changes to the structure of the channel. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	Low	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-42- GB41202G102700). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that the surface water body has water available at high flows (Q30), but limited water availability at low and medium flows (Q95 - Q50), and the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	Low
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	Good						
	Hydromorphology	Hydrological regime	High						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	General physico-chemical	All high						
		Specific pollutants:	All high						
WFD elements for Rivers: Chemical		Priority hazardous substances	All good						
		Priority substances	All good						
Overall Status\ Potential		Ecological	Good	Good by 2015	N\A				
		Chemical	Good	Good by 2015	N\A				
		Overall	Good	Good by 2015	N\A				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers Pre \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers Pre \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers Pre \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers Pre \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers Pre \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers Pre \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstractio https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstractio https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstractio https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstractio https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Authority http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment Da http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB112071065420**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Whitendale River**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Hodder and Loud**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Not designated**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Dunsop**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available at all flows. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. Impacts are likely to be temporary and localised however, and the availability of water in the water body indicates that temporary reductions in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-41-GB41202G103000). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that the surface water body has water available at all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	High	Good by 2015					
		Benthic invertebrates	High	Good by 2015					
		Fish	Good	Good by 2015					
	Hydromorphology	**Hydrological regime**	Supports good	Supports Good by 2015					
		River continuity	Not provided						
		Morphological conditions	Supports good	-					
	Physico-chemical	**General physico-chemical**	All high	Good by 2015					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Autho http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB112071065560**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Hodder - conf Easington Bk to conf Ribble**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Hodder and Loud**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Not designated**					
		Relevant upstream water bodies:		**Dunsop, Easington Brook, Hodder - conf Croasdale Bk to conf Easington Bk, Langden Brook and Loud - Lower**					
		Downstream water bodies:		**Ribble DS Stock Beck**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Medium level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has no water available at low flows (Q95 and Q70, limited water available at medium flows (Q50), and water available at high flows (Q30). Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. Reductions in baseflow are likely to be temporary and localised, however the lack of availability of water in the water body at low flows indicates that a temporary reduction in baseflow could cause a prolonged deterioration in WFD status. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. The option includes a conduit bridge over the Bonstone Brook near Hodder SW. In channel works may reduce the chemical status due to deterioration in water quality due to disturbance of soils and sediments, particularly if contaminated, or due to accidental spillage or leakage of fuels, oils and other chemicals associated with construction machinery. The ecological status may reduce due to smothering of habitats or reduction in light due to release of sediments, or changes to in hydrological regime, river continuity or morphological conditions due to impoundments or changes to the structure of the channel. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-42- GB412025G103000). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that the surface water body has no water available at low flows (Q95 and Q70, limited water available at medium flows (Q50), and water available at high flows (Q30), and the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	Copper- high						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Author http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB41202G103000**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Ribble Carboniferous Aquifers**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Ribble Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent**	Good			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, but this would be localised and temporary. Accidental leakages or spills from construction machinery may affect the chemical status of the groundwater body, but construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the groundwater body. **Construction of new tunnel.** Medium level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. Solid geology is Carboniferous mudstones, sandstones, shales and limestones, a secondary A aquifer. Quantitative Status: Dewatering of the tunnel and shafts may affect groundwater levels and flows and the quantitative water balance of the groundwater body. Although temporary in nature, due to the length of the tunnel, and number and depth of shafts, the impacts could be widespread. Chemical status: Interception of shallow contaminated land may result in vertical or lateral migration of contaminated groundwater or mine waters into previously unaffected parts of the groundwater body. Leakages or spillages from construction machinery could affect the chemical status of the groundwater body. While construction best practice and pollution prevention measures would limit the occurrence of spillages and help mitigate their impact, any uncontrolled leak could rapidly transmit to the saturated zone. Although the construction phase is temporary, the effects of a deterioration in groundwater quality could be prolonged. Impacts would be localised, but could occur in several locations.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Solid geology is Carboniferous mudstones, sandstones, shales and limestones, a secondary A aquifer. Quantitative Status: No dewatering of the tunnel or shafts would take place post construction, and groundwater ingress is expected to be minimal (the tunnels would be designed and maintained to prevent groundwater ingress in order to protect raw water quality). The tunnel will be constructed within the saturated zone of the aquifer and the presence of a low permeability linear structure may alter groundwater flows and levels, particularly where the tunnel is shallower and within the zone of active groundwater flow, or if the orientation of the tunnel is perpendicular to the direction of groundwater flow. In addition disturbance of the strata surrounding the tunnels and shafts may result in altered or preferential groundwater flow pathways. Changes in shallow groundwater levels and flow may affect surface water bodies and groundwater dependent terrestrial ecosystems (i.e. reductions in baseflow). Chemical Status: The tunnel would be used to transfer raw water of potable standard. Any leakages from the tunnel to the groundwater body would locally alter the groundwater chemistry, but it is assumed the potable standard water would be free from hazardous and priority hazardous substances and other pollutants, and would therefore not have a significant negative effect on the chemical status of the groundwater body.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Author http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB112073071090**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Peasey Beck**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Bela**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Lupton (Farleton) Beck**					
		Downstream water bodies:		**Bela**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-42-GB41202G102100). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Author http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB112072071690**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Lune- conf Rawthey to conf Greta**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Lune- Rawthey to Greta**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Not designated**					
		Relevant upstream water bodies:		**Barbon Beck (Barkin Beck), Leck Beck (Ease Gill), Lune- conf Birk Beck to conf Rawthey and Rawthey- Lower**					
		Downstream water bodies:		**Lune- conf Greta to conf Wenning**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available at high flows (Q30), but limited water availability at low and medium flows (Q95 - Q50). Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. Impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-42-GB41202G102700). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available at high flows (Q30), and limited water availability at low and medium flows (Q95 - Q50), but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	Good						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Author http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB112073071080**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Lupton (Farleton) Beck**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Bela**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Not designated**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Peasey Beck**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tabs 37-42-GB41202G102100 and 37-42 - GB41202G102700). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	High						
		Benthic invertebrates	High						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers I \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers I \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers I \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers I \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers I \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers I \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Autho http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		GB41202G102100	Scheme:	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)			
		Water body Name:		South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Reference	Option - 37-42			
		RBMP:		North West	Scheme Phase	Construction		Operational	
		Operational catchment:		Cumbria South Lower Palaeozoic and Carboniferous Aq	Impact potential	Direct		Direct	
		Designation (and uses):		No designation					
		Relevant upstream water bodies:		N\A					
		Downstream water bodies:		N\A					
		WFD Element *(Receptor)*	Status	RBMP objective	Alternate Objective if less than Good		Confidence		Confidence
WFD elements for Groundwater: Quantitative	Quantitative Status Element	Quantitative Dependent Surface Water Body	Good			New connections to Haweswater Aqueduct. Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, but this would be localised and temporary. Accidental leakages or spills from construction machinery may affect the chemical status of the groundwater body, but construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the groundwater body. Construction of new tunnel. Medium level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. Solid geology is Silurian Rocks (undifferentiated) - sandstone and conglomerate, a secondary B aquifer. Quantitative Status: Dewatering of the tunnel and shafts may affect groundwater levels and flows and the quantitative water balance of the groundwater body. Although temporary in nature, due to the length of the tunnel, and number and depth of shafts, the impacts could be widespread. Chemical status: Interception of shallow contaminated land may result in vertical or lateral migration of contaminated groundwater or mine waters into previously unaffected parts of the groundwater body. Leakages or spillages from construction machinery could affect the chemical status of the groundwater body. While construction best practice and pollution prevention measures would limit the occurrence of spillages and help mitigate their impact, any uncontrolled leak could rapidly transmit to the saturated zone. Although the construction phase is temporary, the effects of a deterioration in groundwater quality could be prolonged. Impacts would be localised, but could occur in several locations.	Low	New connections to Haweswater Aqueduct. Minor level of impact. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, but this would be localised. Presence and operation of new tunnel. Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Solid geology is Silurian Rocks (undifferentiated) - sandstone and conglomerate, a secondary B aquifer. Quantitative Status: No dewatering of the tunnel or shafts would take place post construction, and groundwater ingress is expected to be minimal (the tunnels would be designed and maintained to prevent groundwater ingress in order to protect raw water quality). The tunnel will be constructed within the saturated zone of the aquifer and the presence of a low permeability linear structure may alter groundwater flows and levels, particularly where the tunnel is shallower and within the zone of active groundwater flow, or if the orientation of the tunnel is perpendicular to the direction of groundwater flow. In addition disturbance of the strata surrounding the tunnels and shafts may result in altered or preferential groundwater flow pathways. Changes in shallow groundwater levels and flow may affect surface water bodies and groundwater dependent terrestrial ecosystems (i.e. reductions in baseflow). Chemical Status: The tunnel would be used to transfer raw water of potable standard. Any leakages from the tunnel to the groundwater body would locally alter the groundwater chemistry, but it is assumed the potable standard water would be free from hazardous and priority hazardous substances and other pollutants, and would therefore not have a significant negative effect on the chemical status of the groundwater body.	Low
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	Chemical Status Element	Chemical Dependent Surface Water Body	Poor						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	Prevent and Limit Objective	Not provided						
		Trend Assessment	No trend						
Overall Status\Potential		Quantitative	Good	Good by 2015	N\A				
		Chemical (GW)	Poor	Good by 2027	N\A				
		Overall	Poor	Good by 2027	N\A				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Author http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB41202G102700**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Lune and Wyre Carboniferous Aquifers**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Lune and Wyre Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body:**	Good			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, but this would be localised and temporary. Accidental leakages or spills from construction machinery may affect the chemical status of the groundwater body, but construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the groundwater body. **Construction of new tunnel.** Medium level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. Solid geology is Silurian Rocks (undifferentiated) - sandstone and conglomerate, a secondary B aquifer, and Carboniferous Millstone Grit a secondary A aquifer. Quantitative Status: Dewatering of the tunnel and shafts may affect groundwater levels and flows and the quantitative water balance of the groundwater body. Although temporary in nature, due to the length of the tunnel, and number and depth of shafts, the impacts could be widespread. Chemical status: There is the potential for the interception of shallow contaminated land or deeper coal mine workings in the Carboniferous strata. Information from The Coal Authority shows mine entries and abandoned mine workings close to the route of the tunnel between Lunesdale SW and Hodder NW. Interception of these features may result in vertical or lateral migration of contaminated groundwater or mine waters into previously unaffected parts of the groundwater body. Leakages or spillages from construction machinery could affect the chemical status of the groundwater body. While construction best practice and pollution prevention measures would limit the occurrence of spillages and help mitigate their impact, any uncontrolled leak could rapidly transmit to the saturated zone. Although the construction phase is temporary, the effects of a deterioration in groundwater quality could be prolonged. Impacts would be localised, but could occur in several locations.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Solid geology is Silurian Rocks (undifferentiated) - sandstone and conglomerate, a secondary B aquifer, and Carboniferous Millstone Grit a secondary A aquifer. Quantitative Status: No dewatering of the tunnel or shafts would take place post construction, and groundwater ingress is expected to be minimal (the tunnels would be designed and maintained to prevent groundwater ingress in order to protect raw water quality). The tunnel will be constructed within the saturated zone of the aquifer and the presence of a low permeability linear structure may alter groundwater flows and levels, particularly where the tunnel is shallower and within the zone of active groundwater flow, or if the orientation of the tunnel is perpendicular to the direction of groundwater flow. In addition disturbance of the strata surrounding the tunnels and shafts may result in altered or preferential groundwater flow pathways. Changes in shallow groundwater levels and flow may affect surface water bodies and groundwater dependent terrestrial ecosystems (i.e. reductions in baseflow). Chemical Status: The tunnel would be used to transfer raw water of potable standard. Any leakages from the tunnel to the groundwater body would locally alter the groundwater chemistry, but it is assumed the potable standard water would be free from hazardous and priority hazardous substances and other pollutants, and would therefore not have a significant negative effect on the chemical status of the groundwater body.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body:**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Author http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB112073071370**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Mint**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Kent**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Not designated**					
		Relevant upstream water bodies:		**Flodder Beck and Mint- Upper**					
		Downstream water bodies:		**Kent- conf Sprint to tidal**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel. Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-42-GB41202G102100). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	High						
		Benthic invertebrates	High						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Autho http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB112073071340**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Flodder Beck**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Kent**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Not designated**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Mint**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-42-GB41202G102100). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Good						
		Benthic invertebrates	High						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Good**	**Good by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Good**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstrac https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Autho http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB112073071100**	**Scheme:**	**Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)**			
		Water body Name:		**Stainton Beck**	**Reference**	**Option - 37-42**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Bela**	**Impact potential**	**Direct**		**Direct**	
		Designation (uses):		**Not designated**					
		Relevant upstream water bodies:		**Not identified**					
		Downstream water bodies:		**Bela**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New connections to Haweswater Aqueduct.** Minor level of impact. Construction of penstock chamber around existing aqueduct. Open cut pipe construction between penstock chamber and new tunnel Temporary coffer dam, excavations, and associated dewatering may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised and temporary. It is assumed that no water courses would be crossed or diverted for the new connection. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. **Construction of new tunnel.** Minor level of impact. Construction of part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated temporary and permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Temporary shafts every 3 km. The ALS states that the surface water body has water available across all flow regime. Dewatering of the tunnel and shafts may affect groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This could result in a reduction in ecological or chemical status. However impacts are likely to be temporary and localised and the availability of water in the water body indicates some temporary reduction in baseflow could be tolerated. Accidental leakages or spills from construction machinery at the surface may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body. The option includes two conduit bridges on the Crake Hall Gill and Mill Rigg Gill. In channel works may reduce the chemical status due to deterioration in water quality due to disturbance of soils and sediments, particularly if contaminated, or due to accidental spillage or leakage of fuels, oils and other chemicals associated with construction machinery. The ecological status may reduce due to smothering of habitats or reduction in light due to release of sediments, or changes to in hydrological regime, river continuity or morphological conditions due to impoundments or changes to the structure of the channel. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New connections to Haweswater Aqueduct.** Minor level of impact. Penstock shaft. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. **Presence and operation of new tunnel.** Medium level of impact. Part of new 2.6 m diameter conduit and 2.85 m diameter tunnel between Mealbank South Well and Woodgate Hill, including associated permanent shafts. Tunnel depth is up to 120 m and has a total length of 51.8 km. Disruption of groundwater flows and levels may occur (see tab 37-42-GB41202G102100). This may result in long term or widespread changes to baseflow to watercourses. The ALS states that there is water available across all flows, but the potential magnitude of impacts are at present poorly understood. If reductions in baseflow are of a large magnitude there could be a deterioration in the hydrological regime of the surface water body.	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Good by 2027					
		Benthic invertebrates	Good						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	High						
		River continuity	Not provided						
		Morphological conditions	Supports good						
	Physico-chemical	**General physico-chemical**	All high						
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\037 Duplication of T06 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\038 Duplication of T05 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\039 Duplication of T04 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\040 Duplication of T03 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\041 Duplication of T02 tunnel and conduit.xlsx
Engineers F \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C11 New Tunnels\PBDs\042 Duplication of T01 tunnel and conduit.xlsx
EA Abstract https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf
EA Abstract https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf
EA Abstract https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300485/LIT7917v1_161231.pdf
EA Abstract https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300489/LIT_7918_ccfa86.pdf
Coal Autho http://mapapps2.bgs.ac.uk/coalauthority/home.html
Catchment http://environment.data.gov.uk/catchment-planning/

		Water body ID:		**GB112071065500**	**Scheme:**	**Alternative Supply: Raw water transfer and WTW at Martholme BSP**			
		Water body Name:		**Ribble - conf Calder to tidal**	**Reference**	**Option- 215**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Big Ribble**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Calder - Pendle Water to conf Ribble, Duddel Brook, Ribble DS Stock Beck and Showley Brook**					
		Downstream water bodies:		**Ribble**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** No or minimal impact. **New water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station, and water treatment works.** No or minimal impact. **New surface water abstraction quantity.** Medium level of impact. New surface water abstraction from the River Ribble near Old Langho of a maximum of 41 Ml/d. Likely to be operational for six monthly periods, every two years during repair work, then every five years for maintenance. In the ALS water is identified as available at all flows (Q30, Q50, Q70 and Q95) however the abstraction is relatively large in size and could have a widespread impact on the hydrological regime of the River Ribble. The six month limit on the operation period may limit the degree of impact, particulalry if asbtraction is limited to times of high flow, but not enough is known about the operation patterns to lower the predicted impact to minor at this stage. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Good by 2027					
		Benthic invertebrates	Good	Good by 2015					
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Phosphate-poor	Phosphate good by 2027					
		Specific pollutants:	All high	High by 2015					
WFD elements for Rivers: Chemical		**Priority hazardous substances**	All good	Good by 2015					
		Priority substances	All good	Good by 2015					
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C17 Full Dupl
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3(

		Water body ID:		**GB41202G103000**	**Scheme:**	**Alternative Supply: Raw water transfer and WTW at Martholme BSP**			
		Water body Name:		**Ribble Carboniferous Aquifers**	**Reference**	**Option - 215**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Ribble Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body**	Good			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact. **New water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station and water treatment works.** No or minimal impact. **New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from the River Ribble near Clitheroe of a maximum of 41 Ml/d. Likely to be operational for six monthly periods, every two years during repair work, then every five years for maintenance. The ALS does not define a groundwater management unit for this water body, but there is no restricted or non availability of surface water in the overlying water body. Due to the relatively large size of the proposed abstraction there may be reductions in leakage from the river to the aquifer, however these would be localised, and the secondary aquifer is unlikely to be highly dependent on leakage from surface water courses to maintain its quantitative water balance.	**Medium**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body**	Good						
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Poor						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Poor						
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	No trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2015**	**N\A**				
		Overall	**Poor**	**Good by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C17 Full Duplication Plus Volumetric\Scopebooks\215 - Raw transfer
EA Abstraction Licence Strategy (Ribble, Douglas and Crossens): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300484/LIT7919v3_f881c4.pdf

		Water body ID:		**GB112069064641**	**Scheme:**	**Alternative Supply: Raw water abstraction and WTW at Townsend Fold BSP**			
		Water body Name:		**Irwell (Cowpe Bk to Rossendale STW)**	**Reference**	**Option - 216**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Irwell (Source to Whitewell Brook), Limy Water and Whitewell Brook**					
		Downstream water bodies:		**Irwell (Rossendale STW to Roch)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** Minor level of impact. **New surface water intake.** Minor level of impact. **New pumping station.** Minor level of impact. **New water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station and water treatment works.** No or minimal impact. **New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from the River Irwell at Townsend Fold BSP of a maximum of 5.1 Ml/d. In the ALS water is identified as available at all flows (Q30, Q50, Q70 and Q95). As the size of the abstraction is relatively small and there is water available, any impact on the hydrological regime of the River Irwell would be localised. A new abstraction licence would be required to be issued by the Environment Agency.	**Medium**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate	Good by 2027					
		Benthic invertebrates	Good	Good by 2015					
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good	Supports good by 2015					
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high except: Phosphate- moderate and pH- moderate	Phosphate and pH good by 2027					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C17 Full Dupl
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT

		Water body ID:		**GB41202G101800**	**Scheme:**	**Alternative Supply: Raw water abstraction and WTW at Townsend Fold BSP**			
		Water body Name:		**Northern Manchester Carboniferous Aquifers**	**Reference**	**Option - 216**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester Northern Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent**	Good	Good by 2015					
		Quantitative GWDTEs test	Good	Good by 2015					
		Quantitative Saline Intrusion	Good	Good by 2015					
		Quantitative Water Balance	Good	Good by 2015					
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor	Good by 2027		**Transfer pipe line on land.** No or minimal impact. **Transfer pipe line with water course crossings.** No or minimal impact. **New surface water intake.** No or minimal impact. **New pumping station.** No or minimal impact. **New water treatment works.** No or minimal impact.	**High**	**Use of new transfer pipe line, pumping station and water treatment works.** No or minimal impact. **New surface water abstraction quantity.** Minor level of impact. New surface water abstraction from the River Irwell near Haslingden of a maximum of 5.1 Ml/d. The ALS does not define a groundwater management unit for this water body, but there is no restricted or non availability of surface water in the overlying water body. Due to the relatively small size of the proposed abstraction any reductions in leakage from the river to the aquifer would be localised, and the secondary aquifer is unlikely to be highly dependent on leakage from surface water courses to maintain its quantitative water balance.	**Medium**
		Chemical Drinking Water Protected Area	Good	Good by 2015					
		Chemical GWDTEs test	Good	Good by 2015					
		Chemical Saline Intrusion	Good	Good by 2015					
		General Chemical Test	Good	Good by 2015					
	Supporting Elements	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\WRMP\C17 Full Duplication Plus Volumetric\Scopebooks\216 - Raw transfer
EA Abstraction Licence Strategy (Northern Manchester): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300488/LIT_7849_fa7980.pdf

		Water body ID:		**GB112069064641**	**Scheme:**	**T05 targeted repair 2025**			
		Water body Name:		**Irwell (Cowpe Bk to Rossendale STW)**	**Reference**	**Option - 296**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Irwell (Source to Whitewell Brook), Limy Water and Whitewell Brook**					
		Downstream water bodies:		**Irwell (Rossendale STW to Roch)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New Tunnel Lining to Haweswater Aqueduct.** Minor level of impact. Installation of 100 m of steel tunnel liner within the existing aqueduct, including two new access shafts. The ALS states that the surface water body has water available across all flow regime. Temporary dewatering of shafts may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, This would be localised and temporary, and the availability of water in the surface water body indicates that some reduction in baseflow could be tolerated. It is assumed that no water courses would be crossed or diverted. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New Tunnel Lining to Haweswater Aqueduct.** Minor level of impact. Presence of 100 m of new tunnel liner. Presence of two new access shafts. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. (see tab 296-GB41202G101800).	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Good						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	Ammonia and Dissolved oxygen- high, pH and Phosphate- poor	pH and Phosphate good by 2027					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Good by 2027**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\Received 13.12.17\29
Coal Authority Interactive Map: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB41202G101800**	**Scheme:**	**T05 targeted repair 2025**			
		Water body Name:		**Northern Manchester Carboniferous Aquifers**	**Reference**	**Option - 296**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester Northern Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent**	Good			**New Tunnel Lining to Haweswater Aqueduct.** Medium level of impact. Installation of 100 m of steel tunnel liner within the existing aqueduct, including two new access shafts. Solid geology is Carboniferous Millstone Grit, a secondary A aquifer. Quantitative Status: Dewatering of the shafts may affect groundwater levels and flows and the quantitative water balance of the groundwater body. Impacts would be temporary, limited to the construction phase, and localised as only two shafts are included in the option. Shaft T05-08 is within approximately 50 m of the River Irwell and dewatering could impact upon river flows. Chemical status: Interception of shallow contaminated land may result in vertical or lateral migration of contaminated groundwater or mine waters into previously unaffected parts of the groundwater body. Information from The Coal Authority shows mine entries and shallow mine workings in the vicinity of the proposed shafts. Leakages or spillages from construction machinery could affect the chemical status of the groundwater body. While construction best practice and pollution prevention measures would limit the occurrence of spillages and help mitigate their impact, any uncontrolled leak could rapidly transmit to the saturated zone. Although the construction phase is temporary, the effects of a deterioration in groundwater quality could be prolonged. Impacts would be localised, but could occur in several locations.	**Low**	**New Tunnel Lining to Haweswater Aqueduct.** Minor level of impact. Presence of 100 m of new tunnel liner. Presence of two new access shafts. Quantitative Status: No dewatering of the shafts would take place post construction. Groundwater ingress to the tunnel would be reduced due to the improved liner. Disturbance of the strata surrounding the shafts may result in altered or preferential groundwater flow pathways. Changes in shallow groundwater levels and flow may affect surface water bodies and groundwater dependent terrestrial ecosystems (i.e. reductions in baseflow), however impacts would be localised, and it is assumed the shafts would not be located within close proximity to GWDTE. Chemical Status: Any existing leakages from the tunnel to the groundwater body would be reduced due to the improved liner. Impacts would be no or minimal, or positive.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent**	Poor	Good by 2027					
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proforma: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\Received 13.12.17\296 Lining T05 targeted repair 2025.xlsx
Coal Authority Interactive Map: http://mapapps2.bgs.ac.uk/coalauthority/home.html
BGS Geology Viewer: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

		Water body ID:		**GB112069064620**	**Scheme:**	**T06 targeted repair 2025**			
		Water body Name:		**Irwell (Rossendale STW to Roch)**	**Reference**	**Option - 297**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Croal Irwell**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Irwell (Cowpe Bk to Rossendale STW), Kirklees Brook and Ogden**					
		Downstream water bodies:		**Irwell (Roch to Croal)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New Tunnel/Conduit Lining to Haweswater Aqueduct.** Minor level of impact. Installation of 200 m of steel tunnel liner within the existing aqueduct, including two new access shafts. The ALS states that the surface water body has water available across all flow regime. Temporary dewatering of shafts may have an impact on groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This would be localised and temporary and the availability of water indicates that some reduction in baseflow could be tolerated. It is assumed that no water courses would be crossed or diverted. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New Tunnel/Conduit Lining to Haweswater Aqueduct.** Minor level of impact. Presence of 200 m of new tunnel liner. Presence of two new access shafts. The presence of a new concrete lined shaft may disrupt groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. (see tab 297 - GB41202G101800).	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Good						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Supports good						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor	Phosphate poor by 2015					
		Specific pollutants:	Not provided						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Does not require assessment						
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Moderate by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\Received 13.12.17\297 Lining T06 targeted repair 2025.xlsx

		Water body ID:		**GB112069064600**	**Scheme:**	**T06 targeted repair 2025**			
		Water body Name:		**Roch (Spodden to Irwell)**	**Reference**	**Option - 297**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Roch Irk Medlock**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**Heavily modified**					
		Relevant upstream water bodies:		**Naden Brook, Roch (Source to Spodden), Spodden and Whittle Brook (Irwell)**					
		Downstream water bodies:		**Irwell (Roch to Croal)**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Rivers: Ecological	**Biology**	**Phytobenthos**	Not provided			**New Tunnel/Conduit Lining to Haweswater Aqueduct.** Minor level of impact. Installation of 200 m of concrete conduit liner within the existing aqueduct, including two new access chambers. The ALS states that the surface water body has water available across all flow regime. Temporary dewatering of access chambers may have an impact on shallow groundwater levels and flows, which could in turn impact on baseflows to nearby water courses. This would be localised and temporary and the availability of water indicates that some reduction in baseflow could be tolerated. It is assumed that no water courses would be crossed or diverted, and that the Gypsy Brook conduit bridge does not need to be rebuilt. Accidental leakages or spills from construction machinery may affect the chemical status of the surface water body. Release of sediments from construction work may affect the ecological status due to smothering of habitats or reduction in light, or the chemical status of the surface water body, particularly if contaminated. However, construction best practice and pollution prevention measures would help prevent and/or mitigate against a prolonged or widespread impact on the surface water body.	**Low**	**New Tunnel/Conduit Lining to Haweswater Aqueduct.** Minor level of impact. Presence of 200 m of new concrete conduit liner. Presence of two new access chambers. The presence of a new concrete lined access chambers may disrupt shallow groundwater levels and flows, which could in turn impact on baseflows to nearby water courses, but this would be localised. (see tab 297-GB41202G101800).	**Low**
		Macrophytes	Not provided						
		Macrophytes and phytobenthos	Moderate						
		Benthic invertebrates	Not provided						
		Fish	Not provided						
	Hydromorphology	**Hydrological regime**	Not provided						
		River continuity	Not provided						
		Morphological conditions	Not provided						
	Physico-chemical	**General physico-chemical**	All high/good except: Phosphate- poor	Phosphate poor by 2015					
		Specific pollutants:	High						
WFD elements for Rivers: Chemical		**Priority hazardous substances**	Does not require assessment						
		Priority substances	Good						
Overall Status\ Potential		**Ecological**	**Moderate**	**Moderate by 2015**	**N\A**				
		Chemical	**Good**	**Good by 2015**	**N\A**				
		Overall	**Moderate**	**Moderate by 2015**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
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Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\Received 13.12.17\297 Lining T06 targeted repair 2025.xlsx

		Water body ID:		**GB41202G101800**	**Scheme:**	**T06 targeted repair 2025**			
		Water body Name:		**Northern Manchester Carboniferous Aquifers**	**Reference**	**Option - 297**			
		RBMP:		**North West**	**Scheme Phase**	**Construction**		**Operational**	
		Operational catchment:		**Manchester Northern Carboniferous Aq**	**Impact potential**	**Direct**		**Direct**	
		Designation (and uses):		**No designation**					
		Relevant upstream water bodies:		**N\A**					
		Downstream water bodies:		**N\A**					
		WFD Element *(Receptor)*	**Status**	**RBMP objective**	**Alternate Objective if less than Good**		**Confidence**		**Confidence**
WFD elements for Groundwater: Quantitative	**Quantitative Status Element**	**Quantitative Dependent Surface Water Body Status**	Good			**New Tunnel/Conduit Lining to Haweswater Aqueduct.** Medium level of impact. Installation of 200 m of steel liner in tunnel section, including two new access shafts, and 200 m of concrete lining in conduit section with to new conduit access chambers. Solid geology is Carboniferous Millstone Grit and Pennine Lower Coal Measures, a secondary A aquifer. Quantitative Status: Dewatering of the shafts and new access chambers may affect groundwater levels and flows and the quantitative water balance of the groundwater body. Impacts would be temporary, limited to the construction phase, and localised to the four shaft/chamber locations. Shaft T06-05 is within approximately 50 m of a minor watercourse and dewatering could impact upon river flows. Chemical status: Interception of shallow contaminated land may result in vertical or lateral migration of contaminated groundwater or mine waters into previously unaffected parts of the groundwater body. Information from The Coal Authority shows mine entries and shallow mine workings in the vicinity of the proposed shafts. Leakages or spillages from construction machinery could affect the chemical status of the groundwater body. While construction best practice and pollution prevention measures would limit the occurrence of spillages and help mitigate their impact, any uncontrolled leak could rapidly transmit to the saturated zone. Although the construction phase is temporary, the effects of a deterioration in groundwater quality could be prolonged. Impacts would be localised, but could occur in several locations.	**Low**	**New Tunnel/Conduit Lining to Haweswater Aqueduct.** Minor level of impact. Presence of new tunnel linings, access shafts, and conduit access chambers. Quantitative Status: No dewatering of the shafts/access chambers would take place post construction. Groundwater ingress to the tunnel/conduit would be reduced due to the improved liner. Disturbance of the strata surrounding the shafts may result in altered or preferential groundwater flow pathways. Changes in shallow groundwater levels and flow may affect surface water bodies and groundwater dependent terrestrial ecosystems (i.e. reductions in baseflow), however impacts would be localised, and it is assumed the shafts would not be located within close proximity to GWDTE. Chemical Status: Any existing leakages from the tunnel to the groundwater body would be reduced due to the improved liner. Impacts would be no or minimal, or positive.	**Low**
		Quantitative GWDTEs test	Good						
		Quantitative Saline Intrusion	Good						
		Quantitative Water Balance	Good						
WFD elements for Groundwater: Chemical	**Chemical Status Element**	**Chemical Dependent Surface Water Body Status**	Poor	Good by 2027					
		Chemical Drinking Water Protected Area	Good						
		Chemical GWDTEs test	Good						
		Chemical Saline Intrusion	Good						
		General Chemical Test	Good						
	Supporting Elements (groundwater)	**Prevent and Limit Objective**	Not provided						
		Trend Assessment	Upward trend						
Overall Status\Potential		**Quantitative**	**Good**	**Good by 2015**	**N\A**				
		Chemical (GW)	**Poor**	**Good by 2027**	**N\A**				
		Overall	**Poor**	**Good by 2027**	**N\A**				

Assumptions

1- Application of standard best practice construction and pollution prevention methods.
2- Pipe lines will cross water courses with existing roadways where possible to limit the amount of new watercourse crossings.
3- Laying of the pipeline across water courses will take no more than 30 days, and any in channel works will be undertaken at a time which won't have a significant impact on fish communities.
4- New pipe line water course crossings would be installed via a trench and cover technique within a dry working area. New pipe line crossings of estuaries or coastal waters would be installed via a technique that does not involve disturbance of the bed.
5- A ground investigation will be carried out and will identify any contaminated land and any mitigation that may be required.
6- Extensions, modifications, or new pumping stations, water treatment works, etc. would involve a relatively small footprint in the context of any WFD water body catchment, and would not involve the requirement for in-channel works.
7- Dewatering of excavations would not require a permit from the Environment Agency/Natural Resources Wales. Dewatering and a corresponding discharge of sufficient magnitude, duration, or sensitivity to require a permit may have a greater impact than assessed. Dewatering would be of uncontaminated water, and water would be discharged within the same water body.

Evidence

Catchment Data Explorer: http://environment.data.gov.uk/catchment-planning/
Engineers Proformas: \\WAR-FS1.global.amec.com\shared\Projects\38671 UU WRMP Support\5 Design\Resilience Options\Received 13.12.17\297 Lining T06 targeted repair 2025.xlsx

Appendix F
Results of the WFD Assessment of Supply-demand Preferred Plan Options at the Draft WRMP Stage

Overview

UU's Preferred Plan for the Draft WRMP incorporated four strategic choices:

- Enhance leakage reduction by a total of 80 Ml/d over the planning period;
- Improve levels of service for drought permits and orders from 1 in 20 years to 1 in 40 years (moving from 5% to 2.5% annual risk);
- Increase resilience to other hazards, through the Manchester and Pennine Resilience solution; and
- Continue to explore national water trading.

The Draft WRMP Preferred Plan comprised a combination of preferred resource management and demand management measures designed to achieve the four strategic choices outlined above. The preferred supply-demand resource management options were considered as part of this WFD assessment which informed the Draft WRMP and are included here for completeness.

Table F.1 lists the supply-demand resource management options that comprised the Draft WRMP Preferred Plan together with their respective design capacity.

Table F.1 Summary of Draft WRMP Preferred Plan Options

Ref	Preferred Option	Description	Design Capacity	Implementation (AMP)
WR099b	Worsthorne Borehole (Hurstwood IR)	This option comprises the recommissioning and refurbishment of Worsthorne borehole in order to abstract a maximum capacity of 4 Ml/d. Refurbishments would include a new pump, new/improved headworks and mechanical / electrical together with the construction of a new 1.1km main to transfer water to Hurstwood IR.	4	AMP8
WR101	Franklaw Z Site Plus Increased Franklaw WTW Treatment Capacity	This option would involve the reinstatement and refurbishment of two existing boreholes at the Franklaw Z site in order to abstract and transfer a maximum of 18 Ml/d of raw ground water to the existing Franklaw WTW via an existing raw water pipeline. Additionally, new borehole pumps would be installed at 10 other existing/utilised Franklaw/Broughton boreholes in order to abstract an additional 12 Ml/d and the capacity of Franklaw WTW would be increased.	30	AMP8
WR102e	Bold Heath boreholes to Prescot WTW	This option comprises the recommissioning of Bold Heath boreholes. Refurbishment would include new headworks, mechanical / electrical, new pumps, new kiosks at both boreholes, and the construction of a new 9km raw water main to Prescot WTW to provide up to 9 Ml/d.	9	AMP8
WR113	Tytherington boreholes	This option would involve the replacement of an existing treated water main between Tytherington WTW and treated water storage to permit an additional 3Ml/d treated water transfer to existing storage. It would also comprise the replacement of existing borehole pumps at Tytherington and modifications to the WTW. The option would have a capacity of 3 Ml/d.	3	AMP8
WR114	Python Mill Borehole	This option comprises the reinstatement and refurbishment of Python Mill borehole and the transfer of raw water to Rochdale Canal, offsetting compensation from the Chelburn system. It would require a new borehole pump, rising main, headworks modifications and M&E equipment in addition to 3km of new transfer pipeline along a road from Python Mill to Rochdale Canal. A new discharge scour into the canal and new sewer connection at Python Mill would also be required. The option would have a capacity of 3 Ml/d.	3	AMP8

Ref	Preferred Option	Description	Design Capacity	Implementation (AMP)
WR159	Group 1 - Improved reservoir compensation release control from 76 individual reservoirs	This option would involve the construction of new automated penstock arrangements at 76 reservoirs (Group 1) in order to provide compensation control in line with licence requirements. The proposed development scope would also include a new kiosk at each targeted reservoir. It is estimated that operation of the scheme would result in a cumulative design capacity of up to 13.2 Ml/d.	13.2	AMP8
WR160	Group 2 - Improved reservoir compensation release control from Vyrnwy, Rivington, Thirlmere and Haweswater reservoirs	This option would involve the construction of new automated penstock arrangements at 4 reservoirs (Group 2: Lake Vyrnwy, Rivington, Thirlmere and Haweswater) in order to provide compensation control in line with licence requirements. The proposed development scope would also include a new kiosk at each targeted reservoir. It is estimated that operation of the scheme would result in a cumulative design capacity of up to 8.8 Ml/d.	8.8	AMP8
WR821	Shropshire Union Canal	This option would involve increased abstraction from the Shropshire Union Canal for treatment to potable standards at Hurleston WTW and transfer to the Mid-Cheshire Main located near Nanney's Bridge. It would require additional abstraction infrastructure, a new/expanded WTW at Hurleston and a 6.9km treated water main.	30	AMP8
B2	Enabling works to support Thames Water Trading Option	In order to maintain supplies to UU's own customers when exporting water to Thames Water, Dee Aqueduct water would be diverted into Norton Water Tower on the Vyrnwy Aqueduct using existing aqueduct connections and would then be pumped up Line 3 of the Vyrnwy Aqueduct for additional treatment at Oswestry WTW which would be modified accordingly. Several existing bulk supply points would be switched to receive the Dee Aqueduct water, although this element of the scheme would not require any additional infrastructure. The option would require four new booster stations. A total of 26 km of pipeline on Line 3 of the Vyrnwy Aqueduct would be replaced, with slip lining along a further 21.5km of this line also required. Hydraulic controls would also be improved along Lines 1 and 2. Detailed design is required to confirm these proposals.	-	AMP8

Level 1 Screening of Draft WRMP Preferred Plan Options

The Level 1 screening of the preferred options that comprised UU's Draft WRMP Preferred Plan identified 155 WFD water bodies that may be impacted by the eight Preferred Plan resource management options, and the enabling works (Option B2). Some of these water bodies could be impacted by more than one option, resulting in a total number of 202 option-water body combinations. The screening exercise was undertaken for each option and its related water bodies. The results of the screening exercise are summarised in **Table F.2** and presented in full in **Appendix G**.

Table F.2 Summary of Level 1 Screening Exercise for Preferred Plan Options

	No of option–water body combinations	No of water bodies	No of options
Total	202	155	9
High level of impact	0	0	0
Medium level of impact	6	54	8

	No of option–water body combinations	No of water bodies	No of options
Minor level of impact	3	3	2
No or minimal impact	135	101	5

Note that a water body may have varying levels of impact from different options, and an option may have differing levels of impact on different water bodies. This means that some water bodies and options are counted more than once in the values in this table.

Level 2 Assessment of Draft WRMP Preferred Plan Options

The Level 1 screening identified that none of the Preferred Plan options would have a high level of impact, but eight may have a medium level of impact. The water bodies related to these options that may be subject to a medium level of impact were subject to a Level 2 detailed assessment. This involved further consideration of the activities proposed within those water bodies and further review of baseline data. Following the Level 2 detailed assessment, the level of impact could reduce or increase depending on the judgement of the likely impact.

The results of the Level 2 detailed assessment were combined with the results of the Level 1 assessment to produce a combined assessment result which is summarised in **Table F.3** and **Table F.4**, and presented in full in **Appendix G**. The individual assessment spreadsheets are presented in **Appendix C**. In general terms, the Level 2 assessments resulted in a lowering of the level of impacts, a reflection on the conservative approach adopted in the Level 1 screening.

Table F.3 Summary of Combined Assessment Results for Preferred Plan Options

	No of option–water body combinations	No of water bodies	No of options
Total	202	155	9
High level of impact	0	0	0
Medium level of impact	8	8	2
Minor level of impact	59	50	8
No or minimal impact	135	101	5

Note that a water body may have varying levels of impact from different options, and an option may have differing levels of impact on different water bodies. This means that some water bodies and options are counted more than once in the values in this table.

Table F.4 Summary of Combined Assessment Results by Preferred Plan Option

Option Information		**No of water bodies**							
Ref	Name	Total	High	Medium	Minor	No or Minimal	Overall impact level	Confidence level	Option activities likely to cause a high or medium impact
WR099b	Worsthorne Borehole (Hurstwood IR)	2	0	0	2	0	Minor level of impact	Medium	n/a

Option Information		No of water bodies							
Ref	Name	Total	High	Medium	Minor	No or Minimal	Overall impact level	Confidence level	Option activities likely to cause a high or medium impact
WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	7	0	6	1	0	Medium level of impact	Low	Increase in abstraction quantities above recent actual rates, within existing licence.
WR102e	Bold Heath Boreholes to Prescot WTW	7	0	0	4	3	Minor level of impact	High	n/a
WR113	Tytherington Boreholes	2	0	0	2	0	Minor level of impact	Low	n/a
WR114	Python Mill Borehole	3	0	2	1	0	Medium level of impact	Low	Reinstatement of groundwater abstraction, new abstraction licence.
WR159	Group 1 - Improved reservoir compensation release control	116	0	0	35	81	Minor level of impact	Medium	n/a
WR160	Group 2 - Improved reservoir compensation release control	12	0	0	4	8	Minor level of impact	Medium	n/a
WR821	Shropshire Union Canal	4	0	0	3	1	Minor level of impact	Low	n/a
B2	Enabling Works	11	0	0	0	11	No or minimal impact	High	n/a

Cumulative Assessment

Water Body Cumulative Assessment

Where two or more preferred options are located in the same water body, a high level assessment was undertaken to determine the potential cumulative effects on WFD objectives, should all the options be implemented. The same impact classification system was used for the cumulative assessments as for the Level 1 and Level 2 assessments (**Table 3.1**). The results are summarised in **Table F.5** and presented in full in **Appendix H**.

Eight water bodies were identified as being impacted by two or more Preferred Plan options; however, for all of these the cumulative impact of those options would not exceed the maximum impact of the individual options. This is because:

- The activities from the options do not interact to produce a significant cumulative effect (e.g. pipe line construction from one option and a reduction in compensation release from a second option); or
- The individual reductions in flow from individual options are relatively small, so than even when combined, they are unlikely to result in a widespread or prolonged effect.

Table F.5 Summary of Water Body Cumulative Assessment Results

WFD Water Body Information			Option		Assessment Result		
ID	**Type**	**Name**	**Ref**	**Option Name**	**Individual Option**	**Individual Confidence**	**Cumulative**
GB109054049880	River	Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	WR160	Group 2 - Improved reservoir compensation release control	Minor level of impact	Medium	Minor level of impact
			B2	Enabling Works	No or minimal impact	High	
GB112069061320	River	Bollin (Source to Dean)	WR113	Tytherington Boreholes	Minor level of impact	Low	Minor level of impact
			WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
GB112069064720	River	Roch (Source to Spodden)	WR114	Python Mill Borehole	Medium level of impact	Low	Medium level of impact
			WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	High	
GB112071065090	River	Brun - headwaters to conf Don	WR099b	Worsthorne Borehole (Hurstwood IR)	Minor level of impact	Medium	Minor level of impact
			WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
GB40202G102300	Groundwater	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control	No or minimal impact	High	No or minimal impact
			WR160	Group 2 - Improved reservoir compensation release control	No or minimal impact	High	

WFD Water Body Information			Option		Assessment Result		
ID	**Type**	**Name**	**Ref**	**Option Name**	**Individual Option**	**Individual Confidence**	**Cumulative**
GB40902G205300	Groundwater	Severn Uplands - Lower Palaeozoic	WR160	Group 2 - Improved reservoir compensation release control	No or minimal impact	High	No or minimal impact
			B2	Enabling Works	No or minimal impact	High	
GB41202G100300	Groundwater	Douglas, Darwen and Calder Carboniferous Aquifers	WR099b	Worsthorne Borehole (Hurstwood IR)	Minor level of impact	Medium	Minor level of impact
			WR159	Group 1 - Improved reservoir compensation release control	No or minimal impact	High	
			WR160	Group 2 - Improved reservoir compensation release control	No or minimal impact	High	
GB41202G101800	Groundwater	Northern Manchester Carboniferous Aquifers	WR114	Python Mill Borehole	Medium level of impact	Low	Medium level of impact
			WR159	Group 1 - Improved reservoir compensation release control	No or minimal impact	High	

Operational Catchment Cumulative Assessment

Where two or more Preferred Plan options, or different elements of a single Preferred Plan option, are located in multiple water bodies within one operational catchment, a high level assessment was undertaken to determine the potential cumulative effects on WFD objectives, should all the options be implemented. The same impact classification system was used for the cumulative assessments as for the Level 1 and Level 2 assessments. The results are summarised in **Table F.6** and presented in full in **Appendix I**.

A total of 17 operational catchments (including river catchments and regional aquifers) were identified as being impacted by two or more preferred options, or different elements of a single preferred option. For all of these, the cumulative impact on a catchment scale would not exceed the maximum impact on an individual water body. This is because:

- The individual option assessments often assumed a worst case scenario, particularly for Option WR159 where the reduction in compensation flow from a group of reservoirs was assigned to a single water body (due to no detailed information on the reduction in flows from each reservoir within the group). When a number of reservoirs in the same catchment are considered together, the reduction in flow is no greater than that assessed for an individual option;
- The activities from the options do not interact to produce a significant cumulative effect (e.g. pipe line construction from one option and a reduction in compensation release from a second option);
- For groundwater bodies affected by multiple reductions in reservoir compensation flows, the relatively small reductions in compensation flows are unlikely to reduce the wetted area of the reservoirs or downstream watercourses (assuming that low flow compensation released are maintained), therefore any impact on groundwater surface water interaction on this secondary aquifer would be minimal.

Table F.6 Summary of Operational Catchment Cumulative Assessment

Catchment	WFD Water Body Information			Option		Assessment Result		
Operational Catchment	**ID**	**Type**	**WB Name**	**Ref**	**Option Name**	**Individual Option Assessment Result**	**Individual Options Assessment Confidence**	**Cumulative Assessment Result**
Colne Water	GB112071065130	River	Walverden Water	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	Minor level of impact.
	GB112071065210	River	Colne Water (Laneshaw)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	High	
	GB112071065230	River	Pendle Water - headwaters to Colne Water	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	High	
Sankey	170*	River	Non reportable water body to north of River Mersey	WR102e	Bold Heath Boreholes to Prescot WTW	Minor level of impact	High	Minor level of impact
	GB112069060990	River	Whittle Brook (Mersey Estuary)	WR102e	Bold Heath Boreholes to Prescot WTW	No or minimal impact	High	
	GB112069061170	River	Sutton Brook	WR102e	Bold Heath Boreholes to Prescot WTW	Minor level of impact	High	
	GB112069061210	River	Hardshaw (Windle) Brook	WR102e	Bold Heath Boreholes to Prescot WTW	No or minimal impact	High	
Aire and Calder Carb Limestone - Millstone Grit Coal - Measures	GB40402G700400	Groundwater	Aire and Calder Carb Limestone / Millstone Grit / Coal Measures.	WR159	Group 1 - Improved reservoir compensation release control - reductions in compensation flows from multiple reservoirs	No or minimal impact	High	No or minimal impact
Bollin Dean Mersey Upper	GB112069060650	River	Dean (Lamaload to Bollington)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	Minor level of impact

Catchment	WFD Water Body Information			Option		Assessment Result		
Operational Catchment	**ID**	**Type**	**WB Name**	**Ref**	**Option Name**	**Individual Option Assessment Result**	**Individual Options Assessment Confidence**	**Cumulative Assessment Result**
	GB112069060920	River	Micker (Norbury) Brook	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
	GB112069061060	River	Platt Brook (Source to Fallowfield Bk)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
	GB112069061320	River	Bollin (Source to Dean)	WR113	Tytherington Boreholes	Minor level of impact	Low	
	GB112069061320	River	Bollin (Source to Dean)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
Brock and Trib	GB112072065760	River	Woodplumpton Brook	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	Medium level of impact	Low	Medium level of impact
	GB112072065790	River	New Draught Brook	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	Medium level of impact	Low	
	GB112072065800	River	Barton (Westfield) Brook	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	Medium level of impact	Low	
	GB112072065810	River	Brock	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	Minor level of impact	Medium	
Calder	GB112071065040	River	Hyndburn	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	Minor level of impact
	GB112071065090	River	Brun- headwaters to conf Don	WR099b	Worsthorne Borehole (Hurstwood IR)	Minor level of impact	Medium	

Catchment	WFD Water Body Information			Option		Assessment Result		
Operational Catchment	**ID**	**Type**	**WB Name**	**Ref**	**Option Name**	**Individual Option Assessment Result**	**Individual Options Assessment Confidence**	**Cumulative Assessment Result**
	GB112071065090	River	Brun - headwaters to conf Don	WR159	Group 1 - Improved reservoir compensation release control - reductions in compensation flows from multiple reservoirs	Minor level of impact	Medium	
	GB112071065140	River	Sabden Brook	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
Croal Irwell	GB112069064570	River	Eagley Brook	WR159	Group 1 - Improved reservoir compensation release control - reductions in compensation flows from multiple reservoirs	Minor level of impact	Medium	Minor level of impact
	GB112069064580	River	Bradshaw Brook	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
	GB112069064620	River	Irwell (Rossendale STW to Roch)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
	GB112069064650	River	Ogden	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
	GB112069064660	River	Irwell (Source to Whitewell Brook)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
	GB112069064670	River	Whitewell Brook	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	

Catchment	WFD Water Body Information			Option		Assessment Result		
Operational Catchment	**ID**	**Type**	**WB Name**	**Ref**	**Option Name**	**Individual Option Assessment Result**	**Individual Options Assessment Confidence**	**Cumulative Assessment Result**
	GB112069064680	River	Limy Water	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
Cumbria South Lower Palaeozoic and Carboniferous Aq	GB41202G102100	Groundwater	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control - reductions in compensation flows from multiple reservoirs	No or minimal impact	High	No or minimal impact
Eamont	GB102076070690	River	Lowther (Upper)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	High	Minor level of impact
	GB102076070720	River	Haweswater Beck	WR160	Group 2 - Improved reservoir compensation release control	Minor level of impact	High	
Goyt Etherow Tame	GB112069060780	River	Etherow (Woodhead Res. to Glossop Bk.)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	High	Minor level of impact
	GB112069060850	River	Goyt (Source to Randall Carr Brook)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
	GB112069060970	River	Sett	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	High	
	GB112069061111	River	Tame (Chew Brook to Swineshaw Brook)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	

Catchment	WFD Water Body Information			Option		Assessment Result		
Operational Catchment	**ID**	**Type**	**WB Name**	**Ref**	**Option Name**	**Individual Option Assessment Result**	**Individual Options Assessment Confidence**	**Cumulative Assessment Result**
	GB112069061112	River	Tame (Swineshaw Brook to Mersey)	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
	GB112069061300	River	Chew Brook	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	High	
	GB112069064741	River	Tame (Source to Chew Brook)	WR159	Group 1 - Improved reservoir compensation release control - reductions in compensation flows from multiple reservoirs	Minor level of impact	Medium	
Manchester and Cheshire East Carboniferous Aq	GB41202G102900	Groundwater	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control - reductions in compensation flows from multiple reservoirs	No or minimal impact	High	No or minimal impact
Morda and Severn North Shropshire	GB109054055070	River	Morda - source to conf unnamed trib	B2	Enabling Works	No or minimal impact	High	No or minimal impact
	GB109054050010	River	Oswestry Bk	B2	Enabling Works	No or minimal impact	High	
Ribble Carboniferous Aq	GB41202G103000	Groundwater	Ribble Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control - reductions in compensation flows from multiple reservoirs	No or minimal impact	High	No or minimal impact
Roch Irk Medlock	GB112069064690	River	Beal	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	High	Medium level of impact

Catchment	WFD Water Body Information			Option		Assessment Result		
Operational Catchment	**ID**	**Type**	**WB Name**	**Ref**	**Option Name**	**Individual Option Assessment Result**	**Individual Options Assessment Confidence**	**Cumulative Assessment Result**
	GB112069064710	River	Naden Brook	WR159	Group 1 - Improved reservoir compensation release control - reductions in compensation flows from multiple reservoirs	Minor level of impact	Medium	
	GB112069064720	River	Roch (Source to Spodden)	WR114	Python Mill Borehole	Medium level of impact	Low	
	GB112069064720	River	Roch (Source to Spodden)	WR159	Group 1 - Improved reservoir compensation release control - reductions in compensation flows from multiple reservoirs	Minor level of impact	High	
	GB112069064730	River	Spodden	WR159	Group 1 - Improved reservoir compensation release control	Minor level of impact	Medium	
Tanat	GB109054049920	River	Hirnant - source to conf Afon Tanat	B2	Enabling Works	No or minimal impact	High	No or minimal impact
	GB109054049960	River	Afon Tanat - conf Hirnant to conf Afon Rhaeadr	B2	Enabling Works	No or minimal impact	High	
	GB109054055040	River	Afon Rhaeadr - source to conf Afon Tanat	B2	Enabling Works	No or minimal impact	High	
	GB109054055050	River	Afon Iwrch - source to conf Afon Tanat	B2	Enabling Works	No or minimal impact	High	
	GB109054050050	River	Afon Tanat - conf Afon Rhaeadr to conf Afon Vyrnwy	B2	Enabling Works	No or minimal impact	High	
	GB109054055060	River	Afon Cynllaith - source to conf Afon Tanat	B2	Enabling Works	No or minimal impact	High	

Catchment	WFD Water Body Information			Option		Assessment Result		
Operational Catchment	**ID**	**Type**	**WB Name**	**Ref**	**Option Name**	**Individual Option Assessment Result**	**Individual Options Assessment Confidence**	**Cumulative Assessment Result**
Weaver Upper	GB112068055340	River	Rookery Brook, Burland and Brindley Bk. To Weaver	WR821	Shropshire Union Canal	Minor level of impact	Medium	Minor level of impact
	GB112068060460	River	Weaver (Marbury Brook to Dane)	WR821	Shropshire Union Canal	No or minimal impact	High	
Wyre and Calder	GB112072065822	River	Wyre DS Grizedale Brook confl	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	Medium level of impact	Low	Medium level of impact
	GB112072066220	River	Calder (Wyre)	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	Medium level of impact	Low	

Notes

* Non-reportable water bodies do not have a WFD water body ID number. 170 is used in lieu of the water body ID number for the purposes of the WFD assessment.

Protected Area Assessment

An assessment was undertaken for all habitat and species protected areas that are linked to a water body that contained a Draft WRMP Preferred Plan option. The list of protected areas requiring assessment was established by comparing the list of protected areas and the water bodies they are linked to[29], to the list of water bodies affected by the preferred options (**Appendix G**).

Protected area assessments were undertaken for nine protected areas. The results are presented in **Table F.7**. For four protected areas, no hydrological pathway between the protected area and the options have been identified, so there is no potential for the options to impact on the protected area. The remaining five protected areas may be subject to a no or minimal, or minor level of impact.

Table F.7 Results of the Protected Area Assessment

Protected area	Designation	Preferred options	Summary of protected area assessment	Assessment Results
South Pennine Moors	SAC	WR099b: Worsthorne Borehole (Hurstwood IR) WR159: Group 1 - Improved reservoir compensation release control: (Hurstwood, Cant Clough, Swinden 1 and 2, Coldwell Upper and Lower, Laneshaw, Warland, and Whiteholme)	Option WR099b and most of the reservoirs affected by Option WR159 are downstream of the upland SAC which is not designated for migratory fish. Warland and Whiteholme reservoirs are within the SAC and reduction in flows could impact the SAC. The Level 2 detailed assessment of these options is minor (both in water body GB104027062600, Walsden Water from Source to R Calder)	Minor level of impact
Rochdale Canal	SAC	WR114: Python Mill Borehole WR159: Group 1 - Improved reservoir compensation release control: (Watergrove and Blackstone Edge)	WR114 has been assessed as having a minor level of impact on the Rochdale Canal (water body GB71210517). The reduction in compensation releases will not add to the impact as the reservoirs and downstream watercourses are not hydraulically connected to the canal.	Minor level of impact
Bowland Fells	SPA	WR101: Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	Option WR101 is downstream of the SPA which is not designated for migratory fish. No hydrological pathway between the option and the designated features of the SPA.	n/a
Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses	SAC	WR821 Shropshire Union Canal	Option WR821 involves a new abstraction from the canal, located approximately 21 km from the SAC. Option WR821 and the SAC are connected by the groundwater body (GB41202G991700, Weaver and Dane Quaternary Sand and Gravel Aquifer). The Level 2 detailed assessment of Option WR821 is no or minimal level of impact which also applies to the SAC.	No or minimal impact
River Derwent and Bassenthwaite Lake	SAC	WR160: Group 2 - Improved reservoir compensation release control: (Thirlmere)	Thirlmere reservoir is located on St John's Beck which is part of the SAC. The SAC is designated for several types of	Minor level of impact.

[29] Downloaded from the EA's Catchment Data Explorer website October 2017: http://environment.data.gov.uk/catchment-planning/RiverBasinDistrict/12

Protected area	Designation	Preferred options	Summary of protected area assessment	Assessment Results
			migratory fish, which may be affected by reductions in river flows. The Level 2 detailed assessment for St John's Beck (GB112075070430) indicated a minor level of impact, which also applies to the SAC.	
Lake District High Fells	SAC	WR159: Group 1 - Improved reservoir compensation release control: (Wet Sleddale) WR160: Group 2 - Improved reservoir compensation release control: (Thirlmere)	Both Wet Sleddale and Thirlmere are downstream of the upland SAC which is not designated for migratory fish. No hydrological pathway between the options and the designated features of the SAC.	n/a
River Eden	SAC	WR159: Group 1 - Improved reservoir compensation release control: (Wet Sleddale) WR160: Group 2 - Improved reservoir compensation release control: (Haweswater)	Wet Sleddale and Haweswater are located on the River Lowther and the Haweswater Beck respectively, both headwaters of the River Eden. The SAC is designated for a range of migratory fish, aquatic mammals and crustaceans which may be affected by reductions in river flows. The Level 2 detailed assessments of both options indicated a minor level of impact for the Upper Lowther (GB102076070690) and the Haweswater Beck (GB102076070720), which also applies to the SAC.	Minor level of impact.
Asby Complex	SAC	WR159: Group 1 - Improved reservoir compensation release control: (Wet Sleddale)	Wet Sleddale is downstream of the SAC which is not designated for migratory fish. No hydrological pathway between the options and the designated features of the SAC.	n/a
Berwyn and South Clwyd Mountains	SAC and SPA	WR160: Group 2 - Improved reservoir compensation release control: (Vyrnwy) B2 Enabling Works	Wet Sleddale is downstream of the SAC which is not designated for migratory fish. No hydrological pathway between the options and the designated features of the SAC.	n/a

Appendix G
Summary of Level 1 Screening and Level 2 Detailed Assessment Results for Preferred Plan Options at Draft WRMP Stage

Option		WFD Water Body Information											Option Detail																Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipeline on land	Pipeline with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / reservoir / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing abstraction to surface water	New abstraction well drilling / refurbishment	New abstraction well headworks / surface structures	New / increased groundwater abstraction quantity	Changed reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR099b	Worsthorne Borehole (Hurstwood IR)	GB112071065090	River	Heavily modified	Brun- headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	Y	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR099b	Worsthorne Borehole (Hurstwood IR) Franklaw Z Site plus Increased Franklaw WTW Treatment	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	N	N	Y	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR101	Capacity Franklaw Z Site plus Increased Franklaw WTW Treatment	GB112072065760	River	No designation	Woodplumpton Brook	Brock and Trib	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Capacity Franklaw Z Site plus Increased Franklaw WTW Treatment	GB112072065790	River	No designation	New Draught Brook	Brock and Trib	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Capacity Franklaw Z Site plus Increased Franklaw WTW Treatment	GB112072065800	River	No designation	Barton (Westfield) Brook	Brock and Trib	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Capacity Franklaw Z Site plus Increased Franklaw WTW Treatment	GB112072065810	River	No designation	Brock	Brock and Trib	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR101	Capacity Franklaw Z Site plus Increased Franklaw WTW Treatment	GB112072065822	River	No designation	Wyre DS Grizedale Brook confl	Wyre and Calder	Good	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Capacity Franklaw Z Site plus Increased Franklaw WTW Treatment	GB112072066220	River	Heavily modified	Calder (Wyre)	Wyre and Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR101	Capacity	GB41201G100500	Groundwater	No designation	Fylde Permo-Triassic Sandstone Aquifers	Fylde Permo-Triassic Sandstone Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Medium level of impact
WR102e	Bold Heath Boreholes to Prescot WTW	170	River	No designation	Non reportable water body to north of River Mersey	Sankey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB112069060710	River	No designation	Prescot Brook (Logwood Mill Brook)	Ditton	moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	moderate	Moderate by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB112069060990	River	Heavily modified	Whittle Brook (Mersey Estuary)	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB112069061170	River	Heavily modified	Sutton Brook	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB112069061210	River	Heavily modified	Hardshaw (Windle) Brook	Sankey	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB41201G101700	Groundwater	No designation	Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	Mersey Basin Lower and Merseyside North Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR102e	Bold Heath Boreholes to Prescot WTW	GB41202G100100	Groundwater	No designation	Sankey and Glaze Carboniferous aquifers	Sankey and Glaze Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR113	Tytherington Boreholes	GB112069061320	River	Heavily modified	Bollin (Source to Dean)	Bollin Dean Mersey Upper	Moderate	Moderate by 2027	n/a	n/a	Good	Good by 2027	Moderate	Moderate by 2027	Y	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR113	Tytherington Boreholes	GB41201G101100	Groundwater	No designation	Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	Manchester and Cheshire East Permo-Triassic Sandstone Aq	n/a	n/a	Poor	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR114	Python Mill Borehole	GB112069064720	River	Heavily modified	Roch (Source to Spodden)	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2027	Moderate	Good by 2027	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR114	Python Mill Borehole	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2027	Poor	Good by 2027	Poor	Good by 2027	Y	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
WR114	Python Mill Borehole	GB71210517	AWB - Canal	Artificial	Rochdale Canal, western section	Roch Irk Medlock Canals and SWT	Moderate	Good by 2027	n/a	n/a	Good	Good by 2027	Good	Good by 2027	Y	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – WET SLEDDALE	GB102076070690	River	Heavily modified	Lowther (Upper)	Eamont	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – WARLAND	GB104027062600	River	Heavily modified	Walsden Water from Source to River Calder	Calder Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB104027062600	River	Heavily modified	Walsden Water from Source to River Calder	Calder Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LAMALOAD	GB112069060650	River	Heavily modified	Dean (Lamaload to Bollington)	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB112069060780	River	Heavily modified	Etherow (Woodhead Res. to Glossop Bk.)	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – ERREOOD & FERNILEE	GB112069060850	River	Heavily modified	Goyt (Source to Randall Carr Brook)	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	GB112069060920	River	Heavily modified	Micker (Norbury) Brook	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – Kinder	GB112069060970	River	No designation	Sett	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB112069061060	River	Heavily modified	Platt Brook (Source to Fallowfield Bk)	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB112069061111	River	Heavily modified	Tame (Chew Brook to Swineshaw Brook)	Goyt Etherow Tame	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB112069061112	River	Heavily modified	Tame (Swineshaw Brook to Mersey)	Goyt Etherow Tame	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB112069061300	River	Heavily modified	Chew Brook	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	GB112069061320	River	Heavily modified	Bollin (Source to Dean)	Bollin Dean Mersey Upper	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – DELPH	GB112069064570	River	Heavily modified	Eagley Brook	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	GB112069064570	River	Heavily modified	Eagley Brook	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB112069064580	River	Heavily modified	Bradshaw Brook	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SCOUT MOOR	GB112069064620	River	Heavily modified	Irwell (Rossendale STW to Roch)	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB112069064650	River	Heavily modified	Ogden	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – COWPE & CRAGG HOLES	GB112069064660	River	Heavily modified	Irwell (Source to Whitewell Brook)	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CLOUGH BOTTOM	GB112069064670	River	Heavily modified	Whitewell Brook	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CLOWBRIDGE	GB112069064680	River	Heavily modified	Limy Water	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB112069064690	River	Heavily modified	Beal	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – ASHWORTH MOOR	GB112069064710	River	Heavily modified	Naden Brook	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB112069064710	River	Heavily modified	Naden Brook	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB112069064720	River	Heavily modified	Roch (Source to Spodden)	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB112069064720	River	Heavily modified	Roch (Source to Spodden)	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB112069064730	River	Heavily modified	Spodden	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CASTLESHAW UPPER & LOWER	GB112069064741	River	Heavily modified	Tame (Source to Chew Brook)	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB112069064741	River	Heavily modified	Tame (Source to Chew Brook)	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	GB112071065040	River	Heavily modified	Hyndburn	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – HURSTWOOD	GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CANT CLOUGH	GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	GB112071065130	River	Heavily modified	Walverden Water	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – CHURN CLOUGH	GB112071065140	River	No designation	Sabden Brook	Calder	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LANESHAW	GB112071065210	River	Heavily modified	Colne Water (Laneshaw)	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	GB112071065230	River	No designation	Pendle Water - headwaters to Colne Water	Colne Water	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – FISHMOOR TOTAL	GB112071065270	River	Heavily modified	Darwen - conf Davy Field Bk to conf Blakewater	Darwen	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – STOCKS	GB112071065390	River	Heavily modified	Hodder - Stocks Reservoir to conf Croasdale Bk	Hodder and Loud	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB112073071160	River	No designation	Dragley Beck	Leven	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – LEVERS WATER	GB112073071210	River	No designation	Yewdale/Church Beck	Crake	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB112074069790	River	Heavily modified	Mill Beck (Poaka Beck)	Duddon	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR159	Group 1 - Improved reservoir compensation release control – WARLAND	GB30431070	Lake	Heavily modified	Warland Reservoir	Calder Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB30431104	Lake	Heavily modified	White Holme Reservoir	Calder Upper	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LEVERS WATER	GB31229285	Lake	Heavily modified	Levers Water	Crake	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB31229599	Lake	Artificial	Harlock Reservoir	Duddon	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB31229607	Lake	Heavily modified	Pennington Reservoir	Leven	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB31229615	Lake	Artificial	Poaka Beck Reservoir	Duddon	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – STOCKS	GB31230030	Lake	Heavily modified	Stocks Reservoir	Hodder and Loud	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LANESHAW	GB31230377	Lake	Heavily modified	Laneshaw Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	GB31230422	Lake	Heavily modified	Ogden Lower Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	GB31230431	Lake	Heavily modified	Ogden Upper Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CHURN CLOUGH	GB31230459	Lake	Heavily modified	Churn Clough Reservoir	Calder	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	GB31230523	Lake	Heavily modified	Coldwell Lower Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	GB31230533	Lake	Heavily modified	Coldwell Upper Reservoir	Colne Water	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	GB31230590	Lake	Artificial	Swinden Lower Reservoir	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact

Option		WFD Water Body Information											Option Detail														Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipeline on land	Pipeline with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / reservoir / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing abstraction to surface water	New abstraction well drilling / refurbishment	New abstraction well headworks / surface structures	New / increased groundwater abstraction quantity	Changed or reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	GB31230591	Lake	Heavily modified	Swinden Higher Reservoir	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – HURSTWOOD	GB31230625	Lake	Heavily modified	Hurstwood Reservoir	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CANT CLOUGH	GB31230663	Lake	Heavily modified	Cant Clough Reservoir	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CLOWBRIDGE	GB31230769	Lake	Heavily modified	Clowbridge Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	GB31230812	Lake	Heavily modified	Mitchells House Reservoir No 1	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	GB31230833	Lake	Artificial	Mitchells House Reservoir No 2	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CLOUGH BOTTOM	GB31230858	Lake	Heavily modified	Clough Bottom Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – FISHMOOR TOTAL	GB31230883	Lake	Artificial	Fishmoor Reservoir	Darwen	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB31231013	Lake	Heavily modified	Ogden Reservoir Lancashire	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB31231025	Lake	Heavily modified	Calf Hey Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB31231027	Lake	Heavily modified	Holden Wood Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COWPE & CRAGG HOLES	GB31231115	Lake	Heavily modified	Cowpe Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SCOUT MOOR	GB31231130	Lake	Heavily modified	Scout Moor Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB31231141	Lake	Heavily modified	Cowm Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB31231164	Lake	Heavily modified	Watergrove Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB31231168	Lake	Heavily modified	Blackstone Edge Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB31231200	Lake	Heavily modified	Wayoh Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB31231202	Lake	Heavily modified	Turton and Entwistle Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB31231212	Lake	Heavily modified	Spring Mill Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB31231229	Lake	Heavily modified	Middle Naden Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB31231250	Lake	Heavily modified	Lower Naden Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB31231260	Lake	Heavily modified	Greenbooth Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – DELPH	GB31231264	Lake	Heavily modified	Delph Reservoir	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ASHWORTH MOOR	GB31231267	Lake	Heavily modified	Ashworth Moor Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB31231306	Lake	Heavily modified	Jumbles Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	GB31231312	Lake	Heavily modified	Springs Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	GB31231314	Lake	Artificial	Dingle Reservoir	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MLNROW,	GB31231367	Lake	Heavily modified	Norman Hill Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MLNROW,	GB31231393	Lake	Heavily modified	Piethorne Reservoir	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MLNROW,	GB31231398	Lake	Heavily modified	Ogden Reservoir Rochdale	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MLNROW,	GB31231399	Lake	Heavily modified	Kitcliffe Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB31231404	Lake	Heavily modified	Readycon Dean Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MLNROW,	GB31231405	Lake	Heavily modified	Hanging Lees Reservoir	Roch Irk Medlock	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MLNROW,	GB31231435	Lake	Heavily modified	Rooden Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB31231454	Lake	Heavily modified	Crook Gate Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB31231482	Lake	Heavily modified	Dowry Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB31231508	Lake	Heavily modified	New Years Bridge Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CASTLESHAW UPPER & LOWER	GB31231531	Lake	Heavily modified	Upper and Lower Castleshaw Reservoirs	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB31231778	Lake	Heavily modified	Greenfield Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB31231791	Lake	Heavily modified	Yeoman Hey Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB31231829	Lake	Heavily modified	Dovestone Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB31231942	Lake	Heavily modified	Chew Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232065	Lake	Heavily modified	Woodhead Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB31232066	Lake	Heavily modified	Higher Swineshaw Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB31232094	Lake	Heavily modified	Lower Swineshaw Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB31232108	Lake	Heavily modified	Brushes Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232111	Lake	Heavily modified	Torside Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB31232112	Lake	Heavily modified	Walkerwood Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232136	Lake	Heavily modified	Rhodeswood Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232150	Lake	Heavily modified	Valehouse Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232166	Lake	Heavily modified	Arnfield Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB31232183	Lake	Heavily modified	Audenshaw Reservoirs	Bollin Dean Mersey Upper	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – Kinder	GB31232499	Lake	Heavily modified	Kinder Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ERREOOD & FERNILEE	GB31232950	Lake	Heavily modified	Fernilee Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ERREOOD & FERNILEE	GB31233043	Lake	Heavily modified	Errwood Reservoir	Goyt Etherow Tame	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LAMALOAD	GB31233063	Lake	Heavily modified	Lamaload Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	GB31233247	Lake	Heavily modified	Trentabank Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	GB31233250	Lake	Heavily modified	Ridgegate Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	GB31247004	Lake	Heavily modified	Bollinhurst Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	GB31247005	Lake	Heavily modified	Horse Coppice Reservoir	Bollin Dean Mersey Upper	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WET SLEDDALE	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WARLAND	GB40402G700400	Groundwater	No designation	Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.	Aire and Calder Carb Limestone - Millstone Grit Coal - Meas	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB40402G700400	Groundwater	No designation	Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.	Aire and Calder Carb Limestone - Millstone Grit Coal - Meas	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – FISHMOOR TOTAL	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – HURSTWOOD	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CANT CLOUGH	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LANESHAW	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – DELPH	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ASHWORTH MOOR	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact

Option		WFD Water Body Information											Option Detail															Impacts				
Ref	Option Name	ID	Type	Hydro - morphological Designation	WB Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipeline on land	Pipeline with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / reservoir / canal / aquifer	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing abstraction to surface water	New abstraction well drilling / refurbishment	New abstraction well headworks / surface structures	New / increased groundwater abstraction quantity	Changed reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result
WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW,	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – COWPE & CRAGG HOLES	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – SCOUT MOOR	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CLOUGH BOTTOM	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CLOWBRIDGE	GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LEVERS WATER	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LAMALOAD	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CASTLESHAW UPPER & LOWER	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY,	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER &	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – Kinder	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – ERRDOOD & FERNILEE	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD,	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	Manchester and Cheshire East Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – CHURN CLOUGH	GB41202G103000	Groundwater	No designation	Ribble Carboniferous Aquifers	Ribble Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR159	Group 1 - Improved reservoir compensation release control – STOCKS	GB41202G103000	Groundwater	No designation	Ribble Carboniferous Aquifers	Ribble Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – HAWESWATER	GB102076070720	River	Heavily modified	Haweswater Beck	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR160	Group 2 - Improved reservoir compensation release control – VYRNWY	GB109054049880	River	Heavily modified	Vrynwy - Lake Vrynwy to conf Afon Cownwy	Severn Uplands	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR160	Group 2 - Improved reservoir compensation release control – RIVINGTON	GB112070064850	River	Heavily modified	Douglas - Upper	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR160	Group 2 - Improved reservoir compensation release control – Thirlmere	GB112075070430	River	Heavily modified	St John's Beck	Derwent	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact
WR160	Group 2 - Improved reservoir compensation release control – HAWESWATER	GB30229073	Lake	Heavily modified	Haweswater Reservoir	Eamont	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – VYRNWY	GB30935568	Lake	Heavily modified	Llyn Efyrnwy	Severn Uplands	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – Thirlmere	GB31229021	Lake	Heavily modified	Thirlmere	Derwent	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – RIVINGTON	GB31231288	Lake	Heavily modified	Rivington Reservoirs	Douglas OC	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – HAWESWATER	GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	Eden and Esk Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – VYRNWY	GB40902G205300	Groundwater	No designation	Severn Uplands- Lower Palaeozoic	Severn	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – RIVINGTON	GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR160	Group 2 - Improved reservoir compensation release control – Thirlmere	GB41202G103700	Groundwater	No designation	Derwent and West Cumbria Lower Palaeozoic and Carboniferous Aq	Derwent and Cumbria West Lower Palaeozoic and Carbonifo	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact
WR821	Shropshire Union Canal	GB112068055340	River	No designation	Rookery Brook, Burland and Brindley Bk. To Weaver	Weaver Upper	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	Y	Y	N	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact
WR821	Shropshire Union Canal	GB112068060460	River	No designation	Weaver (Marbury Brook to Dane)	Weaver Upper	Poor	Good by 2027	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
WR821	Shropshire Union Canal	GB41202G991700	Groundwater	No designation	Weaver and Dane Quaternary Sand and Gravel Aquifers	Weaver and Dane Quaternary Sand and Gravel Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	Y	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
WR821	Shropshire Union Canal	GB71210133	AWB - Canal	Artificial	Shropshire Union Canal, Market Drayton to Ellesmere Port	Weaver Upper Canals	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact
B2	Enabling Works	GB109054049880	River	Heavily modified	Vrynwy - Lake Vrynwy to conf Afon Cownwy	Vrynwy	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054049920	River	No designation	Hirnant - source to conf Afon Tanat	Tanat	Poor	Good by 2021	n/a	n/a	Fail	Good by 2021	Poor	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054049960	River	No designation	Afon Tanat - conf Hirnant to conf Afon Rhaeadr	Tanat	Moderate	Good by 2021	n/a	n/a	Fail	Good by 2021	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054050010	River	No designation	Oswestry Bk	Morda and Severn North Shropshire	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054050050	River	No designation	Afon Tanat - conf Afon Rhaeadr to conf Afon Vyrnwy	Tanat	Moderate	Good by 2021	n/a	n/a	Fail	Good by 2021	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054055040	River	No designation	Afon Rhaeadr - source to conf Afon Tanat	Tanat	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054055050	River	No designation	Afon Iwrch - source to conf Afon Tanat	Tanat	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054055060	River	No designation	Afon Cynllaith - source to conf Afon Tanat	Tanat	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB109054055070	River	No designation	Morda - source to conf unnamed trib	Morda and Severn North Shropshire	Moderate	Good by 2021	n/a	n/a	Good	Good by 2015	Moderate	Good by 2021	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB40902G205300	Groundwater	No designation	Severn Uplands - Lower Palaeozoic	Severn Uplands - Lower Palaeozoic	n/a	n/a	Good	Good by 2015	Poor	Poor by 2015	Poor	Poor by 2015	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact
B2	Enabling Works	GB40902G205400	Groundwater	No designation	Severn Uplands - Carboniferous Oswestry	Severn Uplands - Carboniferous Oswestry	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact

Appendix H
Water Body Cumulative Assessment for Preferred Plan Options at Draft WRMP Stage

WFD Water Body Information				Option		Option Detail															Impacts						
ID	Type	Hydro - morphological Designation	WB Name	Ref	Option Name	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / reservoir / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing discharge to surface water	New abstraction well drilling / refurbishment	New abstraction well headworks / surface structures	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result	Cumulative Assessment	Cumulative Screening Results
GB109054049880	River	Heavily modified	Vrynwy - Lake Vrynwy to conf Afon Cownwy	WR160	Group 2 - Improved reservoir compensation release control – VYRNWY	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact	Reduction of compensation flow from Vyrnwy reservoir from 48.4 Ml/d to 45.0 Ml/d, a reduction of 3.4 Ml/d. Pipe line construction. The cumulative effect of the two options will not ncrease the level of impact on the water body, as the activities in each option (reduction in compensation flow and pipe line construction) will not interact to produce a cumulative effect.	Minor level of impact
				B2	Enabling Works	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
GB112069061320	River	Heavily modified	Bollin (Source to Dean)	WR113	Tytherington Boreholes	Y	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact	Increased peak abstraction quantity of 3 Ml/d at refurbished Tytherington Boreholes (within current licence quantities), and reduction of compensation flow from Ridgegate and Trentabank reservoirs from 2.1 Ml/d to 1.8 Ml/d, a reduction of 0.3 Ml/d (consented compensation flows maintained). The ALS shows that the part of the surface water body which contains the reservoirs and their upstream catchments has no water available at any flows. Downstream of the reservoirs, the water body has water available at all flows. The cumulative effect of the two options will not increase the level of impact on the water body, due to the availability of water, the small reduction in compensation flows, and that the increase in peak abstraction is within current licensed quantities with no increase in annual average abstraction.	Minor level of impact
				WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
GB112069064720	River	Heavily modified	Roch (Source to Spodden)	WR114	Python Mill Borehole	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact	Increased peak abstraction quantity of 3 Ml/d at refurbished Python Mill Boreholes, and reduction of compensation flow from Watergrove reservoir from 18.9 Ml/d to 18.0 Ml/d, plus a reduction of compensation flow from Blackstone Edge Reservoir from 16.8 Ml/d to 15.7 Ml/d, a combined reduction of 2 Ml/d. (Note: Total reduction for the reservoir Aquator groups assumed to take place in this water body.) The ALS shows that the surface water body has no water available at any flow. No groundwater management unit is defined for this area. The cumulative effect of the two options will not increase the level of impact on the water body, as the total potential reduction in water in the water body (5 Ml/d) remains moderate. Total flows are unlikely to reduce by 5 Ml/d as the full reduction from the Aquator group has been assumed to take place in this water body, and not all of the groundwater abstraction is likely to be translated to a reduction in surface water flows.	Medium level of impact
				WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact		
				WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact		
GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	WR099b	Worsthorne Borehole (Hurstwood IR)	Y	N	N	N	N	N	Y	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact	Increased peak abstraction quantity of 4 Ml/d at refurbished Worsthorne Boreholes (within current licence quantities), and reduction of compensation flow from Hurstwood, Cant Clough, and Swinden reservoirs from 9.1 Ml/d to 8.1 Ml/d, a reduction of 1.0 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this water body.) The ALS shows that part of the surface water body that contains the Swinden reservoirs and their upstream catchment has no water available at any flows. The part of the surface water body that contains the Hurstwood and Cant Clough reservoirs and their upstream catchments has water available at low flows (Q95 and Q70), but no water available at higher flows (Q50 and Q30). The remaining part of the catchment, downstream of the reservoirs and where the abstraction is located has water available at low flows (Q95), limited water available at medium flows (Q70), and no water available at higher flows (Q50 and Q30). It is likely that compensation flows from the reservoirs are supporting the low flow water availability. The cumulative effect of the two options will not increase the level of impact on the water body, due to the availability of water at low flows, that there are unlikely to be strong dependencies between the secondary aquifer and the surface watercourses, the small reduction in compensation flows, and that the increase in peak abstraction is within current licensed quantities.	Minor level of impact
				WR159	Group 1 - Improved reservoir compensation release control – HURSTWOOD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
				WR159	Group 1 - Improved reservoir compensation release control – CANT CLOUGH	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
				WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
GB40202G102300	Groundwater	No designation	Eden and Esk Lower Palaeozoic and Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – WET SLEDDALE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact	Reduction of compensation flow from Wet Sleddale and Haweswater reservoirs from 7.8 Ml/d to 7.4 Ml/d and 24.0 Ml/d to 21.8 Ml/d respectively, a total reduction of 2.6 Ml/d. The cumulative effect of the two options will not increase the level of impact on the groundwater body. The small reductions in compensation flows are unlikely to reduce the wetted area of the reservoirs or downstream water courses (assuming that low flow compensation released are maintained), therefor any impact on groundwater surface water interaction on this secondary aquifer would be minimal.	No or minimal impact
				WR160	Group 2 - Improved reservoir compensation release control – HAWESWATER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
GB40902G205300	Groundwater	No designation	Severn Uplands - Lower Palaeozoic	WR160	Group 2 - Improved reservoir compensation release control – VYRNWY	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact	Reduction of compensation flow from Vyrnwy reservoir from 48.4 Ml/d to 45.0 Ml/d, a reduction of 3.4 Ml/d. Pipe line construction. The cumulative effect of the two options will not increase the level of impact on the water body, as the activities in each option (reduction in compensation flow and pipe line construction) will not interact to produce a cumulative effect.	No or minimal impact
				B2	Enabling Works	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
GB41202G100300	Groundwater	No designation	Douglas, Darwen and Calder Carboniferous Aquifers	WR099b	Worsthorne Borehole (Hurstwood IR)	Y	N	N	N	N	N	Y	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact	Increased peak abstraction quantity of 4 Ml/d at refurbished Worsthorne Boreholes (within current licence quantities), and reduction of compensation flow from: - Mitchells House 1 &2 from 0.4 Ml/d to 0.3 Ml/d, - Fishmoor from 2.0 Ml/d to 1.7 Ml/d, - Hurstwood, Cant Clough, Swinden 1 & 2, Laneshaw, Coldwell (upper & lower), Ogden (upper & lower) from 9.1 Ml/d to 8.1 Ml/d, and - Rivington 26.6 Ml/d to 24.7 Ml/d. This is a total compensation flow reduction of 3.3 Ml/d. Note: Total reduction for the reservoir Aquator group assumed to take place in this groundwater body. The cumulative effect of the three options will not increase the level of impact on the groundwater body beyond the minor level of impact assigned to WR099b. The relatively small reductions in compensation flows from options WR159 and WR160 (which are spread across a number of surface water bodies overlying the groundwater body) are unlikely to reduce the wetted area of the reservoirs or downstream water courses (assuming that low flow compensation released are maintained), therefor any impact on groundwater surface water interaction on this secondary aquifer would be minimal.	Minor level of impact
				WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – FISHMOOR TOTAL	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – HURSTWOOD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – CANT CLOUGH	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – LANESHAW	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR160	Group 2 - Improved reservoir compensation release control – RIVINGTON	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR114	Python Mill Borehole	Y	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
				WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – DELPH	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		

WFD Water Body Information				Option		Option Detail														Impacts						
ID	Type	Hydro - morphological Designation	WB Name	Ref	Option Name	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / reservoir / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing discharge to surface water	New abstraction well drilling / refurbishment	New abstraction well headworks / surface structures	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result	Cumulative Assessment	Cumulative Screening Results
GB41202G101800	Groundwater	No designation	Northern Manchester Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact	Increased peak abstraction quantity of 3 Ml/d at refurbished Python Mill Boreholes, and reduction of compensation flow from: - Wayoh, Entwistle, Jumbles, Delph, Springs Dingle (Bolton IR's) from 24.3 Ml/d to 23.6 Ml/d, - Ashworth Moor, Greenbooth, 2 Nadens, Spring Mill, Watergrove, Cowm (Rochdale) from 18.9 Ml/d to 18.0 Ml/d, - Piethorne, Norman Hill, Kitcliffe, Ogden Milnrow, Hanging Lees, Rooden, Light Hazzles, Whiteholme, Blackstone Edge (Oldham) from 16.8 Ml/d to 15.7 Ml/d, and - Calf Hey, Ogden (Grane), Holdenwood, Cowpe, Cragg Holes, Scout Moor, Clough Bottom and Clowbridge (Rossendale) from 11.3 Ml/d to 9.8 Ml/d. This is a total reduction in compensation flows of 4.2 Ml/d. (Note: Total reduction for each reservoir Aquator group assumed to take place in within this groundwater body). The cumulative effect of the two options will not increase the level of impact on the groundwater body beyond the medium level of impact assigned to WR114. The relatively small reductions in compensation flows from option WR159 (which are spread across a number of surface water bodies overlying the groundwater body) are unlikely to reduce the wetted area of the reservoirs or downstream water courses (assuming that low flow compensation released are maintained), therefor any impact on groundwater surface water interaction on this secondary aquifer would be minimal.	Medium level of impact
				WR159	Group 1 - Improved reservoir compensation release control – ASHWORTH MOOR	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW, HANGING LEES & ROODEN	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – COWPE & CRAGG HOLES	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – SCOUT MOOR	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – CLOUGH BOTTOM	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
				WR159	Group 1 - Improved reservoir compensation release control – CLOWBRIDGE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		

Appendix I
Operational Catchment Cumulative Assessment for Preferred Plan Options at Draft WRMP Stage

Catchment	WFD Water Body Information				Option		Option Detail																Impacts						
Operational Catchment	ID	Type	Hydro - morphological Designation	WB Name	Ref	Option Name	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / reservoir / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing discharge to surface water	New abstraction wet drilling / refurbishment	New abstraction well headworks / surface structures	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result	Cumulative Assessment	Cumulative Screening Results
Colne Water	GB112071065130	River	Heavily modified	Walverden Water	WR159	Group 1 - Improved reservoir compensation release control – COLDWELL UPPER & LOWER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact	Reduction of compensation flow from Coldwell Upper and Lower, Laneshaw, and Ogden Upper and Lower reservoirs from 9.1 Ml/d to 8.1 Ml/d, a reduction of 1.0 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this catchment.) The cumulative effect of the reduction of compensation flows from multiple reservoirs located in three water bodies in this operational catchment will not increase the level of impact in the operational catchment as a whole. This is because the individual water body assessments assumed a worst case compensation flow reduction for each water body. As the reservoirs are all in the same Aquator group the worst case reduction applies to the operational catchment as a whole.	Minor level of impact
	GB112071065210	River	Heavily modified	Colne Water (Laneshaw)	WR159	Group 1 - Improved reservoir compensation release control – LANESHAW	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact		
	GB112071065230	River	No designation	Pendle Water - headwaters to Colne Water	WR159	Group 1 - Improved reservoir compensation release control – OGDEN UPPER & LOWER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact		
Sankey	170	River	No designation	Non reportable water body to north of River Mersey	WR102e	Bold Heath Boreholes to Prescot WTW	Y	Y	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact	New groundwater abstraction of 6.5 to 9 Ml/d peak capacity from the Bold Heath boreholes, plus pipe line construction activities. The cumulative effect of the activities within the four water bodies within this operational catchment will not increase the level of impact on the operational catchment as a whole. This is because an increase in abstraction quantity only occurs in one water body, and pipe line construction in several water bodies will not have a prolonged or widespread impact.	Minor level of impact
	GB112069060990	River	Heavily modified	Whittle Brook (Mersey Estuary)	WR102e	Bold Heath Boreholes to Prescot WTW	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
	GB112069061170	River	Heavily modified	Sutton Brook	WR102e	Bold Heath Boreholes to Prescot WTW	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Minor level of impact	N			Minor level of impact		
	GB112069061210	River	Heavily modified	Hardshaw (Windle) Brook	WR102e	Bold Heath Boreholes to Prescot WTW	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
Aire and Calder Carb Limestone - Millstone Grit Coal - Measures	GB40402G700400	Groundwater	No designation	Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.	WR159	Group 1 - Improved reservoir compensation release control – WARLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact	Reduction of compensation flow from Warland, White Holme, Blackstone Edge and Light Hazzles reservoirs from 16.8 Ml/d to 15.7 Ml/d, a reduction of 1.1 Ml/d. (Note: Total reduction for the reservoir Aquator group assumed to take place in this operational catchment.) The cumulative effect of the two options will not increase the level of impact on the groundwater operational catchment. The small reductions in compensation flows are unlikely to reduce the wetted area of the reservoirs or downstream water courses (assuming that low flow compensation released are maintained), therefore any impact on groundwater surface water interaction on this secondary aquifer would be minimal.	No or minimal impact
	GB40402G700400	Groundwater	No designation	Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.	WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
Bollin Dean Mersey Upper	GB112069060650	River	Heavily modified	Dean (Lamaload to Bollington)	WR159	Group 1 - Improved reservoir compensation release control – LAMALOAD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact	Increased peak abstraction quantity of 3 Ml/d at refurbished Tytherington Boreholes (no overall increase in licence quantity), plus reduction of compensation flow from: - Ridgegate, Trentabank, and Lamaload reservoirs from 2.1 Ml/d to 1.8 Ml/d, - Bollinhurst and Horse Coppice reservoirs from 16.9 Ml/d to 15.5 Ml/d, and - Audenshaw 1, 2 and 3 reservoirs from 48.6 Ml/d to 45.4 Ml/d. This would be a total reduction in compensation flow of 4.9 Ml/d. Note: Total reduction for each reservoir Aquator group assumed to take place in this operational catchment. The cumulative effect of the reduction of compensation flows from multiple reservoirs located in multiple water bodies in this operational catchment, plus the potential reduction in baseflow due to increased groundwater abstraction at Tytherington is not anticipated to increase the level of impact on the operational catchment as a whole. This is because no issues are identified with fish passage, downstream flows, downstream habitats/morphology or downstream water quality in these water bodies as a result of UU's and the EA's investigations into heavily modified water bodies (HMWB). Also the assessments for WR159 is precautionary (total reduction for each reservoir Aquator group assumed to take place in this operational catchment).	Minor level of impact
	GB112069060920	River	Heavily modified	Micker (Norbury) Brook	WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112069061060	River	Heavily modified	Platt Brook (Source to Fallowfield Bk)	WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD, VALEHOUSE, BOTTOMS & ARNFIELD) & AUDENSHAW 1, 2 & 3	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112069061320	River	Heavily modified	Bollin (Source to Dean)	WR113	Tytherington Boreholes	Y	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Low	Minor level of impact		
	GB112069061320	River	Heavily modified	Bollin (Source to Dean)	WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
Brock and Trib	GB112072065760	River	No designation	Woodplumpton Brook	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact	Increased abstraction of 30 Ml/d (from approximately 98 Ml/d recent use, to approx. 128 Ml/d), split across several Franklaw and Broughton borehole sites. The increased abstraction quantity is within the current licence quantity for the borehole group (maximum aggregated daily peak of 190 Ml/d). The cumulative effect of the increased abstraction in several water bodies will not increase the level of impact in the operational catchment as a whole. This is because due to a lack of information about at which borehole sites the increase in abstraction would occur, a worst case abstraction increase was assumed for each individual water body.	Medium level of impact
	GB112072065790	River	No designation	New Draught Brook	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
	GB112072065800	River	No designation	Barton (Westfield) Brook	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
	GB112072065810	River	No designation	Brock	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
Calder	GB112071065040	River	Heavily modified	Hyndburn	WR159	Group 1 - Improved reservoir compensation release control – MITCHELLS HOUSE 1 & 2	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112071065090	River	Heavily modified	Brun- headwaters to conf Don	WR099b	Worsthorne Borehole (Hurstwood IR)	Y	N	N	N	N	N	Y	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact	Increased peak abstraction quantity of 4 Ml/d at refurbished Worsthorne Boreholes (within current licence quantities), and reduction of compensation flow from: - Mitchells House reservoirs from 0.4 Ml/d to 0.3 Ml/d, and - Hurstwood, Cant Clough, Swinden 1 & 2 and Churn Clough reservoirs from 9.1 Ml/d to 8.1 Ml/d. This would be a total reduction in compensation flow of 1.2 Ml/d. Note: Total reduction for each reservoir Aquator group assumed to take place in this operational catchment. The cumulative effect of the two options in the three water bodies in this operational catchment will not increase the level of impact on the operational catchment as a whole. This is due to the availability of water at low flows, that there are unlikely to be strong dependencies between the secondary aquifer and the surface watercourses, the relatively small reduction in compensation flows, and that the increase in peak abstraction is within current licensed quantities.	Minor level of impact
	GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	WR159	Group 1 - Improved reservoir compensation release control – HURSTWOOD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	WR159	Group 1 - Improved reservoir compensation release control – CANT CLOUGH	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112071065090	River	Heavily modified	Brun - headwaters to conf Don	WR159	Group 1 - Improved reservoir compensation release control – SWINDEN 1 & 2	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112071065140	River	No designation	Sabden Brook	WR159	Group 1 - Improved reservoir compensation release control – CHURN CLOUGH	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
Croal Irwell	GB112069064570	River	Heavily modified	Eagley Brook	WR159	Group 1 - Improved reservoir compensation release control – DELPH	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact	Reduction of compensation flow from the following reservoirs: - Delph, Springs Dingle, Wayoh, Entwistle and Jumbles reservoirs from 24.3 Ml/d to 23.6 Ml/d, and - Scout Moor, Calf Hey, Ogden (Grane), Holdenwood, Cowpe, Cragg Holes, Clough Bottom and Clowbridge from 11.3 Ml/d to 9.8 Ml/d This is a total reduction of 2.2 Ml/d. The cumulative effect of the reduction of compensation flows from multiple reservoirs located in seven water bodies in this catchment will not increase the level of impact in the operational catchment as a whole. This is because the reservoirs form part of two Aquator Groups only, and a worst case flow reduction was assumed for each water body. The total reduction in compensation flow is relatively small, and the ALS indicates that there is some water availability in most of the catchment.	Minor level of impact
	GB112069064570	River	Heavily modified	Eagley Brook	WR159	Group 1 - Improved reservoir compensation release control – SPRINGS DINGLE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112069064580	River	Heavily modified	Bradshaw Brook	WR159	Group 1 - Improved reservoir compensation release control – WAYOH, ENTWISTLE & JUMBLES	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112069064620	River	Heavily modified	Irwell (Rossendale STW to Roch)	WR159	Group 1 - Improved reservoir compensation release control – SCOUT MOOR	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112069064650	River	Heavily modified	Ogden	WR159	Group 1 - Improved reservoir compensation release control – CALF HEY, OGDEN (GRANE) & HOLDENWOOD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112069064660	River	Heavily modified	Irwell (Source to Whitewell Brook)	WR159	Group 1 - Improved reservoir compensation release control – COWPE & CRAGG HOLES	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112069064670	River	Heavily modified	Whitewell Brook	WR159	Group 1 - Improved reservoir compensation release control – CLOUGH BOTTOM	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB112069064680	River	Heavily modified	Limy Water	WR159	Group 1 - Improved reservoir compensation release control – CLOWBRIDGE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		

Catchment	WFD Water Body Information				Option		Option Detail															Impacts						
Operational Catchment	ID	Type	Hydro - morphological Designation	WB Name	Ref	Option Name	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / reservoir / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing discharge to surface water	New abstraction wet drilling / refurbishment	New abstraction well headworks / surface structures	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result	Cumulative Assessment	Cumulative Screening Results
Cumbria South Lower Palaeozoic and Carboniferous Aq	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – POAKA BECK, PENNINGTON & HARLOCK	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact	Reduction of compensation flow from Poaka Beck, Pennington, Harlock and Levers Water reservoirs from 2.9 Ml/d to 2.6 Ml/d, a reduction of 0.3 Ml/d. The cumulative effect of the reduction in compensation flows will not increase the level of impact on the groundwater operational catchment. The small reductions in compensation flows are unlikely to reduce the wetted area of the reservoirs or downstream water courses (assuming that low flow compensation released are maintained), therefore any impact on groundwater surface water interaction on this secondary aquifer would be minimal.	No or minimal impact
	GB41202G102100	Groundwater	No designation	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – LEVERS WATER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
Eamont	GB102076070690	River	Heavily modified	Lowther (Upper)	WR159	Group 1 - Improved reservoir compensation release control – WET SLEDDALE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact	Reduction of compensation flow from Wet Sleddale and Haweswater reservoirs from 7.8 Ml/d to 7.4 Ml/d, and 24.0 Ml/d to 21.8 Ml/d respectively, a total reduction of 2.6 Ml/d. The cumulative effect of the reduction of compensation flows from two reservoirs located in two water bodies in this operational catchment will not increase the level of impact on the operational catchment as a whole. This is because of the relatively small decrease in compensation flows compared to the total compensation flow which will be maintained (29.2 Ml/d), and that HMWB investigations undertaken by UU and the EA have not identified any issues with compensation releases from either reservoir.	Minor level of impact
	GB102076070720	River	Heavily modified	Haweswater Beck	WR160	Group 2 - Improved reservoir compensation release control – HAWESWATER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact		
Goyt Etherow Tame	GB111269060780	River	Heavily modified	Etherow (Woodhead Res. to Glossop Bk.)	WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD, VALEHOUSE, BOTTOMS & ARNFIELD) & AUDENSHAW 1, 2 & 3	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact	Reduction of compensation flow from the following reservoirs: - Woodhead, Torside, Rhodeswood, Valehouse, Bottoms & Arnfield) and Audenshaw 1, 2 & 3 reservoirs from 48.6 Ml/d to 45.4 Ml/d, a reduction of 3.2 Ml/d. - Errwood, Fernilee, and Kinder from 16.9 Ml/d to 15.5 Ml/d, a reduction of 1.4 Ml/d. - Brushes, Walkerwood, Swineshaw (higher & lower), Greenfield Valley- Greenfield, Yeoman Hey, Dovestone and Chew from 20.7 Ml/d to 19.5 Ml/d, a reduction of 1.2 Ml/d. - Castleshaw (upper & lower), Readycon Dean, Crookgate, Dowry and New Years Bridge from 16.8 Ml/d to 15.7 Ml/d, a reduction of 1.1 Ml/d. A total reduction of 1.1 Ml/d. This would be a total reduction in compensation flow of 6.9 Ml/d. Note: Total reduction for each reservoir Aquator group assumed to take place in this operational catchment. The cumulative effect of the reduction of compensation flows from multiple reservoirs located in seven water bodies in this operational catchment will not increase the level of impact on the operational catchment as a whole. This is because of the relatively small decrease in compensation flows compared to the total compensation flow which will be maintained (96.1 Ml/d), and that there is some water availability in parts of the operational catchment.	Minor level of impact
	GB111269060850	River	Heavily modified	Goyt (Source to Randall Carr Brook)	WR159	Group 1 - Improved reservoir compensation release control – ERREOOD & FERNILEE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB111269060970	River	No designation	Sett	WR159	Group 1 - Improved reservoir compensation release control – Kinder	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact		
	GB111269061111	River	Heavily modified	Tame (Chew Brook to Swineshaw Brook)	WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER & LOWER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB111269061112	River	Heavily modified	Tame (Swineshaw Brook to Mersey)	WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD, VALEHOUSE, BOTTOMS & ARNFIELD) & AUDENSHAW 1, 2 & 3	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB111269061300	River	Heavily modified	Chew Brook	WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY, DOVESTONE & CHEW	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact		
	GB111269064741	River	Heavily modified	Tame (Source to Chew Brook)	WR159	Group 1 - Improved reservoir compensation release control – CASTLESHAW UPPER & LOWER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB111269064741	River	Heavily modified	Tame (Source to Chew Brook)	WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS BRIDGE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
Manchester and Cheshire East Carboniferous Aq	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – RIDGEGATE & TRENTABANK	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact	Reduction of compensation flow from the following reservoirs: - Ridgegate, Trentabank and Lamaload from 2.1 Ml/d to 1.8 Ml/d, - Castleshaw (upper & lower), Readycon Dean, Crookgate, Dowry and New Years Bridge from 16.8 Ml/d to 15.7 Ml/d, - Greenfield Valley-Greenfield, Yeoman Hey, Dovestone, Chew, Brushes, Walkerwood and Swineshaw (upper & lower) from 20.7 Ml/d to19.5 Ml/d, - Kinder, Errood, Fernilee, Bollinhurst and Horse Coppice from 16.9 Ml/d to 15.5 Ml/d, a reduction of 1.4 Ml/d, and - Londendale (Woodhead, Torside, Rhodeswood, Valehouse, Bottoms & Arnfield) and Audenshaw 1,2 and 3 from 48.6 Ml/d to 45.4 Ml/d. This would be a total reduction in compensation flow of 7.2 Ml/d. Note: Total reduction for each reservoir Aquator group assumed to take place in this operational catchment. The cumulative effect of the reduction in compensation flows will not increase the level of impact on the groundwater operational catchment. The small reductions in compensation flows are unlikely to reduce the wetted area of the reservoirs or downstream water courses (assuming that low flow compensation released are maintained), therefore any impact on groundwater surface water interaction on this secondary aquifer would be minimal.	No or minimal impact
	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – LAMALOAD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – CASTLESHAW UPPER & LOWER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – READYCON DEAN, CROOKGATE, DOWRY & NEW YEARS BRIDGE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – GREENFIELD VALLEY-GREENFIELD, YEOMAN HEY, DOVESTONE & CHEW	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – BRUSHES, WALKERWOOD & SWINESHAW HIGHER & LOWER	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – Kinder	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – ERREOOD & FERNILEE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – BOLLINHURST & HORSE COPPICE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
	GB41202G102900	Groundwater	No designation	Manchester and East Cheshire Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – LONDENDALE (WOODHEAD, TORSIDE, RHODESWOOD, VALEHOUSE, BOTTOMS & ARNFIELD) & AUDENSHAW 1, 2 & 3	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
Morda and Severn North Shropshire	GB109054055070	River	No designation	Morda - source to conf unnamed trib	B2	Enabling Works	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact	The cumulative effect of the construction of pipe lines and treatment works in two water bodies within this operational catchment will not have a significant effect on the operational catchment.	No or minimal impact
	GB109054050010	River	No designation	Oswestry Bk	B2	Enabling Works	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
Ribble Carboniferous Aq	GB41202G103000	Groundwater	No designation	Ribble Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – CHURN CLOUGH	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact	Reduction of compensation flow from Churn Clough reservoir from 9.1 Ml/d to 8.1 Ml/d, and Stocks reservoir from 19.2 Ml/d to 18.1 Ml/d. A total reduction of 2.1 Ml/d. Note: Total reduction for each reservoir Aquator group assumed to take place in this operational catchment. The cumulative effect of the reduction in compensation flows will not increase the level of impact on the groundwater operational catchment. The small reductions in compensation flows are unlikely to reduce the wetted area of the reservoirs or downstream water courses (assuming that low flow compensation released are maintained), therefore any impact on groundwater surface water interaction on this secondary aquifer would be minimal.	No or minimal impact
	GB41202G103000	Groundwater	No designation	Ribble Carboniferous Aquifers	WR159	Group 1 - Improved reservoir compensation release control – STOCKS	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	No or minimal impact	N			No or minimal impact		
Roch Irk Medlock	GB111269064690	River	Heavily modified	Beal	WR159	Group 1 - Improved reservoir compensation release control – PIETHORNE, NORMAN HILL, KITCLIFFE, OGDEN MILNROW, HANGING LEES & ROODEN	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact	New abstraction of up to 3 Ml/d from refurbished borehole at Python Mill, plus reduction of compensation flow from reservoirs at: - Piethorne, Norman Hill, Kitcliffe, Ogden Mlnrow, Hanging Lees, Rooden, Light Hazzles, Whiteholme and Blackstone Edge from 16.8 Ml/d to 15.7 Ml/d, and - Ashworth Moor, Greenbooth, 2 Nadens, Spring Mill, Watergrove and Cowm from 18.9 Ml/d to 18.0 Ml/d, a reduction of 0.9 Ml/d. This is a total compensation flow reduction of 2 Ml/d. Note: Total reduction for each reservoir Aquator group assumed to take place in this operational catchment. The cumulative impact of the new groundwater abstraction and multiple reductions in compensation flows from reservoirs within the operational catchment will not increase the impact on the operational catchment as a whole. This is because of the relatively small reduction in compensation flows, especially when compared to the total maintained compensation flow of 33.7 Ml/d and that the ALS indicates there is some water availability within the catchment.	Medium level of impact
	GB111269064710	River	Heavily modified	Naden Brook	WR159	Group 1 - Improved reservoir compensation release control – ASHWORTH MOOR	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB111269064710	River	Heavily modified	Naden Brook	WR159	Group 1 - Improved reservoir compensation release control – GREENBOOTH & 2 NADENS	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
	GB111269064720	River	Heavily modified	Roch (Source to Spodden)	WR114	Python Mill Borehole	Y	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
	GB111269064720	River	Heavily modified	Roch (Source to Spodden)	WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact		
	GB111269064720	River	Heavily modified	Roch (Source to Spodden)	WR159	Group 1 - Improved reservoir compensation release control – LIGHT HAZZLES, WHITEHOLME & BLACKSTONE EDGE	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Medium level of impact	Y	Minor level of impact	High	Minor level of impact		

Catchment	WFD Water Body Information				Option		Option Detail																Impacts						
Operational Catchment	ID	Type	Hydro - morphological Designation	WB Name	Ref	Option Name	Pipe line on land	Pipe line with water course crossings	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / reservoir / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing discharge to surface water	New abstraction wet drilling / refurbishment	New abstraction well headworks / surface structures	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result	Cumulative Assessment	Cumulative Screening Results
	GB112069064730	River	Heavily modified	Spodden	WR159	Group 1 - Improved reservoir compensation release control – SPRING MILL, WATERGROVE & COWM	N			N										Y	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact		
Tanat	GB109054049920	River	No designation	Hirnant - source to conf Afon Tanat	B2	Enabling Works	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact	The cumulative effect of the construction of pipe lines in six water bodies within this operational catchment will not have a significant effect on the operational catchment.	No or minimal impact
	GB109054049960	River	No designation	Afon Tanat - conf Hirnant to conf Afon Rhaeadr	B2	Enabling Works	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
	GB109054055040	River	No designation	Afon Rhaeadr - source to conf Afon Tanat	B2	Enabling Works	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
	GB109054055050	River	No designation	Afon Iwrch - source to conf Afon Tanat	B2	Enabling Works	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
	GB109054050050	River	No designation	Afon Tanat - conf Afon Rhaeadr to conf Afon Vyrnwy	B2	Enabling Works	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
	GB109054055060	River	No designation	Afon Cynllaith - source to conf Afon Tanat	B2	Enabling Works	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact		
Weaver Upper	GB112068055340	River	No designation	Rookery Brook, Burland and Brindley Bk. To Weaver	WR821	Shropshire Union Canal	Y	Y	Y	N	Y	N	N	N	Y	N	N	N	N	N	N	Medium level of impact	Y	Minor level of impact	Medium	Minor level of impact	New surface water abstraction of up to 30 Ml/d from the Shropshire Union Canal, plus construction of pipe lines, intake, and treatment works.	Minor level of impact
	GB112068060460	River	No designation	Weaver (Marbury Brook to Dane)	WR821	Shropshire Union Canal	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No or minimal impact	N			No or minimal impact	The cumulative effect of the activities in two water bodies within this operational catchment will not increase the level of impact on the operational catchment as a whole, as the activities in each waterbody (new surface water abstraction and pipe line construction) will not interact to produce a cumulative effect.	
Wyre and Calder	GB112072065822	River	No designation	Wyre DS Grizedale Brook confl	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact	Increased abstraction of 30 Ml/d (from approximately 98 Ml/d recent use, to approx. 128 Ml/d), split across several Franklaw and Broughton borehole sites. The increased abstraction quantity is within the current licence quantity for the borehole group (maximum aggregated daily peak of 190 Ml/d).	Medium level of impact
	GB112072066220	River	Heavily modified	Calder (Wyre)	WR101	Franklaw Z Site plus Increased Franklaw WTW Treatment Capacity	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact	The cumulative effect of the increased abstraction in several water bodies will not increase the level of impact in the operational catchment as a whole. This is because due to a lack of information about at which borehole sites the increase in abstraction would occur, a worst case abstraction increase was assumed for each individual water body.	

Appendix J Summary of Level 1 Screening and Level 2 Detailed Assessment Results for Preferred Plan Options

Option			WFD Water Body Information											Option Detail							Impacts				
Ref	Solutions	Option Description	ID	Type	Hydro - morphological Designation	Name	Operational Catchment	Ecological Status	Ecological Objective	Quantitative Status	Quantitative Objective	Chemical Status	Chemical Objective	Overall Status	Overall Objective	Pipe line and associated infrastructure on land (not including water course crossing		New tunnel/tunnel works (inc shafts)	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New / increased surface water abstraction quantity		Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Confidence	Combined Screening Result
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112069064641	River	heavily modified	Irwell (Cowpe Bk to Rossendale STW)	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112069064620	River	heavily modified	Irwell (Rossendale STW to Roch)	Croal Irwell	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112069064600	River	heavily modified	Roch (Spodden to Irwell)	Roch Irk Medlock	Moderate	Moderate by 2015	n/a	n/a	Good	Good by 2015	Moderate	Moderate by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G101800	GroundWaterBody	not applicable	Northern Manchester Carboniferous Aquifers	Manchester Northern Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065490	River	heavily modified	Calder - Pendle Water to conf Ribble	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065040	River	heavily modified	Hyndburn	Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112069064650	River	heavily modified	Ogden	Croal Irwell	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G100300	GroundWaterBody	not applicable	Douglas, Darwen and Calder Carboniferous Aquifers	Douglas Darwen and Calder Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065520	River	not designated artificial or h	Bashall Brook	Ribble Middle - Settle to Calder	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112072066050	River	not designated artificial or h	Hindburn	Wenning	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065420	River	not designated artificial or h	Whitendale river	Hodder and Loud	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112071065560	River	not designated artificial or h	Hodder - conf Easington Bk to conf Ribble	Hodder and Loud	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G103000	GroundWaterBody	not applicable	Ribble Carboniferous Aquifers	Ribble Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071090	River	heavily modified	Peasey Beck	Bela	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112072071690	River	not designated artificial or h	Lune - conf Rawthey to Greta	Lune - Rawthey to Greta	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071080	River	not designated artificial or h	Lupton (Farleton) Beck	Bela	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G102100	GroundWaterBody	not applicable	South Cumbria Lower Palaeozoic and Carboniferous Aquifers	Cumbria South Lower Palaeozoic and Carboniferous Aq	n/a	n/a	Good	Good by 2015	Poor	Good by 2027	Poor	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB41202G102700	GroundWaterBody	not applicable	Lune and Wyre Carboniferous Aquifers	Lune and Wyre Carboniferous Aq	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071370	River	not designated artificial or h	Mint	Kent	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071340	River	not designated artificial or h	Flodder Beck	Kent	Good	Good by 2015	n/a	n/a	Good	Good by 2015	Good	Good by 2015	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
37-42	D, E	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	GB112073071100	River	not designated artificial or h	Stainton Beck	Bela	Moderate	Good by 2027	n/a	n/a	Good	Good by 2015	Moderate	Good by 2027	Y	N	Y	N	N	N	N		Medium level of impact	Y	Medium level of impact	Low	Medium level of impact
112	B, D	HA Outage (4 weeks) for installation of connections	-	-	-	-	-	-	-	-	-	-	-	-	-	N	N	N	N	N	N	N		No or minimal impact	N	-	High	No or minimal impact

Appendix K Operational Catchment Cumulative Assessment for Preferred Plan Options

Catchment	WFD Water Body Information				Option		Option Detail																	Impacts						
Operational Catchment	ID	Type	Hydro - morphological Designation	WB Name	Ref	Option Name	Pipe line and associated infrastructure on land	Pipe line with water course crossings	New tunnel/tunnel works (inc shafts)	New / modified surface water (e.g. river) intake	New pumping station	New / modified water treatment works	New storage reservoir	New outfall to river / reservoir / canal / aqueduct	Transfer of water via river / canal / aqueduct	New / increased surface water abstraction quantity	Cessation of existing discharge to surface water	New abstraction well drilling / refurbishment	New abstraction well headworks / surface structures	New / increased groundwater abstraction quantity	Changed to reservoir compensation release	New reservoir / embankment raising	Level 1 Screening Results	Level 2 Screening Required?	Level 2 Screening Results	Level 2 Screening Confidence	Combined Screening Result	Cumulative Assessment	Cumulative Screening Results
Bela	GB112073071090	River	heavily modified	Peasey Beck	37-42	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact	Construction and permanent presence of new conduit and tunnel, including associated temporary and permanent shafts, penstock chamber, and conduit bridges over the Crake Hall Gill and Mill Rigg Gill. The cumulative effect of the construction and presence of the new infrastructure will not increase the level of impact in the operational catchment above the medium level of impact assigned to each water body. This is because due to only high-level information about the design of the tunnel, the nature of the geological strata it will pass through, and the linkages between the groundwater and surface water environment being available, the individual water body assessments assumed a worst-case impact. Although the new infrastructure will cross through the headwaters of three water bodies in this operational catchment, it is not anticipated that the combined impact would rise above a medium level, particularly as it is assumed that construction best practice and pollution prevention measures will be used during construction, and the ALS states that there is water available across all flows in all three water bodies, helping to mitigate any operational effects on baseflow.	Medium level of impact
	GB112073071080	River	not designated artificial or heavily modified	Lupton (Farleton) Beck			Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
	GB112073071100	River	not designated artificial or heavily modified	Stainton Beck			Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
Calder	GB112071065490	River	heavily modified	Calder - Pendle Water to conf Ribble	37-42	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact	Construction and permanent presence of new conduit and tunnel, including associated temporary and permanent shafts, and penstock chamber. The cumulative effect of the construction and presence of the new infrastructure will not increase the level of impact in the operational catchment above the medium level of impact assigned to each water body. This is because due to only high-level information about the design of the tunnel, the nature of the geological strata it will pass through, and the linkages between the groundwater and surface water environment being available, the individual water body assessments assumed a worst-case impact. Although the new infrastructure will cross through the headwaters of two water bodies in this operational catchment, it is not anticipated that the combined impact would rise above a medium level, particularly as it is assumed that construction best practice and pollution prevention measures will be used during construction, and the ALS states that there is water available across all flows in both water bodies, helping to mitigate any operational effects on baseflow.	Medium level of impact
	GB112071065040	River	heavily modified	Hyndburn			Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
Croal Irwell	GB112069064641	River	heavily modified	Irwell (Cowpe Bk to Rossendale STW)	37-42	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact	Construction and permanent presence of new conduit and tunnel, including associated temporary and permanent shafts, and penstock chamber. The cumulative effect of the construction and presence of the new infrastructure will not increase the level of impact in the operational catchment above the medium level of impact assigned to each water body. This is because due to only high-level information about the design of the tunnel, the nature of the geological strata it will pass through, and the linkages between the groundwater and surface water environment being available, the individual water body assessments assumed a worst-case impact. Although the new infrastructure will cross through the middle reaches of this operational catchment, it is not anticipated that the combined impact would rise above a medium level, particularly as it is assumed that construction best practice and pollution prevention measures will be used during construction, and the ALS states that there is water available across all flows in all three water bodies, helping to mitigate any operational effects on baseflow.	Medium level of impact
	GB112069064620	River	heavily modified	Irwell (Rossendale STW to Roch)			Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
	GB112069064650	River	heavily modified	Ogden			Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
Hodder and Loud	GB112071065420	River	not designated artificial or heavily modified	Whitendale River	37-42	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact	Construction and permanent presence of new conduit and tunnel, including associated temporary and permanent shafts, penstock chamber, and conduit bridges over the Bonstone Brook. The cumulative effect of the construction and presence of the new infrastructure will not increase the level of impact in the operational catchment above the medium level of impact assigned to each water body. This is because due to only high-level information about the design of the tunnel, the nature of the geological strata it will pass through, and the linkages between the groundwater and surface water environment being available, the individual water body assessments assumed a worst-case impact. Although the new infrastructure will cross through the middle reaches of this operational catchment, it is not anticipated that the combined impact would rise above a medium level, particularly as it is assumed that construction best practice and pollution prevention measures will be used during construction, and the ALS states that there is water available across all flows in the Whitendale River water body and at high flows in the Hodder – con Easington Bk to conf Ribble water body, helping to mitigate any operational effects on baseflow.	Medium level of impact
	GB112071065560	River	not designated artificial or heavily modified	Hodder - conf Easington Bk to conf Ribble			Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		
Kent	GB112073071370	River	not designated artificial or heavily modified	Mint	37-42	Haweswater Aqueduct sections T01 to T06 (Mealbank South Well to Woodgate Hill)	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact	Construction and permanent presence of new conduit and tunnel, including associated temporary and permanent shafts, and penstock chamber. The cumulative effect of the construction and presence of the new infrastructure will not increase the level of impact in the operational catchment above the medium level of impact assigned to each water body. This is because due to only high-level information about the design of the tunnel, the nature of the geological strata it will pass through, and the linkages between the groundwater and surface water environment being available, the individual water body assessments assumed a worst-case impact. Although the new infrastructure will cross through the headwaters of two water bodies in this operational catchment, it is not anticipated that the combined impact would rise above a medium level, particularly as it is assumed that construction best practice and pollution prevention measures will be used during construction, and the ALS states that there is water available across all flows in both water bodies, helping to mitigate any operational effects on baseflow.	Medium level of impact
	GB112073071340	River	not designated artificial or heavily modified	Flodder Beck			Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Medium level of impact	Y	Medium level of impact	Low	Medium level of impact		

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