



## Habitats Regulation Assessment of United Utilities' Revised Draft Drought Plan 2022

Report for United Utilities

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# Executive summary

## Introduction

Under the Water Act 2014, United Utilities (UU) is required to prepare and update a Drought Plan every five years. United Utilities (UU) published their current statutory Final Drought Plan in June 2018, with minor amendments made in August 2019 to incorporate lessons learned during the dry weather in 2018. UU are now preparing the Revised Draft Drought Plan 2022 which will encompass the period 2022-2027. It has been determined that Strategic Environmental Assessment (SEA) and a Habitats Regulations Assessment (HRA) are required.

The Drought Plan provides a comprehensive statement of the actions UU will consider implementing during drought conditions to safeguard essential water supplies to customers and minimise environmental impact. It is consistent with UU's Water Resources Management Plan (WRMP), the objective of which is to set the strategic plan for the delivery of adequate water resources over a 25 year period.

Drought Plans encompass a number of drought options that will only be implemented if and when required. Each drought is different in terms of its severity, season, location and duration and each combination of these factors may require a bespoke reaction in terms of measures. In the context of drought planning, individual drought options are taken to constitute alternatives. UU's Revised Draft Drought Plan 2022 comprises a total of 21 drought options (one supply side option, six demand options and 14 drought permit sites).

UU is the competent authority for the Drought Plan, including the SEA and HRA. Regulations 63 and 105 of the Conservation of Habitats and Species Regulations 2017 (as amended) (referred to as the Habitats Regulations) requires every competent authority, in the exercise of any of its functions, to have regard to the requirements of the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna). UU is committed to fulfilling this role and ensuring that full consideration of the Habitats Directive is being given to the revision of its Drought Plan.

HRA Guidance for the appraisal of Plans<sup>1</sup>, summarises the Habitats Regulations. Regulation 63 states that the Plan making authority (in this case UU) shall adopt, or otherwise give effect to, the Plan only after having ascertained that it will not adversely affect the integrity of a European site, subject to Regulation 64 or 105 of the Habitats Regulations.

Best practice guidance<sup>2</sup> recommends that if there are no alternative solutions and if, in exceptional circumstances, it is proposed that a Plan be adopted despite the fact that it may adversely affect the integrity of a European site, the HRA will need to address and explain the Imperative Reasons of Overriding Public Interest (IROPI) which the Plan making authority considers to be sufficient to outweigh the potentially adverse effects on the European site(s).

## Assessment Methodology

The first stage in the HRA is screening to determine the likelihood of any option proposed for inclusion in UU's Drought Plan to have a significant effect on any European site (either alone or in-combination with other plans and projects) and thus if a full HRA Stage 2 'Appropriate Assessment' of any of the drought options would be required prior to inclusion in the Final Drought Plan.

This document comprises the 'Stage 1 HRA Screening' of UU's Drought Plan.

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<sup>1</sup> Tyldesley, D. & Chapman, C. (2013) The Habitats Regulations Assessment Handbook, November 2020 edition UK: DTA Publications Limited.

<sup>2</sup> Tyldesley, D. & Chapman, C. (2013). The Habitats Regulations Assessment Handbook, February 2021 edition UK: DTA Publications Limited.

## Findings of the Assessments

The findings of the HRA of each drought option is presented in **Table 1**.

**Table 1 Summary of HRA Screening conclusions**

Drought Option	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?	Stage 2 Appropriate Assessment required?
<b>Supply Side Options</b>				
<b>Strategic Resource Zone</b>				
None	No	No	No	No
<b>Carlisle Resource Zone</b>				
Castle Carrock Reservoir, dead-water storage	No	No	No	No
<b>North Eden Resource Zone</b>				
None	No	No	No	No
<b>Demand Management</b>				
Drought Publicity	No	No	No	No
Increased leakage detection and repair activity	No	No	No	No
Campaign for voluntary water use restraint	No	No	No	No
Temporary Use Ban (TUB)	No	No	No	No
Ordinary Drought Order (Non-Essential Use Ban)	No	No	No	No
Pressure management	No	No	No	No
<b>Drought Permit</b>				
<b>Strategic Resource Zone</b>				
Delph Reservoir	No	No	No	No
Dovestone Reservoir	No	No	No	No
Fernilee Reservoir	No	No	No	No
Jumbles Reservoir	No	No	No	No
Longdendale Reservoirs	No	No	No	No
River Lune LCUS abstraction	No	No	No	No
Rivington Reservoirs – Brinscall Brook	No	No	No	No
Rivington Reservoirs – White Coppice	No	No	No	No
Ullswater	No	No	No	No
Lake Vyrnwy	No	No	No	No
Lake Windermere	No	No	No	No
<b>Carlisle Resource Zone</b>				
None	No	No	No	No
<b>North Eden Resource Zone</b>				
Eden Valley boreholes - Bowscar boreholes	No	No	No	No
Eden Valley boreholes - Gamblesby boreholes	No	No	No	No
Eden Valley boreholes- Tarn Wood boreholes	No	No	No	No

## Cumulative Impacts

Assessment of UU's Drought Plan with other plans and programmes, including UU's WRMP schemes that are due to be implemented within the time period of the Drought Plan, Environment Agency / NRW Drought Plans, other water company Drought Plans and National Policy Statements, concluded that no other significant cumulative, or in-combination effects are anticipated.

# Table of Contents

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Background and Purpose of Report .....	1
1.1	UU's Water Supply System, Water Resource Management and Drought Planning .....	3
1.2	UU's Drought Planning Process .....	5
1.3	Drought Permit Environmental Studies .....	11
1.4	HRA Stages .....	12
1.5	Purpose of this Document .....	13
<b>2</b>	<b>Methodology .....</b>	<b>14</b>
2.1	Approach to HRA Screening .....	14
2.2	Identification of European Sites for Assessment.....	14
2.3	Potential Impacts of Drought Options.....	15
2.4	Review of Potential In-Combination Effects .....	20
<b>3</b>	<b>HRA Screening Findings for Drought Options.....</b>	<b>22</b>
3.1	HRA Screening of Statutory Drought Plan .....	22
3.2	Potential In-Combination Effects with Other Plans and Projects .....	34
<b>4</b>	<b>Conclusions and Recommendations .....</b>	<b>38</b>
4.1	Summary of HRA Screening Conclusions.....	38
4.2	Consultation on the HRA Screening Report.....	39

**Appendix A** Summary of Construction Activities Required for Supply-Side Drought Options

**Appendix B** Figures

# 1 Introduction

## 1.1 Background and Purpose of Report

Under the Water Act 2014, United Utilities (UU) is required to prepare and update a Drought Plan every five years. United Utilities (UU) published their current statutory Final Drought Plan in June 2018, with minor amendments made in August 2019 to incorporate lessons learned during the dry weather in 2018. UU are now preparing the Revised Draft Drought Plan 2022 which will encompass the period 2022-2027. It has been determined that Strategic Environmental Assessment (SEA) and a Habitats Regulations Assessment (HRA) are required (see Section 1.3.2.).

**The focus of this HRA Screening Report is on the Drought Plan, not the Water Resources Management Plan (WRMP). The aim of the Drought Plan is for UU to identify drought options available to meet water demand in times of severe water shortage. UU's water supply system, the drought planning process and links with the WRMP are discussed in Section 1.3.**

UU is the competent authority for the Drought Plan, including the SEA and HRA. Regulations 63 and 105 of the Conservation of Habitats and Species Regulations 2017 (as amended) (referred to as the Habitats Regulations) requires every competent authority, in the exercise of any of its functions, to have regard to the requirements of the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna). UU is committed to fulfilling this role and ensuring that full consideration of the Habitats Directive is being given to the revision of its Drought Plan.

HRA Guidance for the appraisal of Plans<sup>3</sup>, summarises the Habitats Regulations. Regulation 63 states that the Plan making authority (in this case UU) shall adopt, or otherwise give effect to, the Plan only after having ascertained that it will not adversely affect the integrity of a European site, subject to Regulation 64 or 105 of the Habitats Regulations.

Regulation 64 of the Habitats Regulations states:

*62.—(1) If the competent authority are satisfied that, there being no alternative solutions, the plan or project must be carried out for imperative reasons of overriding public interest (which, subject to paragraph (2), may be of a social or economic nature), they may agree to the plan or project notwithstanding a negative assessment of the implications for the European site or the European offshore marine site (as the case may be).*

*(2) Where the site concerned hosts a priority natural habitat type or a priority species, the reasons referred to in paragraph (1) must be either —*

- (a) reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or*
- (b) any other reasons which the competent authority, having due regard to the opinion of the Appropriate Authority, consider to be imperative reasons of overriding public interest.*

Regulation 105 of the Habitats Regulations states:

*105. — (1) Where a land use plan —*

- (a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and*
- (b) is not directly connected with or necessary to the management of the site, the plan-making authority for that plan must, before the plan is given effect, make an appropriate assessment of the implications for the site in view of that site's conservation objectives.*

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<sup>3</sup> Tyldesley, D. & Chapman, C. (2013) The Habitats Regulations Assessment Handbook, November 2020 edition UK: DTA Publications Limited.

*(2) The plan-making authority must for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority specify.*

*(3) They must also, if they consider it appropriate, take the opinion of the general public, and if they do so, they must take such steps for that purpose as they consider appropriate.*

*(4) In the light of the conclusions of the assessment, and subject to regulation 103 (considerations of overriding public interest), the plan-making authority or, in the case of a regional strategy, the Secretary of State must give effect to the land use plan only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).*

*(5) A plan-making authority must provide such information as the appropriate authority may reasonably require for the purposes of the discharge of the obligations of the appropriate authority under this Chapter.*

*(6) This regulation does not apply in relation to a site which is —*

*(a) a European site by reason of regulation 8(1)(c), or*

*(b) a European offshore marine site by reason of regulation 15(c) of the 2007 Regulations (site protected in accordance with Article 5(4) of the Habitats Directive).*

Best practice guidance<sup>4</sup> recommends that if there are no alternative solutions and if, in exceptional circumstances, it is proposed that a Plan be adopted despite the fact that it may adversely affect the integrity of a European site, the HRA will need to address and explain the Imperative Reasons of Overriding Public Interest (IROPI) which the Plan making authority considers to be sufficient to outweigh the potentially adverse effects on the European site(s).

Four stages of the HRA of UU's Drought Plan have been identified:

1. Firstly, a screening process is undertaken to identify whether each drought option in UU's Statutory Drought Plan (either alone or in combination with other plans or projects) is likely to have significant effects on European designated sites.
2. Where a significant effect is likely (noting the precautionary principle), an Appropriate Assessment would then be undertaken of the drought option to determine whether this would adversely affect the integrity of the European site(s), either alone or in combination with other plans and projects, taking into account available mitigation measures (see Section 4 for a description of Appropriate Assessment methodology).
3. If significant adverse effects are identified at the Appropriate Assessment stage, alternative options would be examined to avoid any potential significant effects on the integrity of the European site as Stage 3 of the HRA.
4. Stage 4 comprises an assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest, it is deemed that the Plan should proceed.

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<sup>4</sup> Tyldesley, D. & Chapman, C. (2013). The Habitats Regulations Assessment Handbook, February 2021 edition UK: DTA Publications Limited.



## 1.1 UU's Water Supply System, Water Resource Management and Drought Planning

### 1.1.1 Introduction

UU supplies water to approximately 7 million people and 0.2 million non-household customers in Cumbria, Lancashire, Greater Manchester, Merseyside, most of Cheshire and a small portion of Derbyshire.

UU owns and operates over 100 water supply reservoirs, various river and stream intakes, as well as lake abstractions, and numerous groundwater sources (boreholes, springs, mine and adit sources). Abstracted water is treated at water treatment works before being supplied to customers through an extensive network of aqueducts and water mains.

Water supplies to the majority of the region (with more than 90% of total water supplied) are managed in an integrated manner and constitute a single resource zone. The UU region is split into four water resource zones (WRZs):

**Strategic Resource Zone:** The Strategic Resource Zone is a combination of the merging of the previous Integrated Resource Zone and West Cumbria Resource Zone, serving south Cumbria, Lancashire, Greater Manchester, Merseyside, most of Cheshire, Workington, Whitehaven, Wigton and Solwa, representing over 90% of total water supplied by UU. A 55km bi-directional pipe, the West-East link, was commissioned in 2011 to allow up to 100MI/d of water to be transferred between Cheshire/Merseyside and Manchester. This link allows UU more flexibility to move water around the region to where it is most needed, and enables UU to carry out aqueduct cleaning by providing a second pipeline. This is in addition to the link between Liverpool and Manchester which was constructed following the 1995/6 drought.

**Carlisle Resource Zone:** The Carlisle Resource Zone serves the Carlisle area. It is supplied by two sources – the River Gelt and the River Eden.

**North Eden Resource Zone:** The North Eden Resource Zone comprises of boreholes that serve the rural, northern part of the Eden district of Cumbria. The Alston area is supplied from a bulk water supply from Northumbrian Water.

**Barepot Resource Zone:** The zone is supplied by a surface water abstraction from the River Derwent at Barepot, Workington. This comprises of a non-potable supply to industrial customers at Barepot in West Cumbria.

The four WRZs that will exist from 2022 are shown in **Figure 1.1**

Figure 1.1: United Utilities' Regional Supply System



## 1.1.2 Link to Water Resources Management Plan

UU published its last Water Resources Management Plan (WRMP) in 2019 which provides a comprehensive statement of UU's water supply and water demand forecasts over the period 2020 to 2045. It also describes the resulting supply-demand balances and the actions UU propose to take as part of the preferred strategy to achieve water supply reliability standards for their customers. The WRMP is updated every 5 years.

The WRMP identifies if there is expected to be a deficit in the future availability of water supplies compared to demand over a 25 year horizon, resulting in the need for new sources of water or demand measures to ensure the balance between supply and demand is maintained. The assessment takes climate change into account, as well as any changes to abstraction licences (e.g. the Environment Agency's review of UU's abstraction licences under the Habitats Directive referred to as the Review of Consents). The WRMP also makes allowance for parts of the water supply system being out of service for maintenance. The Final WRMP 2019 identified the preferred solutions for dealing with forecast deficits over the 2020-2045 period. The baseline supply-demand balance assessments of the plan demonstrated that a surplus will be maintained in all four of the resource zones, other than a very small deficit in the Strategic Resource Zone towards the end of the planning horizon (2041-2045). This will be addressed by reducing the demand for water and a proposed programme of leakage reduction activity. Resilience assessments identified a key risk to supplies in the Manchester and Pennines area which will be addressed by replacing degrading aqueduct tunnels with new tunnels.

The aim of the Drought Plan is for UU to identify drought options available to meet water demand in times of severe water shortage, and leakage control is a key priority of both the WRMP and Drought Plan. Leakage detection and repair activities will be enhanced during a period of severe water shortage, as set out in the Drought Plan. The predicted future baseline for leakage control is outlined in the WRMP. The supply-demand appraisal demonstrates that reducing leakage to the levels shown below is an efficient and integral part of UU's water resources and demand strategy.

To clarify, the aim of this HRA Screening Report is to focus on the Drought Plan, not the WRMP. UU's drought planning process is discussed further in Section 1.2 below.

## 1.2 UU's Drought Planning Process

### 1.2.1 Overview and Timetable

Water companies in England and Wales are required to prepare and maintain Statutory Drought Plans under Sections 39B and 39C of the Water Industry Act 1991, as amended by the Water Act 2003 and subsequently Water Act 2014, which set out the sort of operational steps a company will take before, during and after a drought. The Water Industry Act 1991 defines a Drought Plan as '*a plan for how the water undertaker will continue, during a period of drought, to discharge its duties to supply adequate quantities of wholesome water, with as little recourse as reasonably possible to drought permits*'.

The Drought Plan Direction 2016, which reflects changes made by the Water Act 2014 regarding the publication frequency of drought plans, states that revised drought plans should be submitted according to the following schedule:

- 4(b) *for a revised drought plan –*
  - i. *If section 39B(6)(a) of the Act applies, within 6 months after the date on which the material change of circumstances occurs;*
  - ii. *If section 39B(6)(c) of the Act applies, within 4 years and 3 months after the date on which its drought plan, or its last revised drought plan, is published.*

UU published its first Final Statutory Drought Plan in January 2008. On 1 October 2010, Section 76 of the Water Industry Act 1991 was amended by the commencement of Section 36 of the Flood and Water Management Act 2010. The Water Use (Temporary Bans) Order 2010 also commenced on 1 October 2010 and provides definitions and clarifications on these activities. UU considered these changes in legislation to be a material change and submitted a revised Draft Drought Plan to the Secretary of State (and copied to the Welsh Government) by 1 October 2011 (i.e. 12 months after the date the new legislation came into force). The Draft Drought Plan was accompanied by the SEA Environmental Report and the HRA Screening Report. UU published a Final Drought Plan on 13 June 2013.

Subsequently, following discussions with Defra in summer 2013, UU updated the Final Drought Plan 2013 to include revised drought triggers, a supply-side option and two additional drought order options. Following endorsement from the Secretary of State, UU published its Draft Drought Plan, SEA and HRA for public consultation in early 2014. UU submitted a Revised Draft Drought Plan to Defra which incorporated changes set out in a Statement of Response, and following direction from Defra, UU published a revised statutory Drought Plan in July 2014.

In 2016 UU confirmed revisions to two drought options and these alterations were considered a 'material change' to the Final Drought Plan 2014. Consequently, a revised draft Drought Plan was submitted to Defra within 6 months of the material change, and subsequently the Final Drought Plan 2018 was published in June 2018, with minor amendments made in August 2019 to incorporate lessons learned during the dry weather in 2018.

UU are now preparing the Revised Draft Drought Plan 2022, which will encompass the period 2022-2027.

This document presents HRA Screening assessments of all the drought options that are in the Revised Draft Drought Plan 2022. The period encompassed by the updated Plan is expected to be until 2027. The normal drought plan review cycle is for an updated draft plan to be submitted to the Secretary of State within 5 years of publication of the previous final plan.

Permissions to abstract water, granted through licences issued by the Environment Agency and held and operated by UU, have been subject to a 'Review of Consents' in accordance with the Habitats Regulations. This Review of Consents was undertaken by the Environment Agency (in consultation with Natural England) and includes screening to determine likely significant effect and Appropriate Assessment where likely significant effects are identified, to either affirm an abstraction licence or recommend action to amend the licence conditions. This is in order to ensure that the integrity of the European site is not at risk from the impacts of abstraction. The conclusion of the HRA Screening and the SEA for each drought option should be reviewed at the time of any future application for drought powers to ensure they remains valid.

Only those drought options which are relevant to the period encompassed by the Drought Plan are included for consideration as part of the HRA Screening process. To this end, environmental effects of the Revised Draft Drought Plan 2022 options will be considered within the context of the current licence operating conditions. Potential new sources (which UU may bring on-line in the future), new drought options, or revisions to existing options which are only envisaged to become operational post 2027 have, therefore, been excluded from this HRA assessments.

### 1.2.2 Requirement for SEA and HRA of UU's Drought Plan

It was confirmed with Natural England and the Environment Agency that UU's Draft Drought Plan 2022 required both SEA and HRA and this is still the case for the current revision of the plan. This was concluded following the SEA Screening process which was carried out by UU in accordance with the requirement for a SEA identified under the Environmental Assessment of Plans and Programmes

Regulations 2004 and the Office of the Deputy Prime Minister (ODPM) SEA Guidelines<sup>5</sup>, as described and documented in UU's SEA of United Utilities' Draft Drought Plan 2022, Scoping Report<sup>6</sup>. The SEA Screening process determined that the Drought Plan requires an assessment under Articles 6 and 7 of the Habitats Directive based on environmental assessments undertaken on behalf of UU for site specific drought permits/orders concluding that there is evidence of significant effects on a European Special Area of Conservation (SAC) which triggers the requirement for Appropriate Assessment under the Habitats Regulations. This, in turn, triggers the requirement for a SEA. The SEA has been undertaken in parallel with HRA Screening and is reported separately.

The Environment Agency's 2020 Drought Plan Guideline (DPG)<sup>7</sup> states that consideration is required to ensure that drought management actions meet the requirements of the Habitats Regulations. The 2020 DPG has informed UU's Revised Draft Drought Plan 2022 preparation and this HRA Screening Report.

The amended 2017 Habitats Regulations have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes:

- existing Special Areas of Conservation (SACs) and Special Protected Areas (SPAs)
- new SACs and SPAs designated under these Regulations

SPAs are classified under the European Council Directive 'on the conservation of wild birds' (2009/147/EC; 'Birds Directive') for the protection of **wild birds and their habitats** (including particularly rare and vulnerable species listed in Annex 1 of the Birds Directive, and migratory species).

SACs are designated under the Habitats Directive (92/43/EEC) and target particular **habitats** (Annex 1) **and/or species** (Annex II) identified as being of European importance.

Designated Wetlands of International Importance (known as Ramsar sites) do not form part of the national site network. Many Ramsar sites overlap with SACs and SPAs, and may be designated for the same or different species and habitats. All Ramsar sites are protected in the same way as SACs and SPAs.

For ease of reference through this HRA report, these designations are collectively referred to as "European sites". As per Natural England (NE) guidance<sup>8</sup>, any HRA should also consider any European Marine Protected Areas (MPAs) within England's inshore waters (out to 12 nautical miles) to support sites in achieving conservation objectives and to guide effective management. No MPAs of European importance or Marine Conservation Zones (MCZs) are associated with the study area and therefore, no further consideration is required.

### 1.2.3 UU's Drought Options

In the 2018 Final Drought Plan UU identified four triggers that act as decision-points for implementing drought management actions and options. These have now changed to drought levels (Level 1 to Level 4) in accordance with the 2020 DPG. Drought levels vary for each water resource zone and the nature of the drought management actions associated with the drought level varies depending on the prevailing situation.

Drought actions may be applied either company wide, by water resource zone or to target a specific geographic area, depending on the nature of the drought event prevailing at that time. The Revised Draft Drought Plan 2022 contains a range of potential drought management options available to UU,

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<sup>5</sup> Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive.

<sup>6</sup> Ricardo Energy and Environment (2020) *Strategic Environmental Assessment of United Utilities' Draft Drought Plan 2021. Scoping Report*. Prepared by Ricardo Energy and Environment for United Utilities. March 2021.

<sup>7</sup> Environment Agency (2020) Water Company Drought Plan Guideline, December 2020 (Version 1.1)

<sup>8</sup> Help Note: Tips and advice on how to assess potential impacts of water company statutory plans on the marine environment<sup>1</sup> – Focussing on Marine Conservation Zones (MCZ)



for example bringing contingency water sources into use, implementation of drought permits and water use restrictions.

There are three overall categories of drought options which are described below:

- utilisation of existing licensed water sources within UU's resource base (referred to as supply side options)
- demand side options (e.g. water use restrictions)
- drought permits (i.e. modification to the conditions of an existing abstraction licence).

### Supply Side Options

All supply side options are actions within existing licensed abstraction limits which have been subject to the Environment Agency's Review of Consents process. However, some of the supply side options are licensed stood-down sources which are currently non-commissioned and which do not operate as 'business as usual' and would require recommissioning in the event of use as a drought option.

The supply side drought options in UU's Drought Plan 2018 have been revised. Several previous non-commissioned sources listed as supply side options in the previous drought plan were recommissioned and brought online as part of the 2018 dry weather event and are now considered 'business as usual' sources. In addition, a review of the remaining non-commissioned sources was undertaken during the preparation of the Revised Draft Drought Plan 2022 to assess the availability and benefit they would provide. It was determined that ten boreholes would therefore be removed from the drought plan. These sources are now part of the normal operating suite of sources. By bringing the non-commissioned sources into regular use, utilisation of such sources will assist in taking demand off the regional or local water supply system, making it more resilient overall compared to the previous suite of supply options.

A summary of the construction activities required in order to bring each of the supply side drought options into operation is provided in **Appendix A**.

**Table 1.1: Supply side drought options included in the SEA and HRA**

<b>Licence</b>
<b>Strategic Resource Zone</b>
None
<b>Carlisle Resource Zone</b>
Castle Carrock reservoir, dead water storage
<b>North Eden Resource Zone</b>
None

### Demand Side Options

Demand side options are designed to reduce the demand for water and the options available to UU are consistent between all resource zones (see **Table 1.2**). Demand side options are included in the SEA and HRA Screening.

**Table 1.2: Demand side options (all water resource zones)**

Measure	Comments
Drought publicity	Increased water efficiency messages via increased customer communications
Enhanced leakage detection and repair	Enhanced leakage detection and repair activities targeted to appropriate areas and where greatest savings can be achieved.
Campaign for voluntary water use restraint	Voluntary water use restrictions (applying to the general use of a hosepipe for domestic purposes) and statutory water use restrictions as set out in Section 76 of the Water Industry Act 1991 (as amended by Section 36 of the Flood and Water Management Act 2010)
Temporary Use Ban (TUB)	Implemented when “experiencing, or may experience, a serious shortage of water for distribution”. Due to the level of connectivity a TUB would be applied across each of the WRZs rather than locally.
Ordinary Drought Order (Non-Essential Use Ban)	Drought order to ban non-essential uses of water (as set out in the Drought Direction 2016)
Pressure management	Reducing the pressure in certain parts of UU’s water network to help reduce demand.

Demand measures are just part of a suite of options which will be put in place by UU as part of its Drought Plan alongside supply-side options and drought permits/orders.

### Drought Permit/Order Options

Drought permits and orders are drought management actions that, if granted, can allow more flexibility to manage water resources and the effects of drought on public water supply and the environment. Guidance has been prepared by Defra<sup>9</sup>: which highlights the main differences between drought permits and orders. One of the key differences is that drought permits are granted by the Environment Agency, with drought orders being granted by the Secretary of State, or the Welsh Minsters, as appropriate.

Drought permit sites included in UU’s Revised Draft Drought Plan 2022 are identified in **Table 1.3**. There are no drought orders in UU’s Revised Draft Drought Plan 2022. These options were considered in both the SEA scoping and HRA screening processes.

<sup>9</sup> Environment Agency (2020) Water Company Drought Plan Guideline, December 2020 (Version 1.1).

**Table 1.3: Drought permit options (all water resource zones)**

<b>Water Source</b>	<b>Potential Drought Permits</b>
<b>Strategic Resource Zone</b>	
Delph Reservoir	Reduce compensation flow from 3.7 to 1.0 MI/d
Dovestone Reservoir	Reduce compensation flow from 15.9 to 10.0 or 5.0 MI/d
Fernilee Reservoir	Reduce compensation flow from 13.63 MI/d to 7 MI/d.
Jumbles Reservoir	Reduce compensation flow from 19.9 to 12.0 or 6.0 MI/d
Longdendale Reservoirs	Reduce compensation flow from 45.5 to 22.5 or 15.0 MI/d
River Lune LCUS abstraction	Reduce prescribed flow from 365.0 to a minimum of 200 MI/d
Rivington Reservoirs – Brinscall Brook	Reduce compensation flow from 3.9 to 2.0 MI/d
Rivington Reservoirs – White Coppice	Reduce compensation flow from 4.9 to 2.0 MI/d
Ullswater	Reduce hands-off flow conditions to a minimum of 175 MI/d Relax 12-month rolling abstraction licence limit
Lake Vyrnwy	Reduce compensation flow from 45.0 to 25.0 MI/d
Lake Windermere	Reduce hands-off flow conditions to a minimum of 95 MI/d Relax 12-month rolling abstraction licence limit
<b>Carlisle Resource Zone</b>	
None	-
<b>North Eden Resource Zone</b>	
Eden Valley boreholes - Bowscar boreholes	Increase annual licence limit to enable continuation of the maximum daily abstraction rate as annual limit constrains abstraction
Eden Valley boreholes - Gamblesby boreholes	Increase annual licence limit to enable continuation of the maximum daily abstraction rate as annual limit constrains abstraction
Eden Valley boreholes - Tarn Wood boreholes	Increase annual licence limit to enable continuation of the maximum daily abstraction rate as annual limit constrains abstraction

In June 2019, the Environment Agency issued water companies with a position statement which set out roles and responsibilities with respect to compensation only reservoirs (CORs). A COR is a reservoir that has no links (direct or indirect) to a water company's public water supply network. The main or sole function of a COR is to provide compensation flow to the downstream watercourse. The legal requirement to provide a compensation flow from a COR is usually found in an abstraction licence, impoundment licence or in an Act of Parliament. A COR would not be listed as a source of supply in a water company water resource management plan or as an option to provide public water supply in a water company drought plan.

Previously, the Environment Agency had included drought orders for CORs within their drought plan and had been responsible for preparing environmental assessment reports (EARs) and applications for drought orders. The revised position stated in June 2019 requires water companies to produce an up-front EAR for drought order implementation at CORs, including an Environmental Monitoring Plan and mitigation proposals. Not all COR sites need to be considered for a future drought order (e.g. not all public water supply reservoirs have associated drought permits) if they are resilient (e.g. the compensation flow is small compared to storage). Hence not all sites will need a shelf-copy EAR. UU and the EA have been working together to refine and agree the list of CORs in UU's operating area where the risk of a drought order warrants production of a shelf copy EAR. No sites have been identified where the preparation of an EAR is required.



As there is no public water supply benefit of a drought order at a COR, although reference to CORs with associated drought orders may be made in UU's Revised Draft Drought Plan, UU would not be the party applying for a drought order for a COR, and therefore the SEA and HRA assessments will not cover these.

### Defining the list of Drought Options and Alternatives

In the context of drought planning, individual options are taken to constitute alternatives.

It should be noted that revision of the Drought Plan options has been undertaken in parallel with preparation of the SEA and HRA, and the results of these latter two assessments has fed into the revision of the Drought Plan in an iterative process.

### Supporting Information

Drought options included in the SEA and HRA are documented by UU in its Revised Draft Drought Plan 2022 and are presented in drought management option forms as specified by Drought Plan Guideline<sup>10</sup>. Information provided in these forms has been used to inform the SEA and HRA and vice versa.

It is noted that some drought options may have different environmental effects depending on season of implementation (for example a summer vs. a winter drought). As drought measures can theoretically be required and implemented at any time of year, overall impacts are assessed on a worst-case basis.

## 1.3 Drought Permit Environmental Studies

Environmental assessment reports have been prepared for all of the drought permit sites identified in **Table 1.3**, as part of UU's drought contingency planning.

The aim of these studies was to produce environmental reports such that in the event of a drought they are readily available for refreshing based on the prevailing drought situation at that time. The Environment Agency and Natural England were key consultees for the studies. The environmental studies consider all potentially affected habitats and species including, but not limited to, SAC, SPA and Ramsar features as well as any SSSI or priority habitat and species. The reports also include Environmental Monitoring Plan (EMP) recommendations for each drought permit site. These environmental studies, undertaken outside of an actual drought event, are intended to be used as the basis for the Environmental Report to be prepared in support of a specific drought permit application, should the need arise.

UU has now completed environmental studies at all of the drought permit sites as part of the Revised Draft Drought Plan 2022 preparation (see **Table 1.3**). Environmental Reports, with date of completion are listed in **Table 1.4**.

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<sup>10</sup> Environment Agency (2020) Water Company Drought Plan Guideline, December 2020 (Version 1.1)

**Table 1.4: Drought permit sites environmental assessments**

Drought Permit Site	Date Completed
<b>Strategic Resource Zone</b>	
Delph Reservoir	2021
Dovestone Reservoir	2021
Fernilee Reservoir	2021
Jumbles Reservoir	2021
Longdendale Reservoirs	2021
River Lune LCUS abstraction	2021
Rivington Reservoirs – Brinscall Brook	2021
Rivington Reservoirs – White Coppice	2021
Ullswater	2021
Lake Vyrnwy	2020
Lake Windermere	2021
<b>Carlisle Resource Zone</b>	
None	-
<b>North Eden Resource Zone</b>	
Eden Valley Boreholes: Bowscar, Gamblesby and Tarn Wood	2021

Information from the detailed environmental assessments has been used to inform the SEA and HRA. The methodology for the HRA is described in further detail in Section 2.

## 1.4 HRA Stages

### 1.4.1 Introduction

Four stages of the HRA have been identified and are described in the following sections. Detailed methodology for HRA Screening is given in Section 2.

### 1.4.2 Stage 1 – Screening

The first stage in the HRA is screening to determine the likelihood of any option proposed for inclusion in the Statutory Drought Plan to have a significant effect on any European site (either alone or in combination with other plans and projects) and thus if a full 'Appropriate Assessment' of any of the drought options would be required prior to inclusion in the Final Drought Plan.

For each of the four water resource zones listed in Section 1.2, all European sites which could be impacted, including all SAC, SPA and Ramsar sites, were considered alongside with their qualifying and supporting features. Drought plan options are assessed against the backdrop of the European sites, considering both the qualifying designated habitats and species of conservation interest, and their supporting features, including hydrology, geomorphology, water quality, habitats etc.

In-combination assessments are carried out to establish the possibility of cumulative or synergistic impacts. The approach to cumulative impact assessment is described in Section 2.4.

The output of this screening stage is the Screening Report which identifies if any of the drought plan options require Appropriate Assessment because it has been determined that they, either alone or in combination with other plans or projects, are likely to have significant effects on European designated sites. The Screening Report is used as a basis for consultation with the regulatory authorities.

### 1.4.3 Stage 2 – Appropriate Assessment

Only those drought options that have been identified during HRA Screening (Stage 1) as being likely to have a significant effect (either alone or in combination) would be taken forward to Appropriate Assessment. The Appropriate Assessment would consider the impacts of the Drought Plan, against the conservation objectives of a European Site, in order to identify whether there are likely to be any adverse effects on site integrity and site features. The assessment would conclude whether or not the plan, either alone or in combination with other plans and projects, would adversely affect the integrity of the European site in question. This is judged in terms of the implications of the plan for a site's conservation objectives, which relate to its 'qualifying features' (i.e. those Annex I habitats, Annex II species, and Annex I bird populations for which it has been designated). The responsibility for undertaking the Appropriate Assessment lies with UU as the Plan making authority i.e. UU is the competent authority for HRA of the Drought Plan.

If no significant impacts are identified by the Appropriate Assessment (either alone, or in combination with other plans and projects), no further assessments are undertaken. If significant impacts are identified, the assessment will progress to Stage 3.

### 1.4.4 Stage 3 – Alternative Options Stage

Where significant adverse effects are identified at the Appropriate Assessment stage, alternative options would be examined to avoid any potential damaging effects to the integrity of the European site.

### 1.4.5 Stage 4 – Assessment where adverse impacts remain

Stage 4 comprises an assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest, it is deemed that the project or plan should proceed. Imperative Reasons of Overriding Public Interest will only be progressed if no alternatives are identified as part of Stage 3.

## 1.5 Purpose of this Document

This document comprises Stage 1 – HRA Screening as described in Section 1.4.2. The report consists of the following Sections:

Section 1 – Introduction

Section 2 – Methodology

Section 3 – HRA Screening Findings for Drought Options

Section 4 – Conclusions and Recommendations

This document will be used as a basis for consultation with Natural England, Natural Resources Wales and the Environment Agency.

## 2 Methodology

### 2.1 Approach to HRA Screening

The aim of HRA Screening is to establish whether implementation of the drought options included in UU's Statutory Drought Plan (either alone or in-combination) are likely to have a significant effect on a European site(s).

Drought options include continued utilisation of existing licensed water sources within UU's resource base (referred to as supply side options), demand side options (e.g. water use restrictions) and drought permits. Drought options subject to HRA Screening are described in Section 1.2.3.

The approach adopted in this HRA comprises the assessment of the likelihood of potential for significant effects of drought options considered for inclusion in the Revised Draft Drought Plan 2022 on European site integrity.

The HRA has been undertaken using information contained in correspondence between UU and the Environment Agency, Natural England and other consultees. The HRA has been undertaken in accordance with currently available guidance<sup>1112131415161718</sup> and should be based on a precautionary approach as required under the Conservation of Habitats and Species Regulations 2017 (as amended).

### 2.2 Identification of European Sites for Assessment

GIS data were used to map the locations and boundaries of European sites within or adjacent to UU's four water resource zones using publicly available data from Natural England and Natural Resources Wales. European sites are shown in **Figure 2.1**.

The attributes of the European sites, which contribute to and define their integrity, current conservation status and the specific sensitivities of the site were considered with reference to:

- Standard Data forms for SACs and SPAs and Information Sheets for Ramsar sites. An analysis of these information sources has enabled the identification of the site's qualifying features.
- Article 12 and 17 reporting,
- Site conservation objectives,
- Supplementary advice to the conservation objectives (SACO) where available
- Site Improvement Plans
- Core Management Plans (Wales), and
- the supporting Site of Special Scientific Interest's favourable condition tables where relevant and no SACOs applicable to the features were available.

The locations of the supply side and drought permit options identified in Section 1.2.3 were also mapped in order to establish their geographic proximity to the European sites. Location maps are provided for reference in **Appendix B**.

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<sup>11</sup> Court of Justice for the European Union's ruling on People Over Wind and Sweetman ('Sweetman II') vs Coillte Teoranta, Case C-323/17.

<sup>12</sup> UK Government (2019). Guidance on the use of Habitats Regulations Assessment.

<sup>13</sup> UK Government (2019). Conservation of Habitats and Species Regulations (Amendment) (EU Exit).

<sup>14</sup> Natural England (2020). Guidance on how to use Natural England's Conservation Advice Packages in Environmental Assessments.

<sup>15</sup> Tyldesley, D. & Chapman, C. (2013). The Habitats Regulations Assessment Handbook, February 2021 edition UK: DTA Publications Limited.

<sup>16</sup> Environment Agency and Natural Resources Wales (2017). Water resources planning guideline – April 2017

<sup>17</sup> European Commission (2018). Managing Natura 2000 sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Union, 1-86.

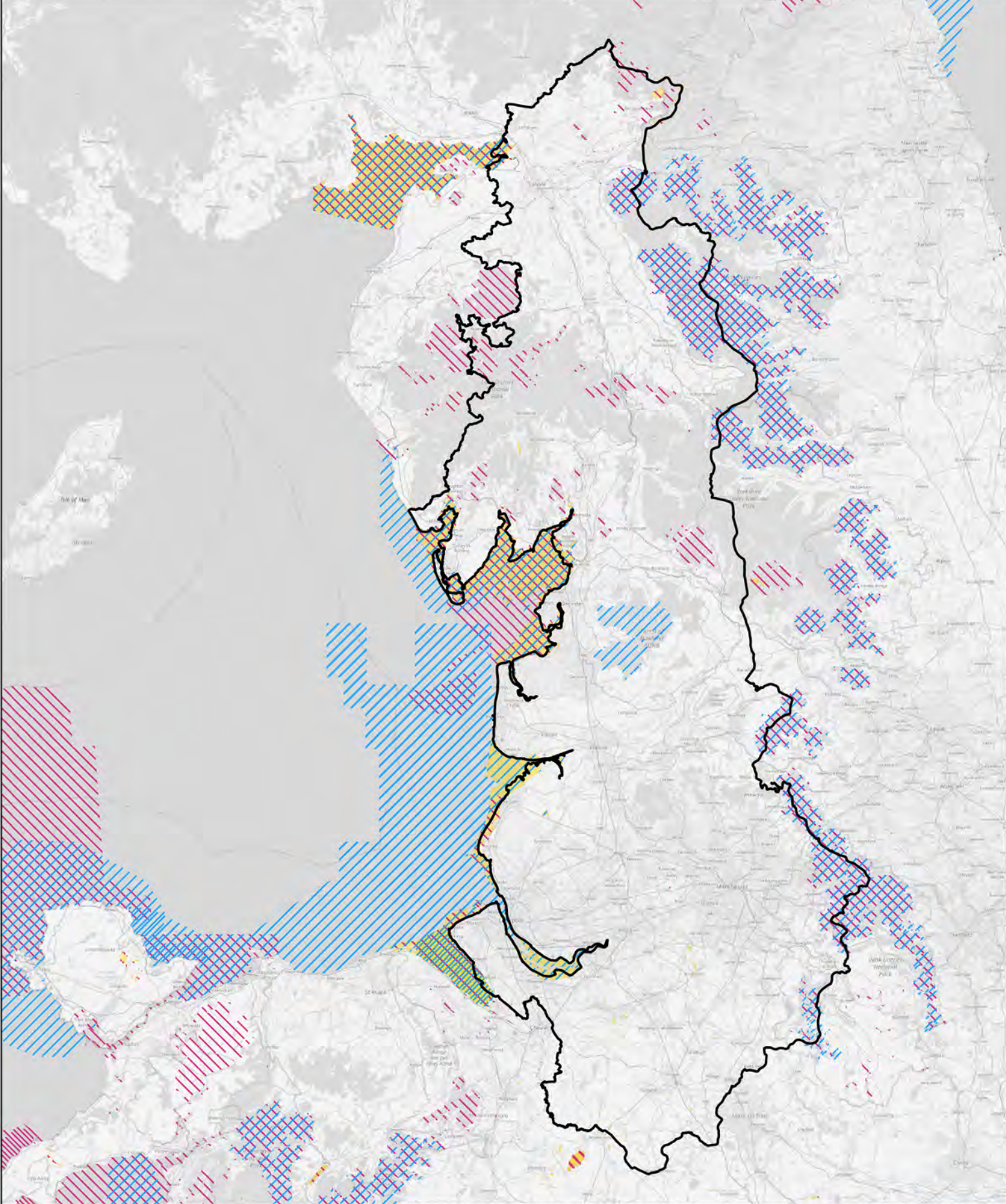
<sup>18</sup> Defra (2012). The Habitats and Wild Birds Directives in England and its seas: Core guidance for developers, regulators & land/marine managers.

## 2.3 Potential Impacts of Drought Options

The qualifying habitats and species of European sites are vulnerable to a wide range of impacts such as physical loss or damage of habitat, disturbance from noise, light, human presence, changes in hydrology (e.g. changes in water levels/flow, flooding), changes in water or air quality and biological disturbance (e.g. direct mortality, introduction of disease or non-native species). However, the drought options considered for inclusion in the drought plan only have the potential to give rise to some of these impacts. The demand management schemes are unlikely to have any significant adverse effects on European sites as they relate to measures which will not result in any new development or water abstraction (repairing leakage and water efficiency measures) and which are largely implemented within urban areas.

In determining the likelihood of significant effects on European sites from drought options, particular consideration has been given to the possible source-receptor pathways through which effects may be transmitted to features contributing to the integrity of the European site(s) (e.g. groundwater or surface water catchments, air etc). **Table 2.1** shows the type of impacts that drought plan options could have on European site qualifying features.





**Legend**



-  United Utilities Supply Area
- Designated Sites
-  Special Areas of Conservation
-  Special Protection Areas
-  Ramsar Sites



**Project title:**  
HRA of United Utilities  
Drought Plan

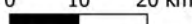
**Figure title:**  
European Designated  
Conservation Sites in North West  
England and North Wales

**Date:** March 2021

**Figure 2.1**

0 10 20 km





**Table 2.1 Potential impacts of drought options on European sites**

Broad categories of potential impacts on European sites, with examples	<i>Examples of operations responsible for impacts (distance assumptions in italics)</i>
Physical loss: <ul style="list-style-type: none"> <li>• Removal (including offsite effects, e.g. foraging habitat, and removal of supporting habitat within boundary of a SPA)</li> <li>• Smothering</li> </ul>	<p><i>Development of infrastructure associated with scheme, e.g. new or temporary pipelines, transport infrastructure, temporary weirs.</i></p> <p><i>Indirect effects from a reduction in flows e.g. drying out marginal habitat.</i></p> <p>Physical loss is most likely to be significant where the boundary of the scheme extends within the boundary of the European site, or within an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European site is designated).</p>
Physical damage: <ul style="list-style-type: none"> <li>• Sedimentation / silting</li> <li>• Prevention of natural processes including coastal and fluvial bank stabilisation, prevention of long-shore drift etc.</li> <li>• Habitat degradation</li> <li>• Erosion</li> <li>• Fragmentation</li> <li>• Severance/barrier effect</li> <li>• Edge effects</li> </ul>	<p><i>Reduction in river flow leading to permanent and/or temporary loss of available habitat, sedimentation/siltation, fragmentation, etc.</i></p> <p>Physical damage is likely to be significant where the boundary of the scheme extends within or is directly adjacent to the boundary of the European site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European site is designated, or where natural processes link the scheme to the site, such as through hydrological connectivity downstream of a scheme, long shore drift along the coast, or the scheme impacts the linking habitat).</p>
Non-physical disturbance: <ul style="list-style-type: none"> <li>• Noise (incl. underwater)</li> <li>• Visual presence</li> <li>• Human presence</li> <li>• Light pollution</li> <li>• Vibration (incl. underwater).</li> </ul>	<p><i>Noise from temporary construction or temporary pumping activities.</i></p> <p>Taking into consideration the noise level generated from general building activity (c. 122dB(A)) and considering the lowest noise level identified in appropriate guidance as likely to cause disturbance to bird species, it is concluded that noise impacts could be significant up to 1km from the boundary of the European site<sup>19</sup>.</p> <p><i>Noise from vehicular traffic during operation of a scheme.</i></p> <p>Noise from construction traffic is only likely to be significant where the transport route to and from the scheme is within 3-5km of the boundary of the European site.</p> <p><i>Plant and personnel involved in in operation of the scheme.</i></p> <p>These effects (noise, visual/human presence) are only likely to be significant where the boundary of the scheme extends within or is directly adjacent to the boundary of the European site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European site is designated).</p> <p><i>Schemes which might include artificial lighting, e.g. for security around a temporary pumping station.</i></p> <p>Effects from light pollution are only likely to be significant where the boundary of the scheme is within 500m of the boundary of the European site.</p> <p><i>Vibration from temporary construction</i></p>

<sup>19</sup> British Standards Institute (BSI) (2009) BS5228 - Noise and Vibration Control on Construction and Open Sites. BSI, London.

<p>Water table/availability:</p> <ul style="list-style-type: none"> <li>• Drying</li> <li>• Flooding / stormwater</li> <li>• Changes to surface water levels and flows including both increases and reductions.</li> <li>• Changes in groundwater levels and flows</li> <li>• Changes to coastal water movement</li> </ul>	<p>From a review of Environment Agency internal guidance on HRA and various websites/sources<sup>20,21,22</sup> it is considered that effects of vibration are more likely to be significant if development is within 500m of a European site.</p> <p><i>Changes to water levels and flows due to increased water abstraction, reduced storage or reduced flow releases from reservoirs to river systems.</i></p> <p>These effects are only likely to be significant where the boundary of the scheme extends within the same ground or surface water catchment as the European site. However, these effects are dependent on hydrological continuity between the scheme and the European site, and sometimes, whether the scheme is up or down stream from the European site.</p>
<p>Toxic contamination:</p> <ul style="list-style-type: none"> <li>• Water pollution</li> <li>• Soil contamination</li> <li>• Air Pollution</li> </ul>	<p><i>Reduced dilution in downstream or receiving waterbodies due to changes in abstraction or reduced compensation flow releases to river systems.</i></p> <p>These effects are only likely to be significant where the boundary of the scheme extends within the same ground or surface water catchment as the European site. However, these effects are dependent on hydrological continuity between the scheme and the European site, and sometimes, whether the scheme is up or down stream from the European site.</p> <p><i>Air emissions associated with plant and vehicular traffic during construction and operation of schemes.</i></p> <p>The effect of dust is only likely to be significant where site is within or in proximity to the boundary of the European site<sup>23,24</sup>. Without mitigation, dust and dirt from the construction site may be transported onto the public road network and then deposited/spread by vehicles on roads up to 500m from large sites, 200m from medium sites, and 50m from small sites as measured from the site exit.</p> <p>Effects of road traffic emissions from the transport route to be taken by the project traffic are only likely to be significant where the protected site falls within 200 metres of the edge of a road affected<sup>25</sup>.</p>
<p>Non-toxic contamination:</p> <ul style="list-style-type: none"> <li>• Nutrient enrichment (e.g. of soils and water)</li> <li>• Algal blooms</li> <li>• Changes in salinity</li> <li>• Changes in water chemistry (e.g. pH, calcium balance etc)</li> <li>• Changes in thermal regime</li> <li>• Changes in turbidity</li> <li>• Changes in sedimentation/silting</li> </ul>	<p><i>Changes to water salinity, nutrient levels, turbidity, thermal regime due to increased water abstraction, storage, or reduced compensation flow releases to river systems.</i></p> <p>These effects are only likely to be significant where the boundary of the scheme extends within the same ground or surface water catchment as the European Site. However, these effects are dependent on hydrological continuity between the scheme and the European site, and sometimes, whether the scheme is up or down stream from the European site.</p>
<p>Biological disturbance:</p> <ul style="list-style-type: none"> <li>• Direct mortality</li> <li>• Changes to habitat availability</li> </ul>	<p><i>Potential for changes to habitat availability, for example reductions in wetted width of rivers leading to desiccation of macrophyte beds due to changes in abstraction or reduced compensation flow releases to river systems. In addition, via removal of vegetation (including hedgerows and</i></p>

<sup>20</sup> Institute of Lighting Professionals (2011) Guidance Notes for the Reduction of Obtrusive Light GN01:2011  
<sup>21</sup> Environment Agency (2013) Bird Disturbance from Flood and Coastal Risk Management Construction Activities. Overarching Interpretive Summary Report. Prepared by Cascade Consulting and Institute of Estuarine and Coastal Studies.  
<sup>22</sup> Cutts N, Hemingway K and Spencer J (2013) The Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning and Construction Projects. Produced by the Institute of Estuarine and Coastal Studies (IECS). Version 3.2.  
<sup>23</sup> Highways Agency (2003) Design Manual for Roads and Bridges (DMRB), Volume 11.  
<sup>24</sup> Institute of Air Quality Management (2014) Guidance on the assessment of dust from demolition and construction v1.1.  
<sup>25</sup> NE Internal Guidance – Approach to Advising Competent Authorities on Road Traffic Emissions and HRAs V1.4 Final - June 2018



<ul style="list-style-type: none"> <li>• Out-competition by non-native species</li> <li>• Selective extraction of species</li> <li>• Introduction of disease</li> <li>• Rapid population fluctuations</li> <li>• Natural succession</li> </ul>	<p><i>trees) used by based as foraging, roosting and hibernation sites and birds as roosting and nesting sites.</i></p> <p><i>Creation of new pathway of non-native invasive species.</i>        This effect is only likely to be significant where the scheme is situated within the European site or an upstream tributary of the European site (or affects groundwater levels supporting these sites or tributaries)</p> <p><i>Entrapment during in-river or terrestrial construction works causing injury and/or mortality of mobile species</i>        Likely to be a risk of entrapment, injury and/or mortality where the boundary of the option extends within or is directly adjacent to the boundary of a European site or within/adjacent to offsite functionally linked habitat. Mobile species could include fish, bats and European otters for example.</p> <p><i>Potential for changes to habitat availability via removal of vegetation (including hedgerows and trees) to facilitate construction activities and potential entrapment, injury and/or mortality of breeding birds and roosting/hibernating bats.</i>        This effect is dependent on the requirement to remove vegetation (if it cannot be avoided), ecological surveys to determine species presence and timing of removal based on species specific ecological considerations.</p>
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As described in Section 1.3, environmental assessment reports have been prepared for the drought permit options and include consideration of potential impacts on European sites (see **Table 1.4**). It is noted that the Environmental Assessment Reports were prepared with information and data available at the time of writing, and are to be reviewed and updated periodically to incorporate any changes to the baseline and any resulting implications for the impact assessment. Where particular issues have been raised during consultation with environmental regulators for a specific drought permit option, this is described in the relevant HRA screening table (see Section 3).

Where an Environmental Report has not been prepared for the drought option (i.e. supply side options), screening for likely significant effects has been determined on a proximity basis. European site(s) that are within 10km of the drought option location were identified and included in the HRA screening assessment.

Consideration was also given to the relative locations of drought option sites and designated sites within the same surface and groundwater catchments (where this information was available) to ensure that any connectivity over a longer distance than the 10km screening distance that might affect water-dependent sites was taken into account. For groundwater supply side options, where the zone of hydrological influence has not been defined, the SPZ has been used to inform the assessment (where SPZs have been defined and noting that a SPZ does not constitute hydrological zone of influence *per se*). The available information on the hydrological influence of each option has been summarised in the assessment table (**Tables 3.1 and 3.3**).

Information and assessments from the Environment Agency Review of Consents has also been used to inform the assessment. This is particularly applicable to supply side drought options (which are all operations within existing licensed abstraction limits). The Review of Consents has also informed the assessment for drought permit options. It should be noted, however, that the Review of Consents was carried out on those options in line with normal licensed operating conditions, and that drought permit options constitute a modification to an existing licence.

Construction phase and operational phase impacts were reviewed and assessed. Most of the drought permit options reviewed comprise a change to an existing abstraction licence, with little or no requirement for additional infrastructure, and as such, few of these options can be considered to have a 'construction' phase.

The HRA Screening process has been undertaken using professional judgement taking into account potential extent, complexity, duration, frequency, reversibility and probability of impacts.

Where uncertainty remains, and it cannot be concluded that the drought option is not likely to have significant effects on the qualifying features of a European site, the drought option is taken forward to Stage 2 which requires a full Appropriate Assessment of that option to be undertaken.

## 2.4 Review of Potential In-Combination Effects

The assessments of cumulative, or in-combination, effects have been informed by drought management option forms documented by UU in its Statutory Drought Plan. Mapping of the locations of the drought options, surface water catchments and groundwater catchments has been used to inform these assessments. Where information from the Environment Agency Review of Consents is available for an abstraction licence, this has also been used to inform the in-combination assessment, noting however, that the Review of Consents was carried out on those options in line with normal licensed operating conditions, and that drought permit options constitute a modification to an existing licence.

The potential for cumulative, or in-combination, effects has considered the following:

1. Assessment of the cumulative impacts of the drought option with UU's existing abstraction licences that operate within the zone of influence of the drought option, and other abstraction and discharge consents, as identified in the Environment Agency Review of Consents reports.
2. Assessment of cumulative impacts of the drought option with other UU supply side and drought permit options (including both intra- and inter- zone options).

Demand management measures serve to reduce pressure on water resources and will have a positive influence on both supply side and drought permit options (by reducing the demand for water and reducing abstraction at source). Therefore, demand management measures have not been included in the in-combination assessment for each supply side and drought permit option, but it is acknowledged that they will have a net positive effect by reducing pressure on water resources. The findings of the assessment are described in Section 3.1.

Consideration has been made of the potential for cumulative impacts of UU's Drought Plan with other plans and projects. Guidance<sup>26</sup> states *"It should be possible to identify the other plans or projects in a targeted way; not trawling for every conceivable plan or project, whilst identifying all the relevant ones. To be relevant to the in combination effect the residual effects of other plans or projects will need to either make the unlikely effects of the subject plan likely, or insignificant effects of the plan significant, or both."*

In accordance with this guidance, other plans and projects of relevance have been considered when undertaking the in combination effects with UU's drought options. Plans cited in the guidance have been considered but it has been concluded that they are not relevant. Such plans, e.g. strategic policies and Local Development Plans which determine potential 'end of pipe' demand are considered to be an issue that relates to wider water resource planning and UU's WRMP rather than UU's Drought Plan.

Assessment of cumulative impacts with UU's WRMP schemes which are scheduled to be implemented and become operational within the time period of the Drought Plan has been undertaken (see Section 3.2.1).

Consideration has also been made of the potential for cumulative impacts of UU's Drought Plan with drought options from other neighbouring water company Drought Plans and Environment Agency/NRW Drought Plans to occur. This has included the review of drought options from neighbouring water

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<sup>26</sup> Tyldesley, D. & Chapman, C. (2013) The Habitats Regulations Assessment Handbook, November 2020 edition UK: DTA Publications Limited.

company drought plans to identify any drought options within the zone of influence of any of UU's drought options. National Policy Statements were also reviewed. The findings of the assessment are described in Section 3.2.

It is noted that there may be cumulative, or in-combination site specific issues with particular drought options which may not be foreseen, for example, other future development projects at, or in the vicinity of specific sites. Such future projects are difficult to define at the time of undertaking HRA Screening of the Drought Plan, due to the uncertainty or timing of implementation, and assessment of these cumulative, or in-combination effects has not been undertaken. For drought permit options, these issues will be investigated at the time of any future drought permit application, both as part of Environmental Assessments prepared in support of the application, and by the Environment Agency/Welsh Ministers when determining the application.

## 3 HRA Screening Findings for Drought Options

### 3.1 HRA Screening of Statutory Drought Plan

The assessments of potential impacts for the drought options that were proposed for inclusion in UU's Revised Draft Drought Plan 2022 are presented in **Tables 3.1, 3.2 and 3.3** for supply side options, demand side options and drought permit options, respectively.

Where applicable, drought options are presented for each resource zone. The European sites, their qualifying features and approximate distance from the drought options are provided in **Tables 3.1 to 3.3**. Within each of the tables, the following questions posed are answered by following the approach described in Section 2:

**Is scheme likely to have a significant effect on European site(s) alone?** – this relates to the specific UU drought option assessed (see Section 2.3).

**Effect in combination with existing consents?** – this relates to the specific UU drought option assessed in combination with UU's existing abstraction licences that operate within the zone of influence of the drought option, and other abstraction and discharge consents (see Section 2.4, bullet 1.)

**Effect in combination with other drought options?** - this relates to the specific UU drought option assessed in combination with other UU supply side and drought permit options (including both intra- and inter- zone options) (see Section 2.4, bullet 2.)

**Table 3.1 Habitats Regulations Screening of supply side drought options**

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
<b>Strategic Resource Zone</b>						
None						
<b>Carlisle Resource Zone</b>						
Castle Carrock reservoir, dead-water storage	North Pennine Moors SAC (1km NE)	<p><b>4030 European dry heaths</b></p> <p>The North Pennine Moors (along with the North York Moors) hold much of the upland heathland of northern England. At higher altitudes and to the wetter west and north of the site complex, the heaths grade into extensive areas of <b>7130 blanket bogs</b>. The most abundant heath communities are H9 <i>Calluna vulgaris</i> – <i>Deschampsia flexuosa</i> heath and H12 <i>Calluna vulgaris</i> – <i>Vaccinium myrtillus</i> heath. There are also examples of H18 <i>Vaccinium myrtillus</i> – <i>Deschampsia flexuosa</i>, H10 <i>Calluna vulgaris</i> – <i>Erica cinerea</i> and H21 <i>Calluna vulgaris</i> – <i>Vaccinium myrtillus</i> – <i>Sphagnum capillifolium</i> heaths.</p> <p><b>5130 Juniperus communis formations on heaths or calcareous grasslands</b></p> <p>The North Pennine Moors includes one major stand of juniper scrub in Swaledale as well as a number of small and isolated localities. The Swaledale site grades into heathland and bracken <i>Pteridium aquilinum</i> but the core area of juniper is of W19 <i>Juniperus communis</i> – <i>Oxalis acetosella</i> woodland with scattered rowan <i>Sorbus aucuparia</i> and birch <i>Betula</i> spp.</p> <p><b>7130 Blanket bogs</b></p> <p>The North Pennine Moors hold the major area of blanket bog in England. A significant proportion remains active with accumulating peat, although these areas are often bounded by sizeable zones of currently non-active bog, albeit on deep peat. The main NVC type is M19 <i>Calluna vulgaris</i> – <i>Eriophorum vaginatum</i> blanket mire, but there is also representation of M18 <i>Erica tetralix</i> – <i>Sphagnum papillosum</i> blanket mire and some western localities support M17 <i>Scirpus cespitosus</i> – <i>Eriophorum vaginatum</i> blanket mire. Forms of M20 <i>Eriophorum vaginatum</i> blanket mire predominate on many areas of non-active bog.</p> <p><b>7220 Petrifying springs with tufa formation (Cratoneurion)</b></p> <p>The petrifying spring's habitat is very localised in occurrence within the North Pennine Moors, but where it does occur it is species-rich with abundant bryophytes, sedges and herbs including bird's-eye primrose <i>Primula farinosa</i> and marsh valerian <i>Valeriana dioica</i>.</p> <p><b>8220 Siliceous rocky slopes with chasmophytic vegetation</b></p> <p>Acidic rock outcrops and screes are well-scattered across the North Pennine Moors and support vegetation typical of Siliceous rocky slopes with chasmophytic vegetation in England, including a range of lichens and bryophytes, such as <i>Racomitrium lanuginosum</i>, and species like stiff sedge <i>Carex bigelowii</i> and fir clubmoss <i>Huperzia selago</i>.</p> <p><b>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</b></p> <p>Birk Gill Wood is an example of old sessile oak woods well to the east of the habitat's main distribution in the UK. However, this sheltered river valley shows the characteristic rich bryophyte and lichen communities of the type under a canopy of oak, birch <i>Betula</i> sp. and rowan <i>Sorbus aucuparia</i>. The slopes are boulder-strewn, with mixtures</p>	<p>Castle Carrock is an offline storage reservoir which is filled using the abstraction from the River Gelt. The drought option comprises abstraction of the deadwater from Castle Carrock only (i.e. water that is not normally available/accessible for abstraction). The reservoir has no compensation flow and no statutory releases would be put at risk. No further abstraction licence or licence change would be required and no reduction to the hands off flow for this abstraction is proposed.</p> <p>Minor construction work will be required to bring the source online as a drought option. Construction works will take approximately 3 months to complete. It will be necessary to construct a concrete base for a pre-fabricated filtration plant and M&amp;E building (~3mx4m) including access track. An acid rig will then be installed, including tapping into existing pipework. A mobile crane and excavator will be on-site for 1 and 3 weeks respectively. This phase will require 18 HGV deliveries, general construction traffic movements of 4 trips per day for 4 weeks.</p> <p>Phase 2 will involve construction of a concrete base and temporary building (~3mx4m), including access track, and installation of pump-sets/M&amp;E, including tapping into existing pipework. A mobile crane and excavator will be on-site for a period of 1 week. This phase will require 7 HGV deliveries, general construction traffic movements of 4 trips per day for 2 weeks. This option will involve on-site chemical storage.</p> <p>There will be no loss of designated habitat due to the scheme as the construction footprint does not overlap any designated sites. Given the distance between drought option site and the North Pennine Moors SAC and River Eden SAC designated sites, the potential for impacts from noise, dust or chemical leak is considered negligible.</p> <p>Transport will utilise the existing road network, however, the increase in vehicle numbers required for the construction of the scheme is considered to be negligible, and will be for a temporary period. Therefore, construction vehicle movements are not likely to have significant effects on the qualifying features of the various designated sites.</p> <p>The Review of Consents for the North Pennine Moors SAC and North Pennine Moors SPA concluded that there was no adverse impact of this licence on the integrity of these sites (both alone and in combination). As the drought option would operate under the terms of the existing licence, no likely significant effects of the operation of the drought option on this site are anticipated, either alone or in combination.</p> <p>The River Eden Review of Consents assessed that the River Gelt abstraction system did have an adverse impact on the integrity of the River Eden SAC and licence changes were implemented including the introduction of hands off flows. The drought option involves abstraction of deadwater from Castle Carrock Reservoir only (which is not part of the designated area), and is not dependant on abstraction from the river i.e. the reservoir can be drawn down even if there is no abstraction from the river. As such, there are no likely significant effects on the designated features of the River Eden SAC.</p>	No	No	No

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		<p>of heather <i>Calluna vulgaris</i>, bilberry <i>Vaccinium myrtillus</i> and moss carpets in the ground flora.</p> <p><b>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></b> (qualifying feature but not primary reason for selection)</p> <p><b>6130 Calaminarian grasslands of the <i>Violetalia calaminariae</i></b> (qualifying feature but not primary reason for selection)</p> <p><b>6150 Siliceous alpine and boreal grasslands</b> (qualifying feature but not primary reason for selection)</p> <p><b>6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco-Brometalia</i>)</b> (qualifying feature but not primary reason for selection)</p> <p><b>7230 Alkaline fens</b> (qualifying feature but not primary reason for selection)</p> <p><b>8110 Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)</b> (qualifying feature but not primary reason for selection)</p> <p><b>8210 Calcareous rocky slopes with chasmophytic vegetation</b> (qualifying feature but not primary reason for selection)</p> <p><b>1528 Marsh saxifrage (<i>Saxifraga hirculus</i>)</b> (qualifying feature but not primary reason for selection)</p>				
	River Eden SAC (1km NE)	<p><b>Primary Habitats and Species</b></p> <p><b>3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i></b> – Ullswater is the second largest lake in Cumbria and is an example of a relatively deep lake with both oligotrophic and mesotrophic flora and fauna species. The lake has an extremely rich aquatic flora, including eight species of <i>Potamogeton</i>. These include various-leaved pondweed (<i>P. gramineus</i>), red pondweed (<i>P. alpinus</i>) and long-stalked pondweed (<i>P. praelongus</i>). The nationally scarce six-stamened waterwort (<i>Elatine hexandra</i>) is also found in some of the bays. One of the few populations of powan (<i>Coregonus lavaretus</i>) in the UK is supported by Ullswater.</p> <p><b>3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation</b> - The River Eden flows over both calcareous limestone and sandstone, which creates a wide diversity of ecological conditions, ranging from oligotrophic to mesotrophic. This river has 184 recorded plant species, more than any other river in the UK. Species of the river system include stream water-crowfoot (<i>Ranunculus penicillatus</i> ssp. <i>Penicillatus</i>) and others, such as <i>R. penicillatus</i> ssp. <i>pseudofluitans</i> and river water-crowfoot (<i>R. fluitans</i>).</p> <p><b>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)* Priority feature</b> – Along the length of the River Eden, stands of alder (<i>Alnus glutinosa</i>) and willow (<i>Salix</i> spp.) can be found, associated with backwaters and seasonally-flooded channels. Ground flora includes common nettle (<i>Urtica dioica</i>), butterbur (<i>Petasites hybridus</i>) and hogweed (<i>Heracleum sphondylium</i>) that grade into hollows with greater tussock-sedge (<i>Carex paniculata</i>).</p> <p><b>1092 White-clawed (or Atlantic stream) crayfish (<i>Austropotamobius pallipes</i>)</b> – High water quality in the</p>		No	No	No

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		<p>River Eden allows it to support a large population of White-clawed crayfish.</p> <p><b>1095 Sea lamprey (<i>Petromyzon marinus</i>) 1096 Brook lamprey (<i>Lampetra planeri</i>)</b></p> <p><b>1099 River lamprey (<i>Lampetra fluviatilis</i>) -</b></p> <p>An extensive river system on a varied and base-rich geology with highly erodible rock results in extensive areas of gravel and finer silts being deposited throughout the system, which provide suitable conditions for spawning and nursery areas, supporting a large population of Sea, Brook and River lamprey.</p> <p><b>1106 Atlantic salmon (<i>Salmo salar</i>)</b></p> <p>The large river system flowing over varied, base-rich geology, coupled with a large range in altitude, results in the development of distinct habitat types, supporting diverse plant and invertebrate communities. The high ecological value of the River Eden across a large area of the catchment means a high population of salmon can be supported.</p> <p><b>1163 Bullhead (<i>Cottus gobio</i>)</b> – The River Eden is relatively unmodified; in the northern part of its range, with extensive areas of gravel and generally good water quality across the catchment, providing good habitat for bullheads.</p> <p><b>1355 Otter (<i>Lutra lutra</i>)</b> – The River Eden is an example of a lowland otter habitats in north-west England.</p>				
	North Pennine Moors SPA (2.2km E)	<p><b>Article 4.1</b></p> <p>During the breeding season the area regularly supports:</p> <p>Hen harrier <i>Circus cyaneus</i> (2.2% of GB breeding population)</p> <p>Merlin <i>Falco columbarius</i> (10.5% of GB breeding population)</p> <p>Peregrine falcon <i>Falco peregrinus</i> (1.3% of GB breeding population)</p> <p>Golden plover <i>Pluvialis apricaria</i> (6.2% of GB breeding population)</p>		No	No	No
<b>North Eden Resource Zone</b>						
None						



**Table 3.2 Habitats Regulations Screening of demand side drought options**

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
<b>All Resource Zones</b>						
Drought Publicity	None	-	None – drought publicity includes increased water efficiency messages via increased customer communications.  No impacts on designated sites are anticipated, other than to acknowledge that decreased consumer demand will have a net positive effect in combination with existing abstraction and/or drought option sites that have the potential to impact European sites due to reduced pressure on water resources and reduced abstraction at source.	No	No	No
Enhanced leakage detection and repair activity	None	-	None - it is envisaged that leakage detection and repair schemes will largely be undertaken primarily in urban areas.  No impacts on designated sites are anticipated, other than to acknowledge that decreased consumer demand will have a net positive effect in combination with existing abstraction and/or drought option sites that have the potential to impact European sites due to reduced pressure on water resources and reduced abstraction at source.	No	No	No
Campaign for voluntary water use restraint	None	-	None – restrictions on consumer water use are demand management measures and as such, are not anticipated to have impacts on European designated sites. It is acknowledged that decreased consumer demand will have a net positive effect in combination with existing abstraction and/or drought option sites that have the potential to impact European sites, due to reduced pressure on water resources and reduced abstraction at source.	No	No	No
Temporary Use Ban (TUB)	None	-	None – Temporary Use Ban are demand management measures and as such are not anticipated to have impacts on European designated sites. It is acknowledged that decreased consumer demand will have a net positive effect in combination with existing abstraction and/or drought option sites that have the potential to impact European sites due to reduced pressure on water resources and reduced abstraction at source.	No	No	No
Ordinary Drought Order (Non-Essential Use Ban)	None	-	None – Ordinary Drought Orders are demand management measures and as such are not anticipated to have impacts on European designated sites. It is acknowledged that decreased consumer demand will have a net positive effect in combination with existing abstraction and/or drought option sites that have the potential to impact European sites due to reduced pressure on water resources and reduced abstraction at source.	No	No	No
Pressure management	None	-	None – Pressure Management is a demand management measure and as such are not anticipated to have impacts on European designated sites. It is acknowledged that decreased consumer demand will have a net positive effect in combination with existing abstraction and/or drought option sites that have the potential to impact European sites due to reduced pressure on water resources and reduced abstraction at source.	No	No	No



**Table 3.3 Habitats Regulations Screening of drought permit options**

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
<b>Strategic Resource Zone</b>						
Delph Reservoir	None	-	An Environmental Report has been prepared in 2021 for the drought option for drought contingency planning purposes. The report confirms that there are no European sites within the zone of influence of the scheme.	No	No	No
Dovestone Reservoir	Rochdale Canal SAC	<b>Primary Habitats and Species</b> <b>1831 Floating water-plantain <i>Luronium natans</i></b> – The canal has predominantly mesotrophic water and supports a large population of floating water-plantain within a diverse waterplant community containing a wide range of other species such as pondweeds ( <i>Potamogeton spp.</i> ).	There is no construction phase associated with this drought option.  An Environmental Report has been prepared in 2021 for the drought option for drought contingency planning purposes. No adverse operational impacts on the Rochdale Canal SAC were reported. Therefore, no likely significant effects of the operation of the drought option on this site are anticipated, either alone or in combination.	No	No	No
Fernilee Reservoir	None	-	An Environmental Report has been prepared in 2021 for the drought option for drought contingency planning purposes. The report confirms that there are no European sites within the zone of influence of the scheme.	No	No	No
Longdendale Reservoirs	South Pennine Moors SAC	<b>4030 European dry heaths</b>  The site is representative of upland dry heath at the southern end of the Pennine range, the habitat's most south-easterly upland location in the UK. Dry heath covers extensive areas, occupies the lower slopes of the moors on mineral soils or where peat is thin, and occurs in transitions to acid grassland, wet heath and <b>7130 blanket bogs</b> . The upland heath of the South Pennines is strongly dominated by heather <i>Calluna vulgaris</i> . Its main NVC types are H9 <i>Calluna vulgaris</i> – <i>Deschampsia flexuosa</i> heath and H12 <i>Calluna vulgaris</i> – <i>Vaccinium myrtillus</i> heath. More rarely H8 <i>Calluna vulgaris</i> – <i>Ulex gallii</i> heath and H10 <i>Calluna vulgaris</i> – <i>Erica cinerea</i> heath are found. On the higher, more exposed ground H18 <i>Vaccinium myrtillus</i> – <i>Deschampsia flexuosa</i> heath becomes more prominent. In the cloughs, or valleys, which extend into the heather moorlands, a greater mix of dwarf shrubs can be found together with more lichens and mosses. The moors support a rich invertebrate fauna, especially moths, and important bird assemblages.  <b>7130 Blanket bogs (* if active bog) * Priority feature</b>  This site represents <b>blanket bog</b> in the south Pennines, the most south-easterly occurrence of the habitat in Europe. The bog vegetation communities are botanically poor. Hare's-tail cottongrass <i>Eriophorum vaginatum</i> is often overwhelmingly dominant and the usual bog-building <i>Sphagnum</i> mosses are scarce. Where the blanket peats are slightly drier, heather <i>Calluna vulgaris</i> , crowberry <i>Empetrum nigrum</i> and bilberry <i>Vaccinium myrtillus</i> become more prominent. The uncommon cloudberry <i>Rubus chamaemorus</i> is locally abundant in bog vegetation. Bog pools provide diversity and are often characterised by common cottongrass <i>E. angustifolium</i> . Substantial areas of the bog surface are eroding, and there are extensive areas of bare peat. In some areas erosion may be a natural process reflecting the great age (9000 years) of the south Pennine peats.  <b>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</b>  Around the fringes of the upland heath and bog of the south Pennines are blocks of <b>old sessile oak woods</b> , usually on slopes. These tend to be dryer than those further north and west, such that the bryophyte communities are less developed (although this lowered diversity may in some instances have been exaggerated by the effects of 19 <sup>th</sup> century air pollution). Other components of the ground flora such as grasses, dwarf shrubs and ferns are common. Small areas of alder woodland along stream-sides add to the overall richness of the woods.	There is no construction phase associated with this drought option.  An Environmental Report has been prepared in 2021 for the drought option for drought contingency planning purposes. No adverse operational impacts on the South Pennine Moors SAC were reported. Therefore, no likely significant effects of the operation of the drought option on this site are anticipated, either alone or in combination.	No	No	No

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
Jumbles Reservoir	None	-	An Environmental Report has been prepared in 2021 for the drought option for drought contingency planning purposes. The report confirms that there are no European sites within the zone of influence of the scheme.	No	No	No
River Lune LCUS abstraction	Morecambe Bay SAC	<p><b>Primary Habitats and Species</b></p> <p><b>1130 Estuaries</b></p> <p><b>1140 Mudflats and sandflats not covered by seawater at low tide</b></p> <p><b>1160 Large shallow inlets and bays</b></p> <p><b>1170 Reefs</b></p> <p><b>1220 Perennial vegetation of stony banks</b></p> <p><b>1310 Salicornia and other annuals colonising mud and sand</b></p> <p><b>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)</b></p> <p><b>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes')</b>. In some areas, transitions to <b>2010 Embryonic Shifting Dunes</b> are observed.</p> <p><b>2130 Fixed dunes with herbaceous vegetation ('grey dunes') * Priority feature – 2190 Humid dune slacks 1166 Great crested newt <i>Triturus cristatus</i></b></p> <p><b>Qualifying Features</b></p> <p><b>1110 Sandbanks which are slightly covered by sea water all the time</b></p> <p><b>1150 Coastal lagoons* Priority feature</b></p> <p><b>1170 Reefs</b></p> <p><b>2110 Embryonic shifting dunes</b></p> <p><b>2150 Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)* Priority feature</b></p> <p><b>2170 Dunes with <i>Salix repens ssp. Argentea (Salicion arenariae)</i></b></p>	<p>There is no construction phase associated with this drought option.</p> <p>The River Lune is one of the five major fresh water sources to Morecambe Bay which also include the Rivers Leven, Kent, Keer and Wyre. It is noted that the River Lune was not considered within the Environment Agency's Review of Consents process. It is acknowledged that the Review of Consents was carried out on the existing licence and not the drought option proposed.</p> <p>An Environmental Assessment Report has been prepared for the drought option for drought contingency planning purposes in 2021. The report concluded no adverse operational impacts on the Morecambe Bay SAC/SPA. Therefore, no likely significant effects of the operation of the drought option on this site are anticipated, either alone or in combination.</p>	No	No	No
	Morecambe Bay SPA	<p><b>Article 4.1</b></p> <p>Over winter the site supports Bar-tailed godwit (<i>Limosa lapponica</i>) and Golden plover (<i>Pluvialis apricaria</i>). During breeding season the site supports Little tern (<i>Sterna albifrons</i>) and Sandwich tern (<i>Sterna sandvicensis</i>).</p> <p><b>Article 4.2</b></p> <p>Over winter the site supports Curlew (<i>Numenius arquata</i>), Dunlin (<i>Calidris alpina alpina</i>), Grey plover (<i>Pluvialis squatarola</i>), Knot (<i>Calidris canutus</i>), Oystercatcher (<i>Haematopus ostralegus</i>), Pink-footed goose (<i>Anser brachyrhynchus</i>), Pintail (<i>Anas acuta</i>), Redshank (<i>Tringa tetanus</i>), Shelduck (<i>Tadorna tadorna</i>) and Turnstone (<i>Arenaria interpres</i>) and on passage <i>Ringed plover</i> (<i>Charadrius hiaticula</i>) and <i>Sanderling</i> (<i>Calidris alba</i>). During breeding season the site supports Herring gull (<i>Larus argentatus</i>) and Lesser black-backed gull (<i>Larus fuscus</i>). The site regularly supports important assemblages of at least 20,000 waterfowl and 20,000 seabirds.</p>		No	No	No
	Morecambe Bay Ramsar	<p><b>Ramsar Criterion 4</b></p> <p>Over winter, the site supports a large waterfowl assemblage of international importance.</p> <p><b>Ramsar Criterion 5</b></p>		No	No	No

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		Over winter, the site supports a large waterfowl assemblage of international importance. <b>Ramsar Criterion 6</b> The site supports a variety of species/populations occurring at levels of international importance.				
Rivington Reservoirs – Brinscall Brook	None	-	An Environmental Report has been prepared in 2021 for the drought option for drought contingency planning purposes. The report confirms that there are no European sites within the zone of influence of the scheme.	No	No	No
Rivington Reservoirs – White Coppice	None	-	An Environmental Report has been prepared in 2021 for the drought option for drought contingency planning purposes. The report confirms that there are no European sites within the zone of influence of the scheme.	No	No	No
Ullswater	River Eden SAC	<b>Primary Habitats and Species</b> <b>3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea –</b> Ullswater is the second largest lake in Cumbria and is an example of a relatively deep lake with both oligotrophic and mesotrophic flora and fauna species. <b>3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation –</b> The River Eden flows over both calcareous limestone and sandstone, which creates a wide diversity of ecological conditions, ranging from oligotrophic to mesotrophic. <b>91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* Priority feature</b> <b>1092 White-clawed (or Atlantic stream) crayfish (Austropotamobius pallipes) –</b> High water quality in the River Eden allows it to support a large population of White-clawed crayfish. <b>1095 Sea lamprey (Petromyzon marinus) 1096 Brook lamprey (Lampetra planeri)</b> <b>1099 River lamprey (Lampetra fluviatilis)</b> <b>1106 Atlantic salmon (Salmo salar)</b> <b>1163 Bullhead (Cottus gobio) –1355 Otter (Lutra lutra)</b>	The River Eamont is a major tributary of the River Eden. An Environmental Assessment Report has been prepared in 2021 for drought contingency planning at Ullswater and includes an assessment of the hydrological, water quality and ecological impacts of the drought option.  The assessment has concluded that there is a negligible impact on lake level and a negligible impact on river flows as a result of implementing the drought permit. Consequently, there are negligible impacts on the physical environment of the river, including water quality.  The assessment concluded that the impacts of drought permit implementation on upstream migration of adult salmon and sea trout are negligible. No changes in river flows in the River Eamont are predicted.  Therefore, no likely significant effects of the operation of the drought option on these sites are anticipated, either alone or in combination.	No	No	No
Lake Vyrnwy	Severn Estuary SAC	<b>Primary Habitats and Species</b> <b>1130 Estuaries</b> <b>1140 Mudflats and sandflats not covered by seawater at low tide</b> <b>1330 Atlantic salt meadows (Glaucopuccinellietalia maritima)</b> <b>1095 Sea lamprey (Petromyzon marinus)</b> <b>1099 River lamprey (Lampetra fluviatilis)</b> <b>1103 Twaite shad (Alosa fallax)</b> <b>Qualifying Features</b> <b>1110 Sandbanks which are slightly covered by sea water all the time</b> <b>1170 Reefs</b>	There is no construction phase associated with this drought option.  An Environmental Report has been prepared in 2020 for the drought option for drought contingency planning purposes. No adverse impacts on the Severn Estuary SAC or SPA were reported.  The Environment Agency has confirmed that the Vyrnwy abstraction was scoped out of the Review of Consents before Stage 3 (although it is noted that the Review of Consents was carried out on the existing abstraction licence, and not the drought option).  The Vyrnwy Aqueduct on the Montgomery Canal is the aqueduct that carries the canal over the River Vyrnwy and belongs to British Waterways. This is distinct from the aqueduct which transfers raw water from Vyrnwy to UU's Oswestry water treatment works. The Vyrnwy Aqueduct on the Montgomery Canal conveys the canal over the River Vyrnwy. Information from Canal & Rivers Trust is that the Montgomery Canal is fed indirectly by the Llangollen Canal via Frankton Locks; by controlled feeds from the River Severn at Penarth (upstream of the confluence with the River Vyrnwy), the River Morda at Maesbury Mill, the River Tanat just upstream of Carreghofa Locks and the Lledan Brook at Welshpool; and an uncontrolled feed at Rednal Moss near Aston. There is no connectivity of the Montgomery Canal with UU's Vyrnwy Reservoir, UU's Vyrnwy aqueduct or the Afon Vyrnwy.	No	No	No
	Severn Estuary SPA	<b>Article 4.1</b> Over winter the area supports Bewick's swan ( <i>Cygnus columbianus bewickii</i> ). <b>Article 4.2</b>	The findings of the Environmental Report confirm that the operation of the drought option will not result in likely significant effects on the SACs, SPAs or Ramsar sites identified (either alone or in	No	No	No

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		Over winter the area supports Curlew ( <i>Numenius arquata</i> ), Dunlin ( <i>Calidris alpina alpina</i> ), Pintail ( <i>Anas acuta</i> ), Redshank ( <i>Tringa tetanus</i> ), Shelduck ( <i>Tadorna tadorna</i> ) and on passage Ringed Plover ( <i>Charadrius hiaticula</i> ). The site regularly supports an important assemblage of at least 20,000 waterfowl.	combination).			
	Severn Estuary Ramsar	<p><b>Ramsar Criterion 1</b></p> <p>Due to immense tidal range (second-largest in world), this affects both the physical environment and biological communities.</p> <p><b>Ramsar Criterion 3</b></p> <p>Due to unusual estuarine communities, reduced diversity and high productivity.</p> <p><b>Ramsar Criterion 4</b></p> <p>This site is important for the run of migratory fish between sea and river via estuary.</p> <p><b>Ramsar Criterion 5</b></p> <p>Over winter, the site supports a large waterfowl assemblage of international importance</p> <p><b>Ramsar Criterion 6</b></p> <p>The site supports a variety of species/populations occurring at levels of international importance.</p>		No	No	No
	Berwyn and South Clwyd Mountains SAC	<p><b>Primary Habitats and Species</b></p> <p><b>4030 European dry heaths</b> – Berwyn contains the largest stands of upland European dry heath in Wales.</p> <p><b>7130 Blanket bogs*</b><i>Priority feature</i> – Berwyn supports the most extensive tract of near-natural blanket bog in Wales.</p> <p><b>Qualifying Features</b></p> <p><b>6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia)</b></p> <p><b>7140 Transition mires and quaking bogs</b></p> <p><b>8120 Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)</b></p> <p><b>8210 Calcareous rocky slopes with chasmophytic vegetation</b></p>		No	No	No
	Berwyn SPA	<p><b>Article 4.1</b></p> <p>During the breeding season, the site regularly supports <i>Circus cyaneus</i>, <i>Falco columbarius</i>, <i>Falco peregrinus</i>, and <i>Milvus milvus</i>.</p>		No	No	No
	Montgomery Canal SAC	<p><b>Primary Species</b></p> <p><b>1831 Floating water-plantain <i>Luronium natans</i></b> – This is the largest and the most extensive population of floating water-plantain <i>Luronium natans</i> in Britain and is a highly significant lowland population. In favourable management conditions the species can be dominant over kilometre lengths of canal, carpeting the shallow bed and flowering and setting seed in abundance. This is a semi-natural population, having colonised from drift material or seed but needing periodic human disturbance for continued growth; in this respect the canal is a substitute for the species' former slow-moving, mesotrophic river niche, which has been largely destroyed in lowland Britain.</p>		No	No	No

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
Lake Windermere	Morecambe Bay SAC	<p><b>Primary Habitats and Species</b></p> <p><b>1130 Estuaries</b></p> <p><b>1140 Mudflats and sandflats not covered by seawater at low tide</b></p> <p><b>1160 Large shallow inlets and bays</b></p> <p><b>1170 Reefs</b></p> <p><b>1220 Perennial vegetation of stony banks</b></p> <p><b>1310 Salicornia and other annuals colonising mud and sand</b></p> <p><b>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)</b></p> <p><b>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes')</b>. In some areas, transitions to <b>2010 Embryonic Shifting Dunes</b> are observed.</p> <p><b>2130 Fixed dunes with herbaceous vegetation ('grey dunes') * Priority feature – 2190 Humid dune slacks 1166 Great crested newt <i>Triturus cristatus</i></b></p> <p><b>Qualifying Features</b></p> <p><b>1110 Sandbanks which are slightly covered by sea water all the time</b></p> <p><b>1150 Coastal lagoons* Priority feature</b></p> <p><b>1170 Reefs</b></p> <p><b>2110 Embryonic shifting dunes</b></p> <p><b>2150 Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)* Priority feature</b></p> <p><b>2170 Dunes with <i>Salix repens ssp. Argentea</i> (<i>Salicion arenariae</i>)</b></p>	<p>There is no construction phase associated with this drought option.</p> <p>The River Leven flows from the southern edge of Windermere for 5km to its tidal limit at Low Wood Bridge and then into Morecambe Bay. An Environmental Assessment Report has been prepared for drought contingency planning for the drought option at Lake Windermere, and includes an assessment of the hydrological, water quality and ecological impacts of the scenarios. The drought option at Windermere includes a reduction in hands-off flow conditions to a minimum of 95 Ml/d and relaxes the 12-month rolling abstraction licence limit. During periods of low level, releases to the River Leven would be made by the EA through their fisheries sluice depending on the prevailing requirements of the river.</p> <p>An Environmental Assessment Report has been prepared for the drought option for drought contingency planning purposes in 2021. The hydrological influence of the drought option on the Morecambe Bay SAC, SPA and Ramsar are likely to be insignificant given the relative volumes of water involved and the large attenuation volumes available in Morecambe Bay. Discussions with the Environment Agency and Natural England confirmed this conclusion. In addition, it is noted that the site is primarily designated for features of interest associated with coastal habitats alone. Therefore, no likely significant effects of the operation of the drought option on these sites are anticipated, either alone or in combination.</p> <p>Roudsea Wood and Mosses SAC is situated adjacent to the River Leven at the head of the estuary near Morecambe Bay. Given the impacts on hydrology and hydromorphology are negligible, no likely significant effects of the operation of the drought option on these sites are anticipated, either alone or in combination.</p>	No	No	No
	Morecambe Bay SPA	<p><b>Article 4.1</b></p> <p>Over winter the site supports Bar-tailed godwit (<i>Limosa lapponica</i>) and Golden plover (<i>Pluvialis apricaria</i>). During breeding season the site supports Little tern (<i>Sterna albifrons</i>) and Sandwich tern (<i>Sterna sandvicensis</i>).</p> <p><b>Article 4.2</b></p> <p>Over winter the site supports Curlew (<i>Numenius arquata</i>), Dunlin (<i>Calidris alpina alpina</i>), Grey plover (<i>Pluvialis squatarola</i>), Knot (<i>Calidris canutus</i>), Oystercatcher (<i>Haematopus ostralegus</i>), Pink-footed goose (<i>Anser brachyrhynchus</i>), Pintail (<i>Anas acuta</i>), Redshank (<i>Tringa tetanus</i>), Shelduck (<i>Tadorna tadorna</i>) and Turnstone (<i>Arenaria interpres</i>) and on passage Ringed plover (<i>Charadrius hiaticula</i>) and Sanderling (<i>Calidris alba</i>). During breeding season the site supports Herring gull (<i>Larus argentatus</i>) and Lesser black-backed gull (<i>Larus fuscus</i>). The site regularly supports important assemblages of at least 20,000 waterfowl and 20,000 seabirds.</p>		No	No	No
	Morecambe Bay Ramsar	<p><b>Ramsar Criterion 4</b></p> <p>Over winter, the site supports a large waterfowl assemblage of international importance.</p> <p><b>Ramsar Criterion 5</b></p> <p>Over winter, the site supports a large waterfowl assemblage of international importance.</p> <p><b>Ramsar Criterion 6</b></p>		No	No	No



Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		The site supports a variety of species/populations occurring at levels of international importance.				
	Roudsea Wood and Mosses SAC	<p><b>Qualifying Features</b></p> <p>7110. Active raised bogs                      7120. Degraded raised bogs still capable of natural regeneration</p> <p>9180. <i>Tilio-Acerion</i> forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes</p> <p>91J0. <i>Taxus baccata</i> woods of the British Isles; Yew-dominated woodland</p>		No	No	No
<b>Carlisle Resource Zone</b>						
None						
<b>North Eden Resource Zone</b>						
Eden Valley boreholes- Bowscar boreholes	River Eden SAC	<p><b>Primary Habitats and Species</b></p> <p><b>3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea</b> – Ullswater is the second largest lake in Cumbria and is an example of a relatively deep lake with both oligotrophic and mesotrophic flora and fauna species.</p> <p><b>3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation</b> – The River Eden flows over both calcareous limestone and sandstone, which creates a wide diversity of ecological conditions, ranging from oligotrophic to mesotrophic.</p> <p><b>91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* Priority feature</b></p> <p><b>1092 White-clawed (or Atlantic stream) crayfish (Austropotamobius pallipes)</b> – High water quality in the River Eden allows it to support a large population of White-clawed crayfish.</p> <p><b>1095 Sea lamprey (Petromyzon marinus) 1096 Brook lamprey (Lampetra planeri)</b></p> <p><b>1099 River lamprey (Lampetra fluviatilis)</b></p> <p><b>1106 Atlantic salmon (Salmo salar)</b></p> <p><b>1163 Bullhead (Cottus gobio) –1355 Otter (Lutra lutra)</b></p>	<p>There is no construction phase associated with this drought option.</p> <p>It is noted that the licence at Bowscar borehole was reviewed as part of Stage 3 Review of Consents; which concluded no adverse impact of the existing licensed abstraction. It is acknowledged that the Review of Consents was carried out on the existing licence and not the drought option proposed.</p> <p>An Environmental Report has been prepared for drought contingency planning at the Eden Valley boreholes sites. The report concluded that the reduction in water level under the proposed drought permit will not be significantly lower than the predicted water level in a drought under the normal abstraction scenario. Similarly, no major changes in average velocity, depth, wetted width or wetted area are predicted. The results of the hydrogeological assessment indicate that the drought option at Bowscar is unlikely to have a measurable impact on flows in the River Eden (due to the large size of the river at this point).</p> <p>Therefore, no likely significant effects of the operation of the drought option on European designated sites are anticipated, either alone or in combination.</p>	No	No	No
	North Pennine Moors SPA	<p><b>Article 4.1</b></p> <p>During the breeding season the area regularly supports:</p> <p>Hen harrier <i>Circus cyaneus</i> (2.2% of GB breeding population)</p> <p>Merlin <i>Falco columbarius</i> (10.5% of GB breeding population)</p> <p>Peregrine falcon <i>Falco peregrinus</i> (1.3% of GB breeding population)</p> <p>Golden plover <i>Pluvialis apricaria</i> (6.2% of GB breeding population)</p>		No	No	No
Eden Valley borehole - - Gamblesby boreholes	River Eden SAC	<p><b>Primary Habitats and Species</b></p> <p><b>3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea</b> – Ullswater is the second largest lake in Cumbria and is an example of a relatively deep lake with both oligotrophic and mesotrophic flora and fauna species.</p> <p><b>3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation</b> – The River Eden flows</p>	<p>There is no construction phase associated with this drought option.</p> <p>It is noted that the licence at Gamblesby borehole was reviewed as part of Stage 3 Review of Consents; which concluded no adverse impact of the existing licensed abstraction. It is acknowledged that the Review of Consents was carried out on the existing licence and not the drought option proposed.</p> <p>An Environmental Report has been prepared for drought contingency planning at the Eden Valley boreholes sites. The report concluded that the reduction in water level under the proposed drought permit will not be significantly lower than the predicted water level in a drought under the normal</p>	No	No	No

Option	European Site	Qualifying features	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		<p>over both calcareous limestone and sandstone, which creates a wide diversity of ecological conditions, ranging from oligotrophic to mesotrophic.</p> <p><b>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)* Priority feature</b></p> <p><b>1092 White-clawed (or Atlantic stream) crayfish (<i>Austropotamobius pallipes</i>)</b> – High water quality in the River Eden allows it to support a large population of White-clawed crayfish.</p> <p><b>1095 Sea lamprey (<i>Petromyzon marinus</i>) 1096 Brook lamprey (<i>Lampetra planeri</i>)</b></p> <p><b>1099 River lamprey (<i>Lampetra fluviatilis</i>)</b></p> <p><b>1106 Atlantic salmon (<i>Salmo salar</i>)</b></p> <p><b>1163 Bullhead (<i>Cottus gobio</i>) –1355 Otter (<i>Lutra lutra</i>)</b></p>	<p>abstraction scenario. Similarly, no major changes in average velocity, depth, wetted width or wetted area are predicted.</p> <p>Therefore, no likely significant effects of the operation of the drought option on European designated sites are anticipated, either alone or in combination.</p>			
	North Pennine Moors SPA	<p><b>Article 4.1</b></p> <p>During the breeding season the area regularly supports:</p> <p>Hen harrier <i>Circus cyaneus</i> (2.2% of GB breeding population)</p> <p>Merlin <i>Falco columbarius</i> (10.5% of GB breeding population)</p> <p>Peregrine falcon <i>Falco peregrinus</i> (1.3% of GB breeding population)</p> <p>Golden plover <i>Pluvialis apricaria</i> (6.2% of GB breeding population)</p>		No	No	No
Eden Valley boreholes – Tarn Wood boreholes	River Eden SAC	<p><b>Primary Habitats and Species</b></p> <p><b>3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea –</b> Ullswater is the second largest lake in Cumbria and is an example of a relatively deep lake with both oligotrophic and mesotrophic flora and fauna species.</p> <p><b>3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation –</b> The River Eden flows over both calcareous limestone and sandstone, which creates a wide diversity of ecological conditions, ranging from oligotrophic to mesotrophic.</p> <p><b>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)* Priority feature</b></p> <p><b>1092 White-clawed (or Atlantic stream) crayfish (<i>Austropotamobius pallipes</i>)</b> – High water quality in the River Eden allows it to support a large population of White-clawed crayfish.</p> <p><b>1095 Sea lamprey (<i>Petromyzon marinus</i>) 1096 Brook lamprey (<i>Lampetra planeri</i>)</b></p> <p><b>1099 River lamprey (<i>Lampetra fluviatilis</i>)</b></p> <p><b>1106 Atlantic salmon (<i>Salmo salar</i>)</b></p> <p><b>1163 Bullhead (<i>Cottus gobio</i>) –1355 Otter (<i>Lutra lutra</i>)</b></p>	<p>There is no construction phase associated with this drought option.</p> <p>It is noted that the licence at Tarn Wood borehole was reviewed as part of Stage 3 Review of Consents; which concluded no adverse impact of the existing licensed abstraction. It is acknowledged that the Review of Consents was carried out on the existing licence and not the drought option proposed.</p> <p>An Environmental Report has been prepared for drought contingency planning at the Eden Valley boreholes sites. The report concluded that the reduction in water level under the proposed drought permits will not be significantly lower than the predicted water level in a drought under the normal abstraction scenario. Similarly, no major changes in average velocity, depth, wetted width or wetted area are predicted.</p> <p>Therefore, no likely significant effects of the operation of the drought option on European designated sites are anticipated, either alone or in combination.</p>	No	No	No
	North Pennine Moors SPA	<p><b>Article 4.1</b></p> <p>During the breeding season the area regularly supports:</p> <p>Hen harrier <i>Circus cyaneus</i> (2.2% of GB breeding population)</p> <p>Merlin <i>Falco columbarius</i> (10.5% of GB breeding population)</p> <p>Peregrine falcon <i>Falco peregrinus</i> (1.3% of GB breeding population)</p> <p>Golden plover <i>Pluvialis apricaria</i> (6.2% of GB breeding population)</p>		No	No	No

## 3.2 Potential In-Combination Effects with Other Plans and Projects

Potential in-combination effects with other relevant plans and projects (as described in Section 2.4) have been reviewed and are summarised in this section.

### 3.2.1 UU's WRMP Schemes

There are no resource management schemes identified within UU's WRMP 2019 that are due to be operational within the time period of the Drought Plan. There is a suite of leakage reduction and network metering actions being implemented. The demand management actions have potentially positive effects, as they will ultimately result in reduced abstraction at source, across all resource zones.

The Thirlmere Transfer scheme, identified in the 2015 WRMP, links UU's former West Cumbria Resource Zone to the Strategic Zone (see Section 1.3.3) and will be operational in 2022, and as such the construction phase of the scheme is not considered in this assessment.

An Environmental Impact Assessment, HRA Screening and statement of 'Information to Inform an Appropriate Assessment' (IIAA) were submitted in support of the Planning Application for the Thirlmere Transfer scheme. HRA Screening and the IIAA assessed the potential impacts of the operation phases of the scheme on Clints Quarry SAC, the River Derwent and Bassenthwaite Lake SAC, the River Eden SAC and the River Ehen SAC. The assessments concluded that assuming that all mitigation measures were implemented, then there would be no significant effects, either alone or in combination, on the Conservation Objectives or the qualifying features of the sites and thus no significant effect on site integrity. Therefore, no significant effects are anticipated in-combination with the drought options included in UU's Revised Draft Drought Plan 2022.

### 3.2.2 Environment Agency Drought Plans

Assessment of the potential for cumulative impacts of supply side and drought permit options with drought options listed in Environment Agency drought plans has been undertaken.

The information used to carry out these assessments is considered to be the most up to date information available at time of writing, but the assessments should be reviewed at the time of drought option implementation to ensure that no changes to Environment Agency drought plans have been made in the intervening period, and that the assessment, therefore, remains valid.

The following Environment Agency / Natural Resources Wales Drought Plans were reviewed:

- North West Operational Drought Plan (2020)
- Midlands Region Drought Plan (January 2012)
- Environment Agency Wales (now Natural Resources Wales) Drought Plan (January 2012).

Drought actions and triggers are given in the Environment Agency Drought Plans. Actions described in the Plans include communications (internal and external), monitoring and drought orders. Of these actions, those which are applicable for cumulative assessment with UU's drought options are external communications and drought orders. The other actions in the Plans relate to drought planning and monitoring and are not direct actions which would physically result in cumulative effects.

The Environment Agency<sup>27</sup> have previously advised that SEA of Environment Agency Drought Plans has not been undertaken, as these Plans do not meet the legal requirements for SEA because of their voluntary status. However, the Environment Agency advised that when developing their plans they

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<sup>27</sup> Mike Stokes, Environment Agency email to Kat Liney, Cascade Consulting, 7 September 2011.



consider the principles behind SEA to help understand, assess and, where possible, mitigate the impacts of their drought management actions on the environment. Likewise, the Environment Agency advised that their Drought Plans do not contain actions / operations that could impact on a European site so have not undertaken HRA for their plans.

Drought Communications Plan (one of the actions in the Environment Agency's Drought Plans) may have positive cumulative effects with UU's drought publicity and campaign for water use restraint demand side options, as drought communication messages may reinforce each other, thereby resulting in increased demand savings.

Environment Agency drought order actions have the potential to have cumulative impacts with UU's drought options. The Environment Agency / Natural Resources Wales can apply to the Secretary of State / Welsh Ministers for drought orders for environmental reasons, e.g. if low flow is posing a risk to the aquatic environment. Environmental drought orders can be used to vary the compensation flow discharged from reservoirs in to the receiving rivers, provide measures to lower the controlled flow to conserve resources, or provide measures to reduce abstractions to ease demand on rivers and minimise the environmental effect of reduced support to river flow.

The Environment Agency / Natural Resources Wales can apply for an environmental drought order only if the environment is suffering serious damage as the result of abstraction during a drought. The Environment Agency North West Operational Drought Plan states that at compensation only reservoirs the precise reduction in compensation flow would be fully discussed between the Environment Agency, UU and NRW if necessary and would depend upon the need for additional water time of year and prevailing environmental circumstances. As a result it is hard to predict the location of all environmental drought orders in advance. However, a review following the 2018 drought assessed the likelihood of a drought order being needed at compensation only reservoirs, which was considered low and no environmental assessment reports were considered to be required for drought orders any at of the CORs. No cumulative impacts with UU's drought options have been identified.

The Midlands Region Drought Plan states that the Environment Agency may in an exceptional drought situation apply to the Secretary of State for an environmental drought order on the River Severn to protect the freshwater flow in the river. Modification of the Vyrnwy compensation release is not listed in the Midlands Region Drought Plan as a condition of a potential River Severn drought order, however, it is noted that the Vyrnwy overdraft (waterbank) may be used to support the estuary, subject to other needs. The compensation flow and the Vyrnwy waterbank operate independently, and therefore, no cumulative effects of a potential UU drought permit at Vyrnwy and an Environment Agency River Severn environmental drought order are considered to be likely. Note that UU's Environmental Report for the Vyrnwy Drought Permit concluded no impact on the Severn Estuary SAC, and minor adverse hydrological impacts in the hydrological zone of influence of the scheme (to Llanymynech gauging station which is 200km upstream from the Severn Estuary SAC).

The Environment Agency Wales (now Natural Resources Wales) Drought Plan for North Wales states that there are no sites identified for environmental drought orders within the area and that the Environment Agency (now Natural Resources Wales) will apply for environmental drought orders if they prove necessary. The Plan notes that an environmental drought order was granted during the drought of 1995/6 to reduce the compensation discharge from Llyn Celyn reservoir. Since then the Dee General Directions have been revised and reissued (most recently in April 2009) to accommodate this. Note that UU does not have any drought options that result in modifications to abstractions on the River Dee, although several supply side drought options are groundwater sources which are in the vicinity of the River Dee. No impacts of these options on the River Dee have been identified and as such, no cumulative impacts of these groundwater sources are anticipated with any future potential environmental drought orders at Llyn Celyn.

In summary, no cumulative impacts of options in Environment Agency / Natural Resources Wales Drought Plans and UU's drought options are anticipated, however, due to the uncertainties of potential locations, and potential revisions to the Environment Agency / Natural Resources Wales Drought Plans

this should be considered further at the time of any potential application for drought permits by UU and the Environment Agency / Natural Resources Wales. .

### 3.2.3 Other Water Company Drought Plans

Assessment of the potential for cumulative impacts of supply side and drought permit options with drought options listed in neighbouring water companies' drought plans has been undertaken.

It should be noted that all water company Drought Plans are subject to review on timescales that may not be aligned with the timescale of UU's Drought Plan revision. The information used to carry out these assessments is considered to be the most up to date information at available at time of writing, but the assessments should be reviewed at the time of drought option implementation to ensure that no changes to the neighbouring water company drought options has been made in the intervening period, and that the assessment, therefore, remains valid.

The assessments have been informed by Drought Plan drought management option forms prepared by UU and mapping of locations of drought options, surface water and groundwater catchments. As stated above, the assessment has used the most recent information available on neighbouring water company Drought Plans.

#### Dŵr Cymru Welsh Water

No cumulative impacts between drought options in UU's Drought Plan with Dŵr Cymru Welsh Water's 2020 Drought Plan which would have potential for impact on European sites have been identified, UU's only drought option in Wales is Lake Vyrnwy and an Environmental Report has been prepared for this drought option which did not identify cumulative impacts with any other water company abstraction licence.

#### Severn Trent

An Environmental Report has been prepared for UU's Lake Vyrnwy drought option and concluded that the hydrological influence of the drought option extends to Llanymynech gauging station on the Afon Vyrnwy (i.e. upstream of the confluence of the Afon Vyrnwy with the River Severn and 200km upstream from the Severn Estuary SAC).

None of the drought options in the Severn Trent Water 2018 Drought Plan affect the hydrological zone of influence of the Lake Vyrnwy drought permit, and therefore, no in-combination impacts of Severn Trent's drought options with UU's drought option on European sites (including the Severn Estuary SAC) have been identified.

#### Yorkshire Water

No cumulative impacts between drought options in UU's Drought Plan with Yorkshire Water's 2019 Drought Plan which would have potential for impact on European sites have been identified.

#### Northumbrian Water

No drought permit options were included in Northumbrian Water's 2019 Drought Plan. All supply side options would be within existing licensed limits. No cumulative impacts between drought options in UU's Drought Plan with Northumbrian Water's Drought Plan which would have potential for impact on European sites have been identified.

#### Scottish Water

In England, the water companies have a statutory duty under the Water Act 2003 for the production of drought plans. Scottish Water currently has a duty under the Water (Scotland) Act 1980 to promote the conservation and effective use of the water resources of Scotland and they are presently in the process

of producing drought plans for their strategic sources which they will subsequently agree with the Scottish Environmental Protection Agency and Scottish Natural Heritage.

### Hafren Dyfrdwy

A supply-side option aimed at augmenting flows in the River Dee was the only supply side measure included in the Drought Plan 2019. No cumulative impacts between drought options in UU's Drought Plan with Hafren Dyfrdwy Drought Plan which would have potential for impact on European sites have been identified.

## 3.2.4 National Policy Statements

**National Policy Statement for Water Resources Infrastructure<sup>28</sup>**; sets out the need and policies for development of nationally significant infrastructure projects (NSIPs) for water resources in England.

**National Policy Statement for Wastewater<sup>29</sup>**; states the policy of reducing demand for wastewater infrastructure by reducing domestic and industrial wastewater production and by implementation of Sustainable Urban Drainage Systems. Only two major infrastructure projects are put forward, both in the south east of the UK. No cumulative effects with UU's drought options have been identified.

**National Policy Statement for Renewable Energy Infrastructure<sup>30</sup>**; covers the following types of nationally significant renewable energy infrastructure; energy from biomass and/or waste (>50 megawatts (MW), offshore wind (>100MW) and onshore wind (>50MW)). Other types of energy generation including hydropower are not included. No cumulative effects with UU's drought options have been identified.

**National Policy Statement for Nuclear Power<sup>31</sup>**; identifies potentially suitable sites for the deployment of new nuclear power stations in England and Wales. Two sites, Heysham and Sellafield, are located within the United Utilities Strategic Resource Zone. No cumulative effects with UU's drought options have been identified.

A number of NSIPs listed on the Planning Inspectorate website are located within the United Utilities supply area. No cumulative effects with UU's drought options have been identified.

## 3.2.5 Summary

No cumulative impacts on European sites have been identified between UU's drought options, and actions in Environment Agency Drought Plans, other water company Drought Plans or key National Policy Statements.

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<sup>28</sup> Defra (2012) Draft *National Policy Statement for Water Resources*. November 2018.

<sup>29</sup> Defra (2012) *National Policy Statement for Wastewater*. March 2012.

<sup>30</sup> Department of Energy and Climate Change (2011) *National Policy Statement for Renewable Energy Infrastructure (EN-3)*. July 2011.

<sup>31</sup> Department of Energy and Climate Change (2011) *National Policy Statement for Renewable Energy Infrastructure (EN-3)*. July 2011.

## 4 Conclusions and Recommendations

### 4.1 Summary of HRA Screening Conclusions

A summary of the conclusions of HRA Screening is presented in **Table 4.1**.

**Table 4.1 Summary of HRA Screening conclusions**

Drought Option	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?	AA required?
<b>Supply Side Options</b>				
<b>Strategic Resource Zone</b>				
None	No	No	No	No
<b>Carlisle Resource Zone</b>				
Castle Carrock Reservoir, dead-water storage	No	No	No	No
<b>North Eden Resource Zone</b>				
None	No	No	No	No
<b>Demand Management</b>				
Drought Publicity	No	No	No	No
Increased leakage detection and repair activity	No	No	No	No
Campaign for voluntary water use restraint	No	No	No	No
Temporary Use Ban (TUB)	No	No	No	No
Ordinary Drought Order (Non-Essential Use Ban)	No	No	No	No
Pressure management	No	No	No	No
<b>Drought Permit</b>				
<b>Strategic Resource Zone</b>				
Delph Reservoir	No	No	No	No
Dovestone Reservoir	No	No	No	No
Fernilee Reservoir	No	No	No	No
Jumbles Reservoir	No	No	No	No
Longdendale Reservoirs	No	No	No	No
River Lune LCUS abstraction	No	No	No	No
Rivington Reservoirs – Brinscall Brook	No	No	No	No
Rivington Reservoirs – White Coppice	No	No	No	No
Ullswater	No	No	No	No
Lake Vyrwvy	No	No	No	No
Lake Windermere	No	No	No	No
<b>Carlisle Resource Zone</b>				
None	No	No	No	No
<b>North Eden Resource Zone</b>				
Eden Valley boreholes - Bowscar boreholes	No	No	No	No

Drought Option	Is scheme likely to have a significant effect on European site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?	AA required?
Eden Valley boreholes - Gamblesby boreholes	No	No	No	No
Eden Valley boreholes- Tarn Wood boreholes	No	No	No	No

Assessment of UU's Drought Plan with other plans and programmes, including UU's WRMP schemes that are due to be implemented within the time period of the Drought Plan, Environment Agency / NRW Drought Plans, other water company Drought Plans and National Policy Statements, concluded that no other significant cumulative, or in-combination effects are anticipated.

## 4.2 Consultation on the HRA Screening Report

The HRA Screening Report was consulted upon alongside UU's Draft Drought Plan 2022.

## APPENDIX A

### Summary of Construction Activities Required for Supply Side Drought Options



## Introduction

This appendix provides a summary of the construction activities required in order to bring each of the supply side drought options into operation.

This appendix consists of two tables.

**Table A1** outlines the key work elements required for each drought option, including an 'Activity Reference'.

**Table A2** provides construction details relating to each 'Activity Reference', including plant and vehicle movements and the basic materials required.

**Table A1 Summary of Construction Activities for Supply Side Options**

Site	Scope	New borehole pumps /rising main	New mechanical and electrical works	Disinfection plant	UV plant	Acid dosing	Filter plant	Temporary pumping station	Existing WTW refurbishment	New Pipeline	Sipline maintenance	Activity Ref (see Table A2)
<b>Strategic Resource Zone</b>												
None												
<b>Carlisle Resource Zone</b>												
Castle Carrock Reservoir dead water storage	Install temporary pumping equipment into reservoir in order to utilise dead storage (170 MI) below Trigger 4, new pumps and rising main, modifications to include a temporary filter plant at the front of the works						X	X				7,8
<b>North Eden Resource Zone</b>												
None												

**Table A2 Construction Activities**

Activity Ref	Activity	Scope	Traffic	Materials
1	<b>New borehole pumps /rising main</b>	Removal of existing borehole pump and rising main and replacement/renewal as needed. Use of mobile crane.	General construction (e.g. transit pick-up truck): 4 trips per day for 1 week Mobile crane: on-site for 1 week Pipe delivery: 1 HGV visit Pump delivery: 1 HGV visit	Pipes: length of rising main, assume 150mm diameter PE Borehole pump(s)
2	<b>New mechanical and electrical works</b>	Replacement or relocation of power supply/starter panel.	General construction (e.g. transit pick-up truck): 4 trips per day for 2 days Panel delivery: 1 HGV visit	Starter panel
3	<b>Disinfection only plant &gt; 5 MI/d</b>	Construction of concrete base and temporary building (~6mx4m) including access track. Installation of disinfection rig including tapping into existing pipework.	General construction (e.g. transit pick-up truck): 4 trips per day for 3 weeks Excavator (e.g. JCB): on site 2 week Sub-base delivery: 2 HGV visits Concrete delivery: 2 HGV visits Building/Rig delivery: 1 HGV visit Mobile crane: on-site for 1 week	Hardcore: ~ 20t Concrete: ~10m <sup>3</sup> Temporary building (6mx4m) Disinfection rig including control equipment Hypochlorite storage
4	<b>Disinfection and UV plant Up to 5 MI/d</b>	Construction of concrete base and temporary building (~3mx4m) including access track. Installation of disinfection/UV rigs including tapping into existing pipework.	General construction (e.g. transit pick-up truck): 4 trips per day for 3 weeks Excavator (e.g. JCB): on site 2 weeks Sub-base delivery: 2 HGV visits Concrete delivery: 2 HGV visits Building/Rig delivery: 2 HGV visits Mobile crane: on-site for 1 week	Hardcore: ~ 15t Concrete: ~10m <sup>3</sup> Temporary building (3mx4m) Disinfection/UV rigs including control equipment Hypochlorite storage
5	<b>Disinfection and UV plant &gt; 5 MI/d</b>	Construction of concrete base and temporary building (~6mx4m) including access track. Installation of disinfection and UV rigs including tapping into existing pipework.	General construction (e.g. transit pick-up truck): 4 trips per day for 4 weeks Excavator (e.g. JCB): on site 2 week Sub-base delivery: 3 HGV visits Concrete delivery: 3 HGV visits Building/Rig delivery: 2 HGV visits Mobile crane: on-site for 2 weeks	Hardcore: ~ 25t Concrete: ~12m <sup>3</sup> Temporary building (6mx4m) Disinfection/UV rigs including control equipment Hypochlorite storage

Activity Ref	Activity	Scope	Traffic	Materials
6	<b>Acid dosing</b>	Construction of concrete base for dosing rig/M&E and building (~3mx4m) including access track. Installation of acid rig including tapping into existing pipework.	General construction (e.g. transit pick-up truck): 4 trips per day for 2 weeks Excavator (e.g. JCB): on site 2 weeks Sub-base delivery: 2 HGV visits Concrete delivery: 2 HGV visits Building/Rig delivery: 2 HGV visit Mobile crane: on-site for 1 week	Hardcore: ~ 20t Concrete: ~10m <sup>3</sup> Temporary building (3mx4m) Disinfection rig including control equipment Chemical storage
7	<b>Filter plant</b>	Construction of concrete base for pre-fabricated filtration plant and M&E building (~3mx4m) including access track. Installation of acid rig including tapping into existing pipework.	General construction (e.g. transit pick-up truck): 4 trips per day for 4 weeks Excavator (e.g. JCB): on site 3 weeks Sub-base delivery: 4 HGV visits Concrete delivery: 4 HGV visits Building/Rig delivery: 10 HGV visit Mobile crane: on-site for 1 week	Hardcore: ~ 30t Concrete: ~10m <sup>3</sup> Temporary building (3mx4m) Filtration plant including control equipment Chemical storage
8	<b>Temporary Pumping Station</b>	Construction of concrete base and temporary building (~3mx4m) including access track. Installation of pump-sets/M&E including tapping into existing pipework.	General construction (e.g. transit pick-up truck): 4 trips per day for 2 weeks Excavator (e.g. JCB): on site 1 week Sub-base delivery: 3 HGV visit Concrete delivery: 1 HGV visit Building/Pump/Generator delivery: 3 HGV visit Mobile crane: on-site for 1 week	Hardcore: ~ 30t Concrete: ~5m <sup>3</sup> Temporary building (3mx4m) Generator Pumps
9	<b>Existing water treatment works refurbishment</b>	Refurbish slipline/ filters/media/chemical dosing at existing works.	General construction (e.g. transit pick-up truck): 4 trips per day for 6 weeks General materials delivery: 12 HGV visits Mobile crane: on-site for 3 weeks	Filter media Pipework/dosing equipment
10	<b>Temporary pipeline and pumping station</b>	Installation and removal of temporary overland PE pipeline (3km 180mm PE). Temporary diesel pumps.	General construction (e.g. transit pick-up truck): 4 trips per day for 6 weeks Excavator (e.g. JCB): on site 3 weeks Sub-base delivery: 10 HGV visits Concrete delivery: 4 HGV visits Pump/fittings delivery: 2 HGV visits Pipe/fittings delivery/removal: 30 visits Mobile crane: on-site for 1 week	3km 180mm diameter PE80 pipe Diesel pumps 30 l/s @ 77m head Temporary fencing: 250m Sub-base material: ~ 50t Concrete: ~ 20m <sup>3</sup>

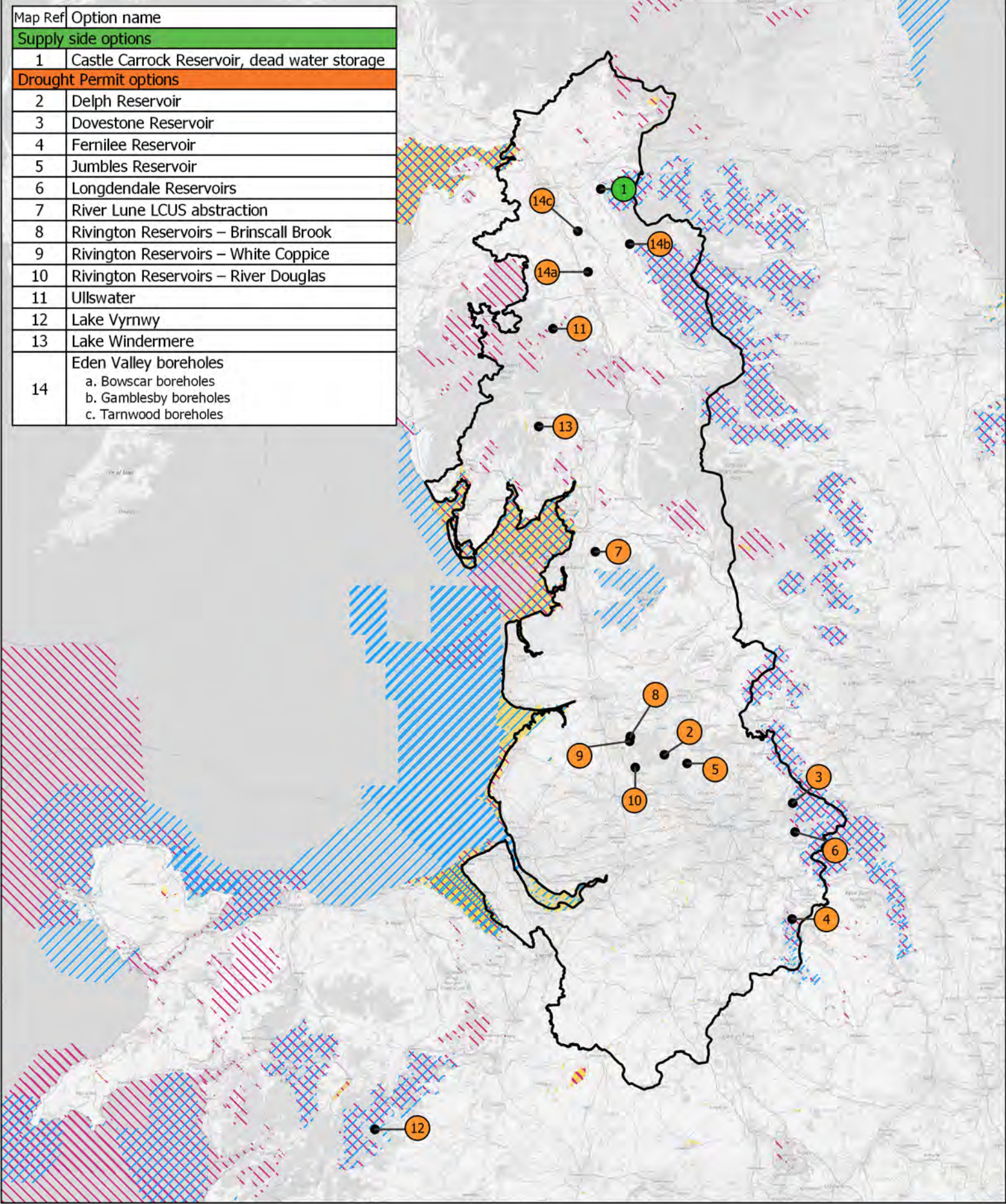
Activity Ref	Activity	Scope	Traffic	Materials
11	New Main	Construction of new supply pipeline.	General construction (e.g. transit pick-up truck): 4 trips per day for 6 weeks Excavator (e.g. JCB): on site 6 weeks Pipe surround deliveries/removal: 100 -TBC HGV visits  Concrete delivery: 6 - TBC HGV visits  Pipe/fittings delivery: 12 –TBC visits	

## APPENDIX B

### Figures



Map Ref	Option name
<b>Supply side options</b>	
1	Castle Carrock Reservoir, dead water storage
<b>Drought Permit options</b>	
2	Delph Reservoir
3	Dovestone Reservoir
4	Fernilee Reservoir
5	Jumbles Reservoir
6	Longdendale Reservoirs
7	River Lune LCUS abstraction
8	Rivington Reservoirs – Brinscall Brook
9	Rivington Reservoirs – White Coppice
10	Rivington Reservoirs – River Douglas
11	Ullswater
12	Lake Vyrnwy
13	Lake Windermere
14	Eden Valley boreholes a. Bowscar boreholes b. Gamblesby boreholes c. Tarnwood boreholes





<b>Legend</b>	
United Utilities Supply Area	Designated Sites
Drought Permit options	Special Areas of Conservation
Supply side options	Special Protection Areas
	Ramsar Sites



**Project title:**  
HRA of United Utilities  
Drought Plan

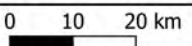
**Figure title:**  
European Designated  
Conservation Sites in North West  
England and North Wales and  
Drought Options

**Date:** March 2021

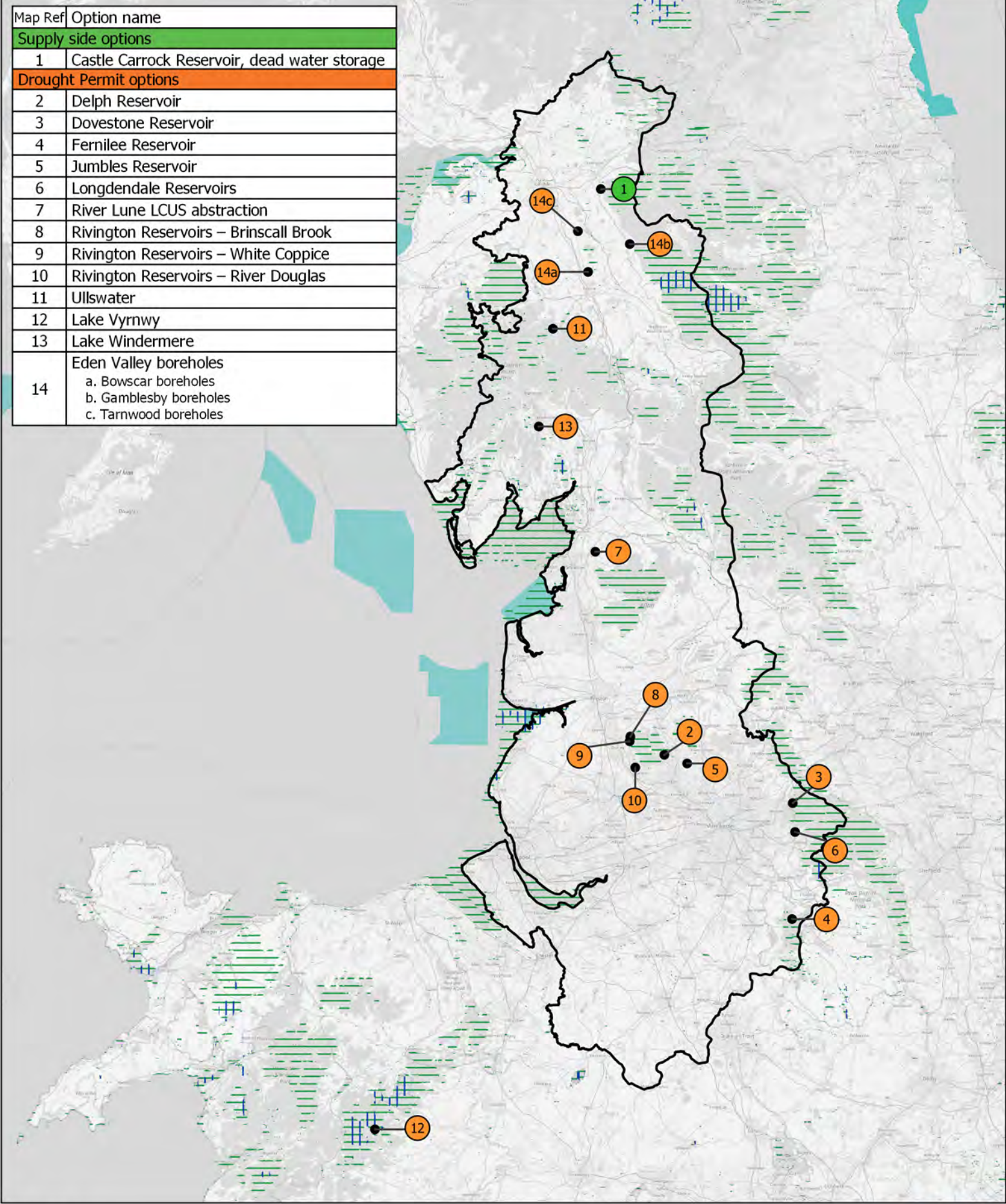
**Figure B1**

0 10 20 km





Map Ref	Option name
<b>Supply side options</b>	
1	Castle Carrock Reservoir, dead water storage
<b>Drought Permit options</b>	
2	Delph Reservoir
3	Dovestone Reservoir
4	Fernilee Reservoir
5	Jumbles Reservoir
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12	Lake Vyrnwy
13	Lake Windermere
14	Eden Valley boreholes a. Bowscar boreholes b. Gamblesby boreholes c. Tarnwood boreholes



<b>Legend</b>	
United Utilities Supply Area	Designated Sites
Drought Permit options	Sites of Special Scientific Interest
Supply side options	National Nature Reserves
	Marine Conservation Zones



**Project title:**  
HRA of United Utilities  
Drought Plan

**Figure title:**  
Sites of Special Scientific  
Interest, National Nature  
Reserves, Marine Conservation  
Zones and Drought Options

**Date:** March 2021



**Figure B2**

0 10 20 km



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