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Habitats Regulation Assessment of United Utilities Draft Drought Plan 2027

Report for United Utilities

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1.0	20/02/26	Initial draft for United Utilities review	**Katie Moran, Charlotte McEnhill**
1.0	17/03/26	Final for Draft DP submission	**Katie Moran, Charlotte McEnhill**

Contents

1. Introduction

1.1 Background and Purpose of Report

Water companies in England and Wales are required to prepare and maintain Statutory Drought Plans (DPs) under Sections 39B and 39C of the Water Industry Act 1991, as amended by the Water Act 2003 and subsequently 2014, which set out the short operational steps a company will take before, during and after a drought. United Utilities (UU) published their current statutory Final Drought Plan in August 2022, which covers the period 2022-2027. UU is currently updating its statutory Drought Plan for publication in draft before 31 March 2026, as indicated in the Drought Plan (England) Directions 2025. This plan will encompass the period 2027-2032. It has been determined that Strategic Environmental Assessment (SEA) and a Habitats Regulations Assessment (HRA) are required (see Section 1.2).

The Environment Agency published an updated Drought Plan Guideline (DPG) in March 2025 (DPG2025). The DPG2025 specifies that a water company must ensure its Drought Plan meets the requirements of The Conservation of Habitats and Species Regulations 2017, as amended. The DPG2025 refers to guidance relating to HRA that can be used which includes the UK Water Industry Research (UKWIR) report 'Strategic Environmental Assessment and Habitat Regulations Assessment - Guidance for Water Resources Management Plans and Drought Plans. The UKWIR report recommends that all DPs should be subject to the first stage of HRA, i.e. screening for Likely Significant Effects (LSEs).

The focus of this HRA Screening Report is on the Drought Plan, not the Water Resources Management Plan (WRMP). The Drought Plan is an operational plan setting out UU's approach to managing water supplies and the actions they will consider taking during a drought. UU's water supply system, the drought planning process and links with the WRMP are discussed in Section 1.4.

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 Regulations is being given to the revision of its Drought Plan.

1.2 Requirement of Habitats Regulations Assessment

The responsibility for undertaking the HRA lies with UU as the Plan making authority (competent authority).

The requirement for a HRA is established through Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and Flora (the Habitats Directive). Following the UK leaving the European Union (EU), the European Union (Withdrawal) Act 2018 (as amended[1]) retains existing EU law i.e. the Habitats and Birds Directives. The Directive is transposed into national legislation by The Conservation of Habitats and Species Regulations 2017, as amended, referred to as the Habitats Regulations[2]. It is this legislation, rather than the Directive, that now governs the HRA process within the UK. However, the amendments require that competent authorities continue to comply with and refer to all caselaw preceding 31 December 2020, unless or until modified by domestic appeals and legislation. Under Regulations 63 and 105, any plan or project which is likely to have a significant effect on a Habitats site (either alone or in-combination with other plans or projects) and is not directly connected with, or necessary for the management of the site, must be subject to an appropriate assessment to determine the implications for the site in view of its conservation objectives.

[1] Amended by the European Union (Withdrawal Agreement) Act 2020.
[2] Amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulation 2019.

HRA Guidance for the appraisal of Plans[3] 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 Habitats site, subject to Regulation 64 or 105 of the Habitats Regulations.

'Habitat sites' include the following:

- 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
- Ramsar sites - the national Ramsar site series means all the wetlands in the United Kingdom that have been designated under paragraph 1 of article 2 of the Ramsar Convention for inclusion in the list of wetlands of international importance referred to in that article[4]

Regulation 64 of the Habitats Regulations states:

(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:

(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.

(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] Tyldesley, D. & Chapman, C. (2013) The Habitats Regulations Assessment Handbook, December 2025 edition UK. DTA Publications Limited. Subsequently withdrawn in January 2026 in response to Part 3 of the Planning and Infrastructure Act.
[4] Under Part 1, Schedule 5 of the Planning and Infrastructure Act 2025, Ramsar sites are to be added to the definition of 'marine areas' under Regulation 3 of the Conservation of Habitats and Species Regulations 2017. However, there is currently no Order for when Part 1 of Schedule 5 will be enacted. In the absence of this enactment, recent case law C.G. Fry & Son Limited v SoS confirmed that the NPPF (194 (b)) provided that Ramsar sites are to be protected as if they were a SAC or SPA under the Habitat Regulations. Ramsar sites are therefore included in this HRA report.

(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[3] 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).

1.3 Approach to HRA

Independent best practice[3] encourages the use of a four-stage process to allow navigation of the tests described in the Habitats Regulations. This four-stage process consists of the following:

1. Firstly, a screening process is undertaken to identify whether each drought option in UU's DP (either alone or in-combination with other plans or projects) is likely to have significant effects on Habitats sites.
2. Where a significant effect is likely (noting the precautionary principle), an Appropriate Assessment will then be undertaken of the drought option to determine whether this would adversely affect the integrity of the Habitats site(s), either alone or in-combination with other plans and projects, taking into account available mitigation measures.
3. Where 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 Habitats 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.

The HRA has been undertaken in accordance with currently available guidance[3567] and has been based on a precautionary approach as required under the Habitats Regulations. It has followed the staged HRA approach, commencing with the Stage 1 screening of all options contained within the DP.

The assessment refers to the LSE of an option on one or more Habitats sites, including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) (also known as National Site Network) and Ramsar sites.

- 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.
- The Government also expects potential SPAs (pSPAs), possible/ proposed SACs (pSACs), compensation habitat and Ramsar sites to be included within the assessment.

[5] Court of Justice for the European Union's ruling on People Over Wind and Sweetman ('Sweetman II') vs Coillte Teoranta, Case C-323/17.
[6] UK Government (2023). Habitats Regulations Assessments: Protecting a European Site.
[7] UK Government (2019). The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019.

- Ramsar sites support **internationally important wetland habitats** and are listed under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention, 1971).

For ease of reference through the HRA process, these designations are collectively referred to as Habitats sites.

The purpose of the screening stage is to determine whether any part of the plan in question (in this case the draft DP 2027) is likely to have a significant effect on any Habitats site. 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[8], or Ramsar criterion, for which it has been designated). Significantly, HRA is based on a rigorous application of the precautionary principle. Where uncertainty or doubt remains, an impact should be assumed, triggering the requirement for Appropriate Assessment of that scheme.

The screening stage also must conclude whether any in-combination effects would result from the schemes within the plan itself, or from the plan in-combination with other plans and projects, for example neighbouring water companies' DPs and Water Resource Management Plans (WRMPs), and whether these would adversely affect the integrity of a Habitats site.

This document reports the HRA Screening of UU's draft DP 2027, i.e. Stage 1 as identified above. HRA Screening identifies whether the drought options contained within UU's draft DP 2027 will have LSEs on Habitats sites and as such, determines the requirement for Appropriate Assessment.

In April 2018[9] there was an important judgment in the Court of Justice of the European Union (CJEU) which ruled that Article 6(3) of the Habitats Directive must be interpreted as meaning that mitigation measures should be assessed within the framework of an Appropriate Assessment and that it is not permissible to take account of mitigation measures at the screening stage. Considering this judgement, the implications have been taken into account as part of the HRA screening process in support of the draft DP 2027.

UU have also undertaken a Strategic Environmental Assessment (SEA) of their draft DP 2027. The SEA has been undertaken in parallel with the HRA assessment and is reported separately.

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

1.4.1 Introduction

UU supplies water to approximately eight million people and 150,000 non-household customers in the north west of England.

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), with limited connectivity between them:

Strategic Resource Zone: A regional network serving west Cumbria, south Cumbria, Lancashire, Greater Manchester, Merseyside, most of Cheshire, Workington, Whitehaven, Wigton and Solway, representing over 90% of total water supplied by UU. A bi-directional pipe, the West-East link main, was commissioned in 2011 to allow water

[8] Annexes are contained within the relevant EC Directive.
[9] Court of Justice for the European Union's ruling on People Over Wind and Sweetman ('Sweetman II') vs Coillte Teoranta, Case C-323/17.

to be transferred between the west and the east of the resource zone. This link allows UU more flexibility to move water around the region to where it is most needed.

Carlisle Resource Zone: The Carlisle Resource Zone serves the Carlisle area. This is a surface water only zone.

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

Barepot Resource Zone: This is a non-potable industrial supply and is a surface water source..

The current boundaries and characteristics of UU's WRZs are shown in **Figure 1-1**.

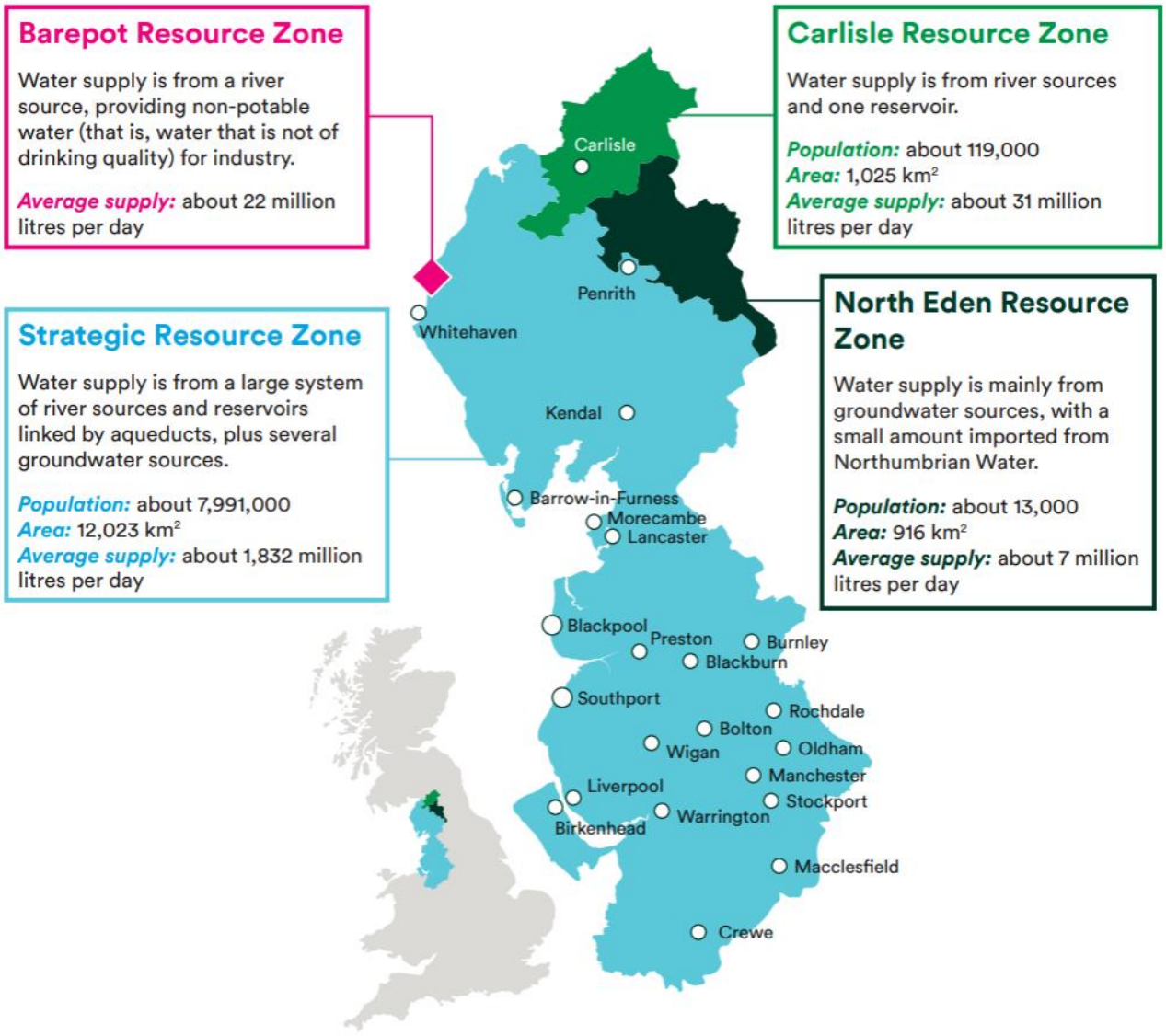


Figure 1-1 United Utilities' WRZs

1.4.2 Link to Water Resources Management Plan

UU published its latest Water Resources Management Plan (WRMP) in 2024, which provides a comprehensive statement of UU's water supply and water demand forecasts over the period 2025 to 2085. 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 determines whether a deficit in future water supply availability is expected compared to demand over a 25-year horizon and identifies preferred solutions to address forecast deficits, thereby maintaining a balance between supply and demand. The assessment takes climate change into account, as well as any changes to abstraction licences (e.g. the Environment Agency's review of abstraction licences under the Habitats Directive referred to as the Review of Consents). The WRMP also allows for parts of the water supply system to be out of service for maintenance. The baseline supply-demand balance assessments of the plan demonstrated that a surplus will be maintained in the Carlisle, North Eden, and Barepot resource zones. Without intervention, the Strategic Resource Zone would likely face a potential deficit starting from 2025/26, resulting in insufficient supplies to meet demand. With intervention via reducing water demand and implementing a proposed programme of leakage reduction activities, the Strategic Resource Zone will be in surplus. In the longer term the WRMP supports regional and national water resource needs through water transfers.

The Drought Plan is an operational plan setting out UU's approach to managing water supplies and the actions the company would consider taking during a drought. Leakage control is a key priority for both the WRMP and the Drought Plan. Leakage detection and repair activities will be enhanced during periods of severe water shortages, as outlined in the Drought Plan. The predicted future baseline for leakage control is outlined in the WRMP. The supply-demand appraisal demonstrates that reducing leakage 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 1.5** below.

1.5 UU's Drought Planning Process

1.5.1 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 (England) Direction 2025, which reflects changes made by the Water Act 2014 regarding the publication frequency of drought plans, states that draft drought plans should be submitted according to the following schedule:

4(1)Except where the Secretary of State otherwise permits, for the purpose of 37B(1) of the Act, a water undertake must submit a draft of its drought plan to the Secretary of State before or on 31st March 2026 unless the following circumstances apply -

(a) for a first drought plan, within 6 months of the date of the appointment under section 6 or variation under section 7 of the Act(b)
(b) for a revised drought plan to which section 39B(6)(a) of the Act applies, within 6 months of the date on which the material change of circumstances occurs.

UU published it's last statutory DP in 2022. UU are now preparing the draft Drought Plan 2027, which will encompass the period 2027-2032. This document presents HRA Screening assessments of all the drought options that are in the draft Drought Plan 2027.

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 remain 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 draft Drought Plan 2027 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 2032 have, therefore, been excluded from this HRA assessment.

1.5.2 UU's Drought Options

In the previous Drought Plan (DP2022) and following a change in the drought plan guidance, UU developed new drought levels and control rules that act as decision-points for implementing drought management actions and options. 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 draft Drought Plan 2027 contains a range of potential drought management options available to UU, 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).

1.5.2.1 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.

There is one supply side drought option included in UU's Drought Plan 2027, which is consistent with the previous DP 2022 (**Table 1-1**). Several previous non-commissioned sources listed as supply side options in previous drought plans have since been recommissioned and brought online (e.g. as part of the 2018 dry weather event) and are now considered 'business as usual' sources. Additionally, a review of the remaining non-commissioned sources was conducted during the preparation of DP 2022 to assess their availability and potential benefits. It was determined that ten boreholes would, therefore, be removed from the Drought Plan (DP). 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 HRA

WRZ	Licence
Strategic Resource Zone	None
Carlisle Resource Zone	Castle Carrock Reservoir, dead water storage
North Eden Resource Zone	None
Barepot Resource Zone	None

1.5.2.2 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**). These 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. Demand side options are included in the SEA and HRA Screening.

Table 1-2: Demand side options (all WRZs)

Option	Description
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.
Pressure management	Reducing the pressure in certain parts of UU's water network to help reduce demand.
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". May be applied company-wide, across a resource zone, or to target a specific geographical area, depending on the nature of the drought at the time
Ordinary Drought Order (Non-Essential Use Ban)	Drought order to ban non-essential uses of water (as set out in the Drought Direction 2011)

1.5.2.3 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 the Environment Agency[10]: 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.

[10] Environment Agency (2025) Drought permits and drought orders supplementary guidance. Water company drought plan guideline, March 2025.

Drought permit sites included in UU's draft Drought Plan 2027 are identified in **Table 1-3** and on the maps provided in **Appendix C**. There are no drought orders in UU's draft Drought Plan 2027. These options were considered in both the SEA scoping and HRA screening processes.

Table 1-3: Drought permit options

Water Source	Drought Permit
Strategic Resource Zone	
Delph Reservoir	Reduce compensation flow from 3.7 to 1.0 Ml/d
Dovestone Reservoir	Reduce compensation flow from 15.9 to 10.0 or 5.0 Ml/d
Fernilee Reservoir	Reduce compensation flow from 13.63 Ml/d to 6.8 Ml/d.
Jumbles Reservoir	Reduce compensation flow from 19.9 to 12.0 or 6.0 Ml/d
Longdendale Reservoirs	Reduce compensation flow from 45.5 to 22.5 or 15.0 Ml/d
River Lune LCUS abstraction	Reduce prescribed flow from 365.0 to a minimum of 200 Ml/d
Rivington Reservoirs – Brinscall Brook	Reduce compensation flow from 3.9 to 2.0 Ml/d
Rivington Reservoirs – White Coppice	Reduce compensation flow from 4.9 to 2.0 Ml/d
Ullswater	Reduce hands-off flow conditions to a minimum of 175 Ml/d Relax 12-month rolling abstraction licence limit
Lake Windermere	Reduce hands-off flow conditions to a minimum of 95 Ml/d Relax 12-month rolling abstraction licence limit
Carlisle Resource Zone	
None	
North Eden Resource Zone	
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 a position statement to water companies, outlining their roles and responsibilities regarding 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 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 DP 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 upfront 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 the storage). Hence, not all sites will need a shelf-copy EAR. UU and the EA have been working together to refine and agree on the list of CORs in UU's operating area, where the risk of a drought order warrants the production of a shelf copy EAR. It has been agreed that shelf-copy EARs for two CORs currently need to be prepared (Belmont and Black Moss). These are currently being prepared in consultation with the EA.

There is no public water supply benefit of a drought order at a COR. However, reference to CORs with associated drought orders may be made in UU's 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 include these. Drought orders would, however, be considered in the in-combination / cumulative assessments.

1.5.2.3.1 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 the revision of the Drought Plan options has been undertaken in parallel with the preparation of the SEA and HRA, and the results of these latter two assessments have informed the revision of the Drought Plan through an iterative process.

The list of drought options and the assessments provided in this document will be revised to reflect any changes between the Draft and Final Drought Plans.

1.5.2.3.2 Supporting Information

Drought options included in the SEA and HRA are documented by UU in its Drought Plan 2027 and presented in drought management option forms as specified by Drought Plan Guideline[11], specifically the environmental assessment supplementary guidance[12]. Information provided in these forms will be used to inform the SEA.

Drought options may have different environmental effects depending on the season of implementation (for example, a summer drought *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.

Detailed environmental assessment studies have been conducted for all of UU's drought permit/drought order sites, and the information from these studies has been used to inform the SEA and HRA Screening.

1.5.3 Drought Permit Environmental Studies

EARs have been prepared for all of the drought permit options identified in **Table 1-3** as part of UU's drought contingency planning.

EARs are designed to be updated in response to the prevailing drought situation at the time. The Environment Agency and Natural England were key consultees for the studies. The environmental assessment encompasses potentially affected habitats and species, including, but not limited to, SACs, SPAs, and Ramsar sites, as well as any SSSIs or priority habitats and species. The reports also include Environmental Monitoring Plan (EMP) recommendations for each drought permit site. These environmental assessments are intended to serve as the basis for the Environmental Report, which will support a specific drought permit or order application, should the need arise.

UU has updated the environmental assessments at all drought permit/drought order sites as part of the preparation for Drought Plan 2027. Environmental Reports, with date of completion, are listed in **Table 1-4**.

[11] Environment Agency (2025) Water company drought plan guideline, March 2025. (Version 1.4)

Table 1-4: Drought permit environmental assessments

Drought Permit	Date EAR last updated
Strategic Resource Zone	
Delph Reservoir	January 2026
Dovestone Reservoir	December 2025
Fernilee Reservoir	March 2026
Jumbles Reservoir	December 2025
Longdendale Reservoirs	March 2026
River Lune LCUS abstraction	2021, updated EAR in preparation for completion spring 2026
Rivington Reservoirs – Brinscall Brook	March 2026
Rivington Reservoirs – White Coppice	March 2026
Ullswater	November 2025
Lake Windermere	2021, updated EAR in preparation for completion spring 2026
Carlisle Resource Zone	
None	
North Eden Resource Zone	
Eden Valley boreholes - Bowscar boreholes	April 2025
Eden Valley boreholes - Gamblesby boreholes	
Eden Valley boreholes - Tarn Wood boreholes	

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.

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 Habitats 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 1.5.2.

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 draft DP 2027 on Habitats site(s) 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[3,13,14,15] 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 Habitats sites for Assessment

To provide an indication of those options more likely to have a significant effect on a Habitats site(s), those options that are within 10 km of a Habitats site were identified. Consideration was also given to the relative locations of options and Habitats sites within the same surface and groundwater catchments (where this information was available) to ensure that any connectivity over a longer distance that might affect water-dependent sites was taken into account. GIS data were used to map the locations and boundaries of Habitat sites within or adjacent to UU's supply area using publicly available data from Natural England and Natural Resources Wales.

The attributes of Habitats sites, which contribute to and define their integrity, were considered with reference to Standard Data forms for SACs and SPAs and Information Sheets for Ramsar sites[16].

The data sources that were considered include:

- Relevant citation documents;
- Conservation objectives (SACs and SPAs) and Supplementary Advice (where available) including the targets and attributes that inform favourable condition status;
- Site Improvement Plans (SACs and SPAs);
- Regulation 33 information for European Marine Sites;
- Favourable condition tables for Sites of Special Scientific Interest (SSSI);
- Article 12 (SPAs) and Article 17 (SACs) status reports;
- SSSI condition assessments;
- Common Standards Monitoring Guidance (where specific targets have been set and agreed by Natural England and Environment Agency);
- Habitat preferences for the qualifying species (e.g. nesting, foraging, commuting) and food preferences; and
- Physical characteristics of the habitats and environment influencing them.

[13] Court of Justice for the European Union's ruling on People Over Wind and Sweetman ('Sweetman II') vs Coillte Teoranta, Case C-323/17.
[14] UK Government (2023). Habitats Regulations Assessments: Protecting a European Site.
[15] UK Government (2019). The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019.

[16] These were obtained from the Joint Nature Conservation Committee and Natural England websites (www.jncc.gov.uk and www.naturalengland.org.uk).

A summary of the information provided by these documents is provided in **Appendix B:**. This information allows identification of those features of each site which determine site integrity and the specific sensitivities of the site, as well as an analysis of how potential impacts of the drought options may affect site integrity.

The locations of the supply side and drought permit options identified in Section 1.5.2 were also mapped in order to establish their geographic proximity to the Habitats sites. Location maps are provided for reference in **Appendix C**.

2.3 Potential Impacts of Drought Options

The qualifying habitats and species of Habitat Regulations 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 schemes considered for inclusion in the draft DP 2027 only have the potential to give rise to some of these impacts.

The demand management schemes are unlikely to have any effects on Habitats sites as they comprise measures which will not result in any new development or water abstraction (repairing leakage and water efficiency measures) and are largely implemented within urban areas. However, they have still been subject to the HRA screening process, the results of which are included in **Section 3**.

In determining the likelihood of significant effects on Habitats sites from the supply side drought options and drought permit/drought order drought options, particular consideration has been given to the possible source-receptor pathways through which effects may be transmitted from activities associated with DP options to features contributing to the integrity of the Habitats sites (e.g. groundwater or surface water catchments, air etc). **Table 2-1** shows the type of impacts drought options could have on Habitats site qualifying features.

Screening for LSEs has been determined on a proximity basis for many of the types of impacts, based on the proximity of the drought option location to each Habitats site. However, there are many uncertainties associated with using set distances as there are very few standards available as a guide to how far impacts will extend. Different types of impacts can occur over different distances, and the assumptions and distances used in this HRA and justification for them are shown in **Table 2-1**[17,18,19,20,21, 22] below.

Table 2-1: Potential impacts of drought options on Habitats sites

Broad categories of potential impacts on Habitats sites, with examples	Examples of activities responsible for impacts *(example distance considerations in italics)*
Physical loss: • Removal Smothering	**Development of infrastructure associated with option**, e.g. new or temporary pipelines, transport infrastructure, temporary weirs. **Indirect effects from a reduction in flows** e.g. drying out of water-margin habitat. *Physical loss is likely to be significant where the boundary of the option extends within or is directly adjacent to the boundary of the Habitats site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a Habitats site is designated, or where natural processes link the option to the site, such as through hydrological connectivity downstream of an option, long shore drift along the coast, or the option impacts the linking habitat).*

[17] Taken from UKWIR (2021) Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans) (21/WR/02/15).
[18] 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.
[19] 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.
[20] Waterbird Disturbance & Mitigation Toolkit. TIDE toolbox - TIDE tools (tide-toolbox.eu)
[21] British Standards Institute (BSI) (2009) BS5228 - Noise and Vibration Control on Construction and Open Sites. BSI, London.
[22] Institute of Lighting Professionals (2020) Guidance Notes for the Reduction of Obtrusive Light GN01/20.

Broad categories of potential impacts on Habitats sites, with examples	Examples of activities responsible for impacts *(example distance considerations in italics)*
Physical damage: • Sedimentation/silting • Prevention of natural processes • Habitat degradation • Erosion • Fragmentation • Severance/barrier effect • Edge effects	**Construction activity leading to permanent and/or temporary damage of available habitat, sedimentation/siltation, fragmentation, etc.** *Physical damage is likely to be significant where the boundary of the option extends within or is directly adjacent to the boundary of the Habitats site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat that supports species for which a Habitats site is designated, or where natural processes link the option to the site, such as through hydrological connectivity downstream of an option or sediment drift along the coast.*
Non-physical disturbance: • Noise • Visual presence • Human presence • Light pollution	**Noise from temporary construction or temporary pumping activities.** *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 estuarine bird species, it is concluded that noise impacts could be significant up to 1km from the boundary of the Habitats site.* **Noise from vehicular traffic during operation of an option.** *Noise from construction traffic is only likely to be significant where the transport route to and from the option is within 3-5km of the boundary of the Habitats site.* **Plant and personnel involved in in operation of the option.** *These effects (noise, visual/human presence) are only likely to be significant where the boundary of the option extends within or is adjacent to the boundary of the Habitats site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a Habitats site is designated).* **Options that might include artificial lighting**, *e.g. for security around a temporary pumping station.* *Effects from light pollution are more likely to be significant where the boundary of the option is within 500m of the boundary of the Habitats site.*
Water table/availability: • Drying • Flooding/stormwater • Changes to surface water levels and flows • Changes in groundwater levels and flows • Changes to coastal water movement	**Changes to water levels and flows due to increased water abstraction, reduced storage, or reduced flow releases from reservoirs to river systems. Potential for changes to habitat availability, for example reductions in wetted width of rivers leading to desiccation of macrophyte beds.** *These effects are only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the Habitats site. However, these effects are dependent on hydrological continuity between the option and the Habitats site, and sometimes whether the option is up or down stream from the Habitats site.*
Toxic contamination: • Water pollution • Soil contamination • Air Pollution	**Reduced dilution in downstream or receiving waterbodies due to changes in abstraction or reduced compensation flow releases to river systems.** *These effects are only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the Habitats site. However, these effects are dependent on hydrological continuity between the option and the Habitats site, and sometimes whether the option is up or down stream from the Habitats site.* **Air emissions associated with plant and vehicular traffic during construction and operation of options.** *The effect of dust is only likely to be significant where site is within or in close proximity to the boundary of the Habitats site. 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.*

Broad categories of potential impacts on Habitats sites, with examples	Examples of activities responsible for impacts *(example distance considerations in italics)*
	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.
Non-toxic contamination: • Nutrient enrichment (e.g. of soils and water) • Algal blooms • Changes in salinity • Changes in thermal regime • Changes in turbidity • Changes in sedimentation/silting	**Changes to water salinity, nutrient levels, turbidity, thermal regime due to increased water abstraction, discharges, storage, or reduced compensation flow releases to river systems.** *These effects are only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the Habitats site. However, these effects are dependent on hydrological continuity between the option and the Habitats site, and sometimes whether the option is up or down stream from the Habitats site.*
Biological disturbance: • Direct mortality • Changes to habitat availability • Out-competition by non-native species • Selective extraction of species • Introduction of disease • Rapid population fluctuations • Natural succession	**Killing or injury due to construction activity.** *Likely to be a risk where the boundary of the option extends within or is directly adjacent to the boundary of the Habitats site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a Habitats site is designated).* **Creation of new pathway for spread of non-native invasive species.** *This effect is only likely to be significant where the option is situated within the Habitats site or an upstream tributary of the Habitats site, but also for inter-catchment water transfers.*

As described in Section 1.5.3, environmental assessment reports have been prepared for the drought permit options and include consideration of potential impacts on Habitats sites (see **Table 1-4**). It is noted that the EARs 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 EAR 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. Habitats Regulations site(s) that are within 10km of the drought option location, or in hydrological connectivity, were identified and included in the HRA screening assessment.

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. All 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 was undertaken using professional judgement taking into account potential extent, complexity, duration, frequency, reversibility and probability of impacts.

Where uncertainty remains after screening, and it cannot be concluded that a drought option is not likely to have significant effects on the qualifying features of a Habitats site, the drought option should be 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

Article 6(3) of the Habitats Directive requires an Appropriate Assessment of 'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in-combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives'.

The review has therefore, considered the in-combination effects of the drought options within the UU draft DP 2027 and the in-combination effects of the draft DP 2027 with a number of plans and projects that could have an impact on the Habitats sites identified within this HRA, as follows:

- Inter-option effects within the UU draft DP 2027
- UU's WRMP24
- Other water company WRMPs and DPs
- Environment Agency Regional DP
- River Basin Management Plan (RBMP) 2022
- Other major planned infrastructure schemes.

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.

The assessment has used all publicly available information. It should also be noted that the water companies are at different stages of updating their WRMPs and DPs and therefore further updates may be required to the HRA in-combination assessment at the time of application for any of the drought permits or implementation of other drought options.

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 when determining the application.

3. HRA Screening Findings for Drought Options

3.1 HRA Screening for Statutory Drought Plan

The assessments of potential impacts for the drought options that were proposed for inclusion in UU's Draft Drought Plan 2027 are presented in **Table 3-1, Table 3-2** and **Table 3-3** for supply side options, demand side options and drought permit options, respectively.

Where applicable, drought options are presented for each resource zone and the Habitat sites, their qualifying features and approximate distance from the drought options are provided. 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 Habitat 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)

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).

Table 3-1 Habitats Regulations Screening of supply side drought options

Option	Habitat Site[23]	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
Strategic Resource Zone					
None					
Carlisle Resource Zone					
Castle Carrock reservoir, dead-water storage	North Pennine Moors SAC (1km NE)	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. 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&E building (~3mx4m) including access track. An acid rig with 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. Phase 2 will involve construction of a concrete base and temporary building (~3mx4m), including access track, and installation of pump-sets/M&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.	No	No	No
	River Eden SAC (1.1km N)		No	No	No
	North Pennine Moors SPA (1km NE)		No	No	No

[23] **Appendix B** provides a summary of the designation reasons and key vulnerabilities for each Habitat site.

Option	Habitat Site[23]	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		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. 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. 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. 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.			
North Eden Resource Zone					
None					

Table 3-2 Habitat Regulations Screening of demand side drought options

Option	Habitat Site	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
All Resource Zones					
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 Habitats Regulations 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 Habitats Regulations 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 Habitats Regulations 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 Habitat 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 Habitats Regulations 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 Habitat sites due to reduced pressure on water resources and reduced abstraction at source.	No	No	No

Option	Habitat Site	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
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 Habitats Regulations 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 Habitats Regulations 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 Habitats Regulations 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	Habitat Site	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
Strategic Resource Zone					
Delph Reservoir	None	There is no construction phase associated with this drought option. An updated Environmental Report has been prepared in 2026 for the drought option for drought contingency planning purposes. The report confirms that there are no Habitats Regulations sites within the zone of influence of the scheme.	No	No	No
Dovestone Reservoir	South Pennine Moors SAC (0.1km E)	There is no construction phase associated with this drought option. An updated Environmental Report has been prepared in 2025 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
	South Pennine Moors SPA (0.1km E)		No	No	No
Fernilee Reservoir	Peak District Moors (South Pennine Moors Phase 1) SAC & SPA (UK9007021) (0.5km E)	There is no construction phase associated with this drought option. An updated Environmental Report has been prepared in 2026 for the drought option for drought contingency planning purposes. The report confirms that the Habitats Regulations sites are not within the zone of influence of the drought option.	No	No	No
Longdendale Reservoirs	Peak District Moors (South Pennine Moors Phase 1) SAC & SPA (UK9007021) (<0.1km)	There is no construction phase associated with this drought option. An updated Environmental Report has been prepared in 2026 for the drought option for drought contingency planning purposes. The report confirms that the Habitats Regulations sites are not within the zone of influence of the drought option	No	No	No
Jumbles Reservoir	None	There is no construction phase associated with this drought option.	No	No	No

Option	Habitat Site	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		An Environmental Report has been prepared in 2026 for the drought option for drought contingency planning purposes. The report confirms that there are no Habitats Regulations sites within the zone of influence of the scheme.			
River Lune LCUS abstraction	Morecambe Bay SAC	There is no construction phase associated with this drought option. 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 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. An updated Environmental Assessment Report is currently in preparation for the drought option for drought contingency planning purposes and will be finalised in spring 2026. The previous published report (2021) concluded no adverse operational impacts on the Morecambe Bay SAC/SPA/Ramsar and the updated assessment will present the same conclusion. 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
	Morecambe Bay SPA		No	No	No
	Morecambe Bay Ramsar		No	No	No
Rivington Reservoirs – Brinscall Brook	None	There is no construction phase associated with this drought option. An Environmental Report has been prepared in 2025 for the drought option for drought contingency planning purposes. The report confirms that there are no Habitats Regulations sites within the zone of influence of the scheme.	No	No	No
Rivington Reservoirs – White Coppice	None	There is no construction phase associated with this drought option. An Environmental Report has been prepared in 2025 for the drought option for drought contingency planning purposes. The report confirms that there are no Habitats Regulations sites within the zone of influence of the scheme.	No	No	No

Option	Habitat Site	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
Ullswater	River Eden SAC	There is no construction phase associated with this drought option. The River Eamont is a major tributary of the River Eden. An Environmental Assessment Report has been prepared in 2025 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 Windermere	Morecambe Bay SAC (0km)	There is no construction phase associated with this drought option. 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. A An updated Environmental Assessment Report is currently in preparation for the drought option for drought contingency planning purposes and will be finalised in spring 2026. The previous published report (2021) concluded that 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	No	No	No
	Morecambe Bay SPA (0km)		No	No	No
	Morecambe Bay Ramsar (0km)		No	No	No
	Roudsea Wood and Mosses SAC (0km)		No	No	No

Option	Habitat Site	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		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. 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.			
Carlisle Resource Zone					
None					
North Eden Resource Zone					
Eden Valley boreholes-Bowscar boreholes	River Eden SAC (3.95km)	There is no construction phase associated with this drought option. 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. An Environmental Report has been prepared for drought contingency planning at the Eden Valley boreholes sites in 2025. The report concluded a moderate temporary increase in groundwater drawdown (>0.5m) within a radius of 1.6km from source. Cumbrian Marsh Fritillary Site SAC is outside of the zone of impact of any groundwater drawdown. The impact on surface water hydrology was assessed as negligible for the River Eden and River Eamont, with no changes in habitat and geomorphology or water quality anticipated as a result.	No	No	No
	Cumbrian Marsh Fritillary Site SAC UK0030126 (8.0km)		No	No	No

Option	Habitat Site	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
		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). Therefore, no likely significant effects on Habitats Regulations sites are anticipated, either alone or in combination.			
Eden Valley borehole - Gamblesby boreholes	River Eden SAC (5.3km W)	There is no construction phase associated with this drought option. 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. An Environmental Report was prepared in 2025 for drought contingency planning at the Eden Valley boreholes sites. The report concluded that the drought option would result in a modest temporary increase in groundwater drawdown (<0.5m) beyond 500m from the source with a corresponding minor impact on surface water flows. Negligible impacts were assessed for habitat and geomorphology and water quality. In conclusion, additional drawdown is not anticipated to result in significant reductions in groundwater level or river flows and any changes are considered to be well within the tolerance range of the designated sites present. Therefore, no likely significant effects of the operation of the drought option on Habitats Regulations sites are anticipated, either alone or in combination.	No	No	No
	North Pennine Moors SAC (8.3km N)		No	No	No
	North Pennine Moors SPA (1.5km SE)		No	No	No
	Moor House- Upper Teesdale SAC (1.5km SE)		No	No	No
Eden Valley boreholes -- Tarn Wood boreholes	River Eden SAC (1.8km)	There is no construction phase associated with this drought option. 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	No	No	No

Option	Habitat Site	Potential for effects on qualifying features?	Is scheme likely to have a significant effect on Habitat site(s) alone?	Effect in combination with existing consents?	Effect in combination with other drought options?
	Cumbrian Marsh Fritillary Site SAC UK0030126 (7.9km)	acknowledged that the Review of Consents was carried out on the existing licence and not the drought option proposed. An Environmental Report has been prepared for drought contingency planning at the Eden Valley boreholes sites. The report concluded a moderate temporary increase in groundwater drawdown (>0.5m) within a radius of 1.2km from source which would manifest as a negligible impact on surface water hydrology with no impact anticipated on habitat and geomorphology or water quality. Therefore, no likely significant effects of the operation of the drought option on European designated sites are anticipated, either alone or in combination.	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 Final WRMP24[24] that are due to be operational within the time period of the Drought Plan. The requirements of the Drought Plan 2022 were fully incorporated into both the WRMP calculations and the HRA for the Final WRMP24. As there have been no changes to the options proposed for the Drought Plan 2027, no additional in-combination effects are expected between the Drought Plan and the Final WRMP24. Furthermore, the WRMP24 options do not interact with any of the Habitats Regulations Sites that could potentially be affected by the Drought Plan options. The WRMP24 HRA therefore concludes that there will be *no likely significant effects* (alone or in combination) arising from the WRMP.

There is a suite of leakage reduction and network metering actions being implemented through the WRMP24. The demand management actions have potentially positive effects, as they will ultimately result in reduced abstraction at source, across all resource zones.

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 (2025)

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[25] 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 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 Habitat 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.

[24] United Utilities (2024) Final Water Resources Management Plan 2024, December 2024. Available at: https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/ [Accessed February 2026]
[25] Mike Stokes, Environment Agency email to Kat Liney, Cascade Consulting, 7 September 2011.

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 into 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 and UU 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. Two environmental assessment reports for CORs are currently being prepared (Belmont and Black Moss). In-combination impacts have been assessed for a potential drought order at Belmont with UU's Jumbles and Delph drought permits. No likely significant effects of the operation of the drought orders at these two sites on Habitat sites are anticipated, either alone or in combination with UU drought permits. However, due to the uncertainties of potential locations, and potential revisions to the Environment Agency Drought Plans this should be considered further at the time of any potential application for drought permits by UU and the Environment Agency.

3.2.3 Other Water Company Drought Plans and Water Resources Management Plans

Assessment of the potential for in-combination effects of supply side and drought permit options with drought options listed in neighbouring water companies' DPs and WRMPs has been undertaken. Plans from the following water companies were reviewed as part of this process:

- Dŵr Cymru Welsh Water
- Severn Trent Water
- Yorkshire Water
- Northumbrian Water
- Scottish Water
- Hafren Dyfrdwy

It should be noted that all water company DPs and WRMPs are subject to review on timescales that may not be aligned with the timescale of UU's Drought Plan. 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.

A supply-side option aimed at augmenting flows in the River Dee was the only supply side measure included in the Hafren Dyfrdwy Drought Plan 2025-2030[26]. No drought permit options were included in Northumbrian Water's 2022 Drought Plan and all supply side options would be within existing licensed limits. No potential for in-combination effects on Habitat sites between UU's DP 2027 and other water company drought plans or WRMPs have been identified.

3.2.4 River Basin Management Plans

Assessment of the potential for in-combination effects of supply side and drought permit options with drought options listed in the River Basin Management Plans has been undertaken.

[26] Hafren Dyfrdwy (2025) Hafren Dyfrdwy Drought Plan 2025-2030

The updated North West RBMP[27], published in October 2022, describes the planned steps to implement the measures required to achieve the environmental objectives of the Water Framework Directive (WFD). It provides the framework for protecting and enhancing the water environment.

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

The RBMP and DP contain similar objectives around the protection, sustainable management and use of the water environment in terms of quality and quantity. The HRA[28] of the North West RBMP concluded that the risk of significant in-combination effects on Habitats sites with other plans is considered to be low, because the objectives and actions within the RBMP are aimed at improving the status of water bodies and achieving favourable conservation status for water dependent Habitats sites. Implementation of the RBMP with the Drought Plan may constrain the implementation of RBMP objectives, however, the plans may also provide opportunities to co-deliver actions.

3.2.5 National Policy Statements

National Policy Statement for Water Resources Infrastructure[29]; sets out the need and policies for development of nationally significant infrastructure projects (NSIPs) for water resources in England.

National Policy Statement for Wastewater[30]; 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[31]; ** covers the following types of nationally significant renewable energy infrastructure in England; energy from biomass and/or waste (>50 megawatts (MW), pumped hydro storage (>50MW), solar photovoltaic (>100MW), offshore wind (>100MW) and onshore wind (>100MW), tidal stream (>100MW). No cumulative effects with UU's drought options have been identified.

National Policy Statement for Nuclear Energy Generation [32]**;** 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.

3.2.6 Summary

No adverse in-combination effects on Habitat sites have been identified between UU's drought options, and actions in UU's WRMP24, Environment Agency Drought Plans, other water company Drought Plans or key National Policy Statements.

[27] Environment Agency (2022) North West river basin district river basin management plan: updated 2022. Available at: https://www.gov.uk/guidance/north-west-river-basin-district-river-basin-management-plan-updated-2022 [Accessed February 2026]
[28] Environment Agency (2022) River basin management plan for the Thames River Basin District: Habitats Regulations Assessment, September 2022. Available at https://assets.publishing.service.gov.uk/media/635248048fa8f554cca7b226/Thames_river_basin_management_plan_2022_HRA.pdf [Accessed February 2026]

[29] Defra (2025) *National Policy Statement for water resources infrastructure*. July 2025.
[30] Defra (2012) *National Policy Statement for waste water*. March 2012.
[31] Department of Energy Security and Net Zero (2025) *National Policy Statement for Renewable Energy Infrastructure (EN-3)*. December 2025.
[32] Department of Energy and Climate Change (2025) *National Policy Statement for nuclear energy generation (EN-7)*. November 2025.

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?
Supply Side Options				
Strategic Resource Zone				
None	No	No	No	No
Carlisle Resource Zone				
Castle Carrock Reservoir, dead-water storage	No	No	No	No
North Eden Resource Zone				
None	No	No	No	No
Demand Management (all WRZs)				
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
Drought Permit Options				
Strategic Resource Zone				
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
Carlisle Resource Zone				
None	No	No	No	No
North Eden Resource Zone				
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

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 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

This HRA Screening Report will be consulted upon alongside UU's Draft Drought Plan 2027.

Appendix A: Construction Activities Required for Supply Side 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	Slipline maintenance	Activity Ref (see Table A2)
Strategic Resource Zone												
None												
Carlisle Resource Zone												
Castle Carrock Reservoir dead water storage	Install temporary pumping equipment into reservoir in order to utilise dead storage (170 Ml) 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**
North Eden Resource Zone												
None												

Table A2 Construction Activities

Activity Ref	Activity	Scope	Traffic	Materials
1	**New borehole pumps /rising main**	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	**New mechanical and electrical works**	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	**Disinfection only plant > 5 Ml/d**	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^3 Temporary building (6mx4m) Disinfection rig including control equipment Hypochlorite storage
4	**Disinfection and UV plant Up to 5 Ml/d**	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^3 Temporary building (3mx4m) Disinfection/UV rigs including control equipment Hypochlorite storage

Activity Ref	Activity	Scope	Traffic	Materials
5	**Disinfection and UV plant > 5 Ml/d**	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^3 Temporary building (6mx4m) Disinfection/UV rigs including control equipment Hypochlorite storage
6	**Acid dosing**	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^3 Temporary building (3mx4m) Disinfection rig including control equipment Chemical storage
7	**Filter plant**	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^3 Temporary building (3mx4m) Filtration plant including control equipment Chemical storage
8	**Temporary Pumping Station**	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^3 Temporary building (3mx4m) Generator Pumps

Activity Ref	Activity	Scope	Traffic	Materials
9	**Existing water treatment works refurbishment**	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	**Temporary pipeline and pumping station**	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: ~ 20m3
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: Habitats Regulations Sites Summaries

Table A-1: Summaries of Habitats Regulations Sites potentially impacted by UU's drought options

Site Name	Reason for Designation	Site Vulnerability
South Pennine Moors SAC (UK0030280)	**4030 European dry heaths** 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 **7130 blanket bogs**. The upland heath of the South Pennines is strongly dominated by heather *Calluna vulgaris*. Its main NVC types are H9 *Calluna vulgaris –Deschampsia flexuosa* heath and H12 *Calluna vulgaris – Vaccinium myrtillus* heath. More rarely H8 *Calluna vulgaris – Ulex gallii* heath and H10 *Calluna vulgaris – Erica cinerea* heath are found. On the higher, more exposed ground H18 *Vaccinium myrtillus – Deschampsia flexuosa* 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. **7130 Blanket bogs (* if active bog)** * Priority feature This site represents **blanket bog** in the south Pennines, the most south-easterly occurrence of the habitat in Europe. The bog vegetation communities are botanically **4030 European dry heaths** 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 **7130 blanket bogs**. The upland heath of the South Pennines is strongly dominated by heather *Calluna vulgaris*. Its main NVC types are H9 *Calluna vulgaris –Deschampsia flexuosa* heath and H12 *Calluna vulgaris – Vaccinium myrtillus* heath. More rarely H8 *Calluna vulgaris – Ulex gallii* heath and H10 *Calluna vulgaris – Erica cinerea* heath are found. On the higher, more exposed ground H18 *Vaccinium myrtillus – Deschampsia flexuosa* 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. **7130 Blanket bogs (* if active bog)** * Priority feature This site represents **blanket bog** 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 *Eriophorum vaginatum* is often overwhelmingly dominant and the usual bog-building *Sphagnum* mosses are scarce. Where the blanket peats are slightly drier, heather *Calluna vulgaris*, crowberry *Empetrum nigrum* and bilberry *Vaccinium myrtillus* become more prominent. The uncommon cloudberry *Rubus chamaemorus* is locally abundant in bog vegetation. Bog pools provide diversity and are often characterised by common cottongrass *E. angustifolium*. 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. **91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles** Around the fringes of the upland heath and bog of the south Pennines are blocks of **old sessile oak woods**, 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 19th century air pollution). Other components of the ground	The site is subject to threats and pressures from; Air pollution, air-borne pollutants, Agriculture activities not referred to above, Human induced changes in hydraulic conditions, Fire and fire suppression, Outdoor sports and leisure activities, recreational activities.

Site Name	Reason for Designation	Site Vulnerability
	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.	
North Pennine Moors SAC (UK0030033)	**4030 European dry heaths** 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 **7130 blanket bogs**. The most abundant heath communities are H9 *Calluna vulgaris – Deschampsia flexuosa* heath and H12 *Calluna vulgaris – Vaccinium myrtillus* heath. There are also examples of H18 *Vaccinium myrtillus – Deschampsia flexuosa*, H10 *Calluna vulgaris – Erica cinerea* and H21 *Calluna vulgaris – Vaccinium myrtillus – Sphagnum capillifolium* heaths. **5130 *Juniperus communis* formations on heaths or calcareous grasslands** 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 *Pteridium aquilinum* but the core area of juniper is of W19 *Juniperus communis – Oxalis acetosella* woodland with scattered rowan *Sorbus aucuparia* and birch *Betula* spp. **7130 Blanket bogs** 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 *Calluna vulgaris – Eriophorum vaginatum* blanket mire, but there is also representation of M18 *Erica tetralix – Sphagnum papillosum* blanket mire and some western localities support M17 *Scirpus cespitosus – Eriophorum vaginatum* blanket mire. Forms of M20 *Eriophorum vaginatum* blanket mire predominate on many areas of non-active bog. **7220 Petrifying springs with tufa formation (*Cratoneurion*)** 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 *Primula farinosa* and marsh valerian *Valeriana dioica*. **8220 Siliceous rocky slopes with chasmophytic vegetation** 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 *Racomitrium lanuginosum*, and species like stiff sedge *Carex bigelowii* and fir clubmoss *Huperzia selago*. **91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles** 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 *Betula* sp. and rowan *Sorbus aucuparia*. The slopes are boulder-strewn, with mixtures of heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus* and moss carpets in the ground flora. **4010 Northern Atlantic wet heaths with *Erica tetralix*** (qualifying feature but not primary reason for selection) **6130 Calaminarian grasslands of the *Violetalia calaminariae*** (qualifying feature but not primary reason for selection) **6150 Siliceous alpine and boreal grasslands** (qualifying feature but not primary reason for selection) **6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)** (qualifying feature but not primary reason for selection) **7230 Alkaline fens** (qualifying feature but not primary reason for selection) **8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)** (qualifying feature but not primary reason for selection)	The site is subject to threats and pressures from; Interspecific floral relations, Fire and fire suppression, Human induced changes in hydraulic conditions, Grazing, Modification of cultivation practices.

Site Name	Reason for Designation	Site Vulnerability
	8210 Calcareous rocky slopes with chasmophytic vegetation (qualifying feature but not primary reason for selection) **1528 Marsh saxifrage (*Saxifraga hirculus*)** (qualifying feature but not primary reason for selection)	
River Eden SAC (UK0012643)	**3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the Isoëto-*Nanojuncetea* -** 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. **3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation -** The River Eden flows over both calcareous limestone and sandstone, which creates a wide diversity of ecological conditions, ranging from oligotrophic to mesotrophic. **91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) -** Throughout the length of the River Eden stands of alder and willow occur associated with backwaters and seasonally-flooded channels. **1092 White-clawed crayfish (*Austropotamobius pallipes*) -** High water quality in the River Eden allows it to support a large population of white-clawed crayfish. **1095 Sea lamprey (*Petromyzon marinus*) -** The Eden represents a sea lamprey population associated with an extensive river system on a varied and base-rich geology in northern England. A large and healthy population of sea lamprey is supported in the middle to lower regions of the river. **1096 Brook lamprey (*Lampetra planeri*) -** The Eden represents a brook lamprey population associated with an extensive river system on a varied and base-rich geology in northern England. Brook lamprey is supported widely within the catchment. **1099 River lamprey (*Lampetra fluviatilis*) -** The Eden represents a river lamprey population associated with an extensive river system on a varied and base-rich geology in northern England. **1106 Atlantic salmon (*Salmo salar*) -** The Eden represents one of the largest populations of Atlantic salmon in northern England. It is an excellent example of a large river system that flows over varied, base-rich geology. **1163 Bullhead (*Cottus gobio*) -** The Eden represents bullhead *Cottus gobio* in a high-quality, relatively unmodified river in the northern part of its range in England. **1355 Otter (*Lutra lutra*) -** The River Eden provides an example of lowland otter *Lutra lutra* habitats in north-west England and complements the selection of the River Derwent and Bassenthwaite Lake.	The site is subject to threats and pressures from; Changes in biotic conditions, Pollution to groundwater (point sources and diffuse sources), Human induced changes in hydraulic conditions, Cultivation, Problematic native species.
Peak District Moors (South Pennine Moors Phase 1) SPA & SAC (UK9007021)	**4030 European dry heaths** 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 **7130 blanket bogs**. The upland heath of the South Pennines is strongly dominated by heather *Calluna vulgaris*. Its main NVC types are H9 *Calluna vulgaris –Deschampsia flexuosa* heath and H12 *Calluna vulgaris – Vaccinium myrtillus* heath. More rarely H8 *Calluna vulgaris – Ulex gallii* heath and H10 *Calluna vulgaris – Erica cinerea* heath are found. On the higher, more exposed ground H18 *Vaccinium myrtillus – Deschampsia flexuosa* 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. **7130 Blanket bogs (* if active bog)** * Priority feature	The site is subject to threats and pressures from; Outdoor sports and leisure activities, recreational activities, Human induced changes in hydraulic conditions, Fire and fire suppression, Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive

Site Name	Reason for Designation	Site Vulnerability
	This site represents **blanket bog** 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 *Eriophorum vaginatum* is often overwhelmingly dominant and the usual bog-building *Sphagnum* mosses are scarce. Where the blanket peats are slightly drier, heather *Calluna vulgaris*, crowberry *Empetrum nigrum* and bilberry *Vaccinium myrtillus* become more prominent. The uncommon cloudberry *Rubus chamaemorus* is locally abundant in bog vegetation. Bog pools provide diversity and are often characterised by common cottongrass *E. angustifolium*. 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. **91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles** Around the fringes of the upland heath and bog of the south Pennines are blocks of **old sessile oak woods**, 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 19th 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. **Article 4.1** During the breeding season the area regularly supports: *Asio flammeus* at least 2.2% of the GB breeding population Count, as at 1990 and 1998 *Falco columbarius* at least 2.3% of the GB breeding population Count as at 1990 and 1998 *Pluvialis apricaria* [North-western Europe - breeding] at least 1.9% of the GB breeding population Count, as at 1990 and 1998.	density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.), Reduced fecundity/ genetic depression.
North Pennine Moors SPA (UK9006272)	**Article 4.1** During the breeding season the area regularly supports: Hen harrier Circus cyaneus (2.2% of GB breeding population) Merlin Falco columbarius (10.5% of GB breeding population) Peregrine falcon Falco peregrinus (1.3% of GB breeding population) Golden plover Pluvialis apricaria (6.2% of GB breeding population)	The site is subject to threats and pressures from; Interspecific floral relations, Fire and fire suppression, Human induced changes in hydraulic conditions, Grazing, Modification of cultivation practices.
South Pennine Moors SPA (UK9007022)	**Article 4.1** During the breeding season the area regularly supports: *Asio flammeus* at least 2.2% of the GB breeding population Count, as at 1990 and 1998 *Falco columbarius* at least 2.3% of the GB breeding population Count as at 1990 and 1998 *Pluvialis apricaria* [North-western Europe - breeding] at least 1.9% of the GB breeding population Count, as at 1990 and 1998.	The site is subject to threats and pressures from; Air pollution, air-borne pollutants, Agriculture activities not referred to above, Human induced changes in hydraulic conditions, Fire and fire

Site Name	Reason for Designation	Site Vulnerability
		suppression, Outdoor sports and leisure activities, recreational activities.
Morecambe Bay SAC (UK0013027)	**1130 Estuaries** Morecambe Bay in north-west England is the confluence of four principal **estuaries**, the Leven, Kent, Lune and Wyre (the latter lies just outside the site boundary), together with other smaller examples such as the Keer. Collectively these form the largest single area of continuous intertidal mudflats and sandflats in the UK and the best example of muddy sandflats on the west coast. The estuaries are macro-tidal with a spring tidal range of 9 m. The significant tidal prisms of the estuaries result in the Bay being riven by large low-water channel systems. The Kent, Leven and Lune estuaries have been modified variously by railway embankments, flood embankments and training walls but support extensive intertidal areas. Although cobble 'skears' and shingle beaches occur at their mouths, the estuaries consist predominantly of fine sands and muddy sands. The estuaries support dense invertebrate communities, their composition reflecting the salinity and sediment regimes within each estuary. Extensive saltmarshes and glasswort *Salicornia* spp. beds are present in the Lune estuary, contrasting with the fringing saltmarshes and more open intertidal flats of the Leven and Kent estuaries. Most of the saltmarshes are grazed, a characteristic feature of north-west England. In the upper levels of the saltmarshes there are still important transitions from saltmarsh to freshwater and grassland vegetation. Water quality is generally good. **1140 Mudflats and sandflats not covered by seawater at low tide** Morecambe Bay in north-west England is the confluence of four principal estuaries, the Leven, Kent, Lune and Wyre (the latter lies just outside the site boundary), together with other smaller examples such as the Keer. Collectively these form the largest single area of continuous intertidal **mudflats and sandflats** in the UK and the best example of muddy sandflats on the west coast. At low water, large areas of sandflats are exposed, and these range from the mobile fine sands of the outer Bay to more sheltered sands in the inner areas. With increasing shelter in the Bay's adjoining estuaries, finer sediments settle out and form extensive mudflats, supporting a particularly rich and diverse range of infaunal species. **1160 Large shallow inlets and bays** Morecambe Bay in north-west England is the second-largest embayment in the UK, after the Wash. It is a large, very shallow, predominantly sandy bay bordered on the south by the channel of the Lune estuary and on the north by Walney Channel. At low tide vast areas of intertidal sandflats are exposed, with small areas of mudflat, particularly in the upper reaches of the associated estuaries. The sediments of the bay are mobile and support a range of community types, from those typical of open coasts (mobile, well-sorted fine sands), grading through sheltered sandy sediments to low-salinity sands and muds in the upper reaches. Apart from the areas of intertidal flats and subtidal sandbanks, Morecambe Bay supports exceptionally large beds of mussels *Mytilus edulis* on exposed 'scars' of boulder and cobble, and small areas of **1170 Reefs** with fucoid algal communities. Of particular note is the rich community of sponges and other associated fauna on tide-swept pebbles and cobbles at the southern end of Walney Channel. **1220 Perennial vegetation of stony banks** Morecambe Bay represents **Perennial vegetation of stony banks** in north-west England. Walney Island on the shores of Morecambe Bay is a barrier island fringed by shingle with a partial sand covering. Two areas of exposed vegetated shingle occur at the extremes of the barrier. The southern area has been highly modified by eutrophication from a large gull colony, resulting in communities that are	The site is subject to threats and pressures from; Outdoor sports and leisure activities, recreational activities, Pollution to surface waters (limnic & terrestrial, marine & brackish), Fishing and harvesting aquatic resources.

Site Name	Reason for Designation	Site Vulnerability
	unusually species-rich for pioneer shingle vegetation. Perennial rye-grass *Lolium perenne*, common chickweed *Stellaria media* and biting stonecrop *Sedum acre* are constant elements, with dove's-foot crane's-bill *Geranium molle* an unusual and important feature. **1310 Salicornia and other annuals colonizing mud and sand** Two types of pioneer saltmarsh are represented at Morecambe Bay in north-west England. Pioneer glasswort *Salicornia* spp. saltmarsh occurs intermittently along the coastline of the bay, forming a transition from the extensive intertidal sand and mudflats to the distinctive saltmeadows at this site. The sea pearlwort *Sagina maritima* community occurs in open pans on the upper marsh. **1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)** Morecambe Bay is characteristic of saltmarshes in north-west England, with large areas of closely grazed upper marsh. The mid-upper marsh vegetation is strongly dominated by the saltmarsh-grass/fescue *Puccinellia*/*Festuca* communities, of which over 1,000 ha occur here, and by smaller areas of saltmarsh rush *Juncus gerardii* community. NVC type SM18 *Juncus maritimus* community is also more strongly represented here than elsewhere in England. The plant species include both southern elements, such as lesser centaury *Centaurium pulchellum*, and northern elements, such as saltmarsh flat-sedge *Blysmus rufus* and few-flowered spike-rush *Eleocharis quinqueflora*. **2120 "Shifting dunes along the shoreline with Ammophila arenaria (""white dunes"")"** Shifting dune vegetation forms a major component of the active sand dune systems at the entrance to Morecambe Bay on Walney Island and the Duddon Estuary at Sandscale Haws. A small area is also present at the entrance to the Wyre. Sandscale Haws supports a mosaic of shifting communities, which form a continuous block around the seaward edge of this site. There are transitions to **2110 Embryonic shifting dunes**. The prograding shingle spits at either end of Walney Island support dune systems at South End and North End Haws. Species associated with these shifting dunes include sea holly *Eryngium maritimum*, sea spurge *Euphorbia paralias*, Portland spurge *Euphorbia portlandica* and sea bindweed *Calystegia soldanella*. **2130 "Fixed coastal dunes with herbaceous vegetation (""grey dunes"")" * Priority feature** Sandscale Haws at the entrance to the Duddon Estuary supports the largest area of calcareous **fixed dunes** in Cumbria, which contrast with the acidic dunes at the adjacent North End Haws on Walney Island. South End Haws on Walney Island supports a smaller area of fixed dunes. North Walney and Sandscale in particular show well-conserved structure and function. The fixed dunes support a rich plant diversity including wild pansy *Viola tricolor*, lady's bedstraw *Galium verum*, common restharrow *Ononis repens* and the uncommon dune fescue *Vulpia membranacea* and dune helleborine *Epipactis dunensis*. **2190 Humid dune slacks** Dune slacks are particularly well-represented at Sandscale Haws, the largest calcareous dune system in Cumbria. The slacks support a good range of vegetation communities and are very species-rich. Several uncommon species including marsh helleborine *Epipactis palustris*, dune helleborine *Epipactis dunensis* and coralroot orchid *Corallorhiza trifida* occur. **1110 Sandbanks which are slightly covered by sea water all the time** **1150 Coastal lagoons* *Priority feature*** **1170 Reefs** **2110 Embryonic shifting dunes** **2150 Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)* *Priority feature*** **2170 Dunes with *Salix repens ssp. Argentea* (*Salicion arenariae*)**	

Site Name	Reason for Designation	Site Vulnerability
Morecambe Bay SPA (UK9020326)	**Article 4.1** Over winter the site supports Bar-tailed godwit (*Limosa lapponica)* and Golden plover (*Pluvialis apricaria)*. During breeding season the site supports Little tern (*Sterna albifrons)* and Sandwich tern (*Sterna sandvicensis).* **Article 4.2** Over winter the site supports Curlew (*Numenius arquata),* Dunlin (*Calidris alpina alpine),* Grey plover (*Pluvialis squatarola),* Knot (*Calidris canutus),* Oystercatcher (*Haematopus ostralegus),* Pink-footed goose (*Anser brachyrhynchus),* Pintail (*Anas acuta),* Redshank (T*ringa tetanus),* Shelduck (*Tadorna tadorna)* and Turnstone (*Arenaria interpres)* and on passage *Ringed plover (*Charadrius hiaticula) and S*anderling (*Calidris alba). During breeding season the site supports Herring gull (*Larus argentatus)* and Lesser black-backed gull (*Larus fuscus).* The site regularly supports important assemblages of at least 20,000 waterfowl and 20,000 seabirds.	The site is subject to threats and pressures from; Outdoor sports and leisure activities, recreational activities, Air pollution, air-borne pollutants, Fishing and harvesting aquatic resources, Marine water pollution, Changes in biotic conditions, Changes in abiotic conditions, Airports, flightpaths, Interspecific faunal relations Interspecific faunal relations.
Morecambe Bay Ramsar (UK11045)	**Ramsar Criterion 4** Over winter, the site supports a large waterfowl assemblage of international importance. **Ramsar Criterion 5** Over winter, the site supports a large waterfowl assemblage of international importance. **Ramsar Criterion 6** The site supports a variety of species/populations occurring at levels of international importance.	
Roudsea Wood and Mosses SAC (UK0019834)	**7110 Active raised bogs * Priority feature** Roudsea consists of a complex of raised bogs on the northern shore of Morecambe Bay in north-west England. Although the majority of the complex has undergone extensive drainage in the past, with domestic peat-cutting around the margins, drainage was abandoned many years ago and much of the area has recovered to a considerable degree. Less than 20% of the site is classified as **7120 degraded raised bog**. Within the site there are transitions between acid bog and limestone woodland, with a number of scarce plant species including the rare large yellow-sedge *Carex flava*. **7120 Degraded raised bogs still capable of natural regeneration** This is a complex of raised bogs on the northern shore of Morecambe Bay in north-west England. Although the majority of the complex has undergone extensive drainage in the past, with domestic peat-cutting around the margins, drainage was abandoned many years ago and peat-formation has resumed over much of its area. Less than 20% of the site is classified as **degraded raised bog**. Within the site there are transitions between acid bog and limestone woodland, with a number of scarce plant species including the rare yellow sedge *Carex flava*. **9180 Tilio-Acerion forests of slopes, screes and ravines * Priority feature** Woodland at Roudsea, with others within the nearby Morecambe Bay Pavements, represents ***Tilio-Acerion* forests** on Carboniferous limestone in north-west England. Although close to the northern limit of lime distribution, the ash *Fraxinus excelsior*-dominated	The site is subject to threats and pressures from; Forest and Plantation management & use, Invasive non-native species, Biocenotic evolution, succession, Problematic native species, Human induced changes in hydraulic conditions.

Site Name	Reason for Designation	Site Vulnerability
	woodland around Morecambe Bay contains many patches of small-leaved lime *Tilia cordata*, which survive sometimes with elm *Ulmus* spp., often along outcrop edges. There is a rich assemblage of rare species, including fingered sedge *Carex digitata*. A notable feature of this wood is the sudden vegetation change across the boundaries between the limestone, where the *Tilio-Acerion* occurs, and acid peats or Silurian slates. **91J0 Taxus baccata woods of the British Isles * Priority feature** The yew ***Taxus baccata* woods** of Roudsea Wood have strong similarities with the yew stands at the nearby Morecambe Bay Pavements. They are both on the northern Carboniferous Limestone, and as in the Wye Valley yew occurs both as dense groves and as scattered trees in the understorey of ash or ash-elm *Fraxinus-Ulmus* woodland.	
Moor House-Upper Teesdale SAC (UK0014774)	**3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.** This site includes a single small hard oligo-mesotrophic waterbody, Tarn Dub, an upland pool which is impermanent in nature and situated on the slopes of Cronkley Fell. A species-poor flora includes stoneworts *Chara* spp. in the deeper parts, as well as shoreweed *Littorella uniflora*, the aquatic moss *Fontinalis antipyretica* and tubular water-dropwort *Oenanthe fistulosa*. **4060 Alpine and Boreal heaths** Moor House – Upper Teesdale has the most extensive area of **Alpine and Boreal heaths** south of Scotland and is the best southern outlier. The main sub-type is H19 *Vaccinium myrtillus – Cladonia arbuscula* heath, which occurs on an extensive plateau. Characteristically (as in the Scottish Highlands) there is an abundance of lichens, especially *Cladonia* species, but on this site there is also an unusual abundance of large clumps of the montane lichen *Cetraria islandica*. At the edge of the plateau *Vaccinium – Cladonia* heath gives way below to a wind-clipped form of H12 *Calluna vulgaris – Vaccinium myrtillus* heath. which grades into taller heaths of the same community lower down the slopes. These represent alpine to boreal transitions which, in the more severe climate of the Highlands, would be represented by lichen- or bryophyte-rich prostrate *Calluna* heaths. Similarly, on one level summit at an altitude of 600 m, wind-clipped heather of a short but upright growth form occurs among a profusion of lichens, especially *Cladonia* species. This constitutes an unusual alpine/subalpine form of *Calluna – Vaccinium* heath that is very local in England. **5130 Juniperus communis formations on heaths or calcareous grasslands** This site represents ***Juniperus communis* formations** on a more acidic substrate in north-east England. It has the second most extensive area of juniper scrub in UK and the largest south of Scotland. The main area of juniper scrub grows on the igneous whin-sill, at moderately high altitude. In Upper Teesdale the juniper has developed mainly on heath and is of the W19 *Juniperus communis – Oxalis acetosella* type. There are transitions to dwarf-shrub heath, acidic grasslands and whin-sill cliffs. Small patches of juniper scrub also occur on calcareous soils, including the sugar limestone grassland for which this site is famous. Palaeo-environmental evidence indicates that juniper scrub has been present continuously since the last glacial period. **6130 Calaminarian grasslands of the Violetalia calaminariae** This site contains an example of **Calaminarian grassland** on lead-mine spoil associated with the Carboniferous limestone at high altitude in the Pennines of northern England. Much of the spoil is unvegetated and has a variety of particle sizes ranging from coarse rubble to fine sediment, and several steep, unstable slopes. The metallophytes spring sandwort *Minuartia verna*, alpine penny-cress *Thlaspi caerulescens* and Pyrenean scurvygrass *Cochlearia pyrenaica* occur along with lichens such as *Cladonia rangiformis*, *C. chlorophaea* and *Coelocaulon aculeatum*.	The site is subject to threats and pressures from; Modification of cultivation practices, Fire and fire suppression, Interspecific floral relations, Grazing, Reduced fecundity/ genetic depression.

Site Name	Reason for Designation	Site Vulnerability
	6150 Siliceous alpine and boreal grasslands The summit of Cross Fell has the best-developed and most extensive area of **Siliceous alpine and boreal grasslands** in England. The U10 *Carex bigelowii – Racomitrium lanuginosum* moss-heath that covers the summit cap has a high cover of woolly fringe-moss *Racomitrium lanuginosum*. **6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)** Extensive stands of CG9 *Sesleria albicans – Galium sterneri* grassland occur at this site in northern England. It is an important variant of this community since it contains a rich assemblage of relict arctic-alpine species, such as spring gentian *Gentiana verna* and alpine forget-me-not *Myosotis alpestris*, making Moor House – Upper Teesdale one of the most important arctic-alpine refugia in the UK. The grasslands are for the most part heavily grazed but show transitions to a wide range of other vegetation types, including **7130 Blanket bogs**, acid grassland, **7230 Alkaline fens**, **6520 Mountain hay meadows**, **8240 Limestone pavements**, cliffs and **8120 calcareous and calcshist screes of the montane to alpine levels**. **6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)** This is one of three sites representing M26 *Molinia caerulea – Crepis paludosa* mire in northern England. Although less extensive and more fragmentary than at Craven Limestone Complex, stands occur in a wider range of ecological contexts, including examples within **6520 Mountain hay meadows** (which are not found in other sites), as well as examples in lightly grazed pasture, on wet margins of woodland and on stream banks. **6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels** Moor House – Upper Teesdale comprises an area of mixed geology made up of carboniferous sandstones, mudstone and limestones. The combination of acidic and base-rich soil has given rise to an important range of vegetation types that has also been influenced by climatic conditions on this, the highest part of the Pennines. **Hydrophilous tall herb fringe communities** occur on wet ledges in base-rich rocks, which are inaccessible to grazing livestock. One of the most extensive stands is on a tributary of Little Gill, and examples also occur at Lady Gill, Greencastle, High Cup Nick and Mickle Fell. Typical species that occur in these localities include great wood-rush *Luzula sylvatica*, wood crane's-bill *Geranium sylvaticum*, water avens *Geum rivale*, lady's-mantle *Alchemilla glabra*, wild angelica *Angelica sylvestris* and roseroot *Sedum rosea*. **6520 Mountain hay meadows** Upper Teesdale contains actively-managed **Mountain hay meadows** at their highest altitude in the UK. Though representing a smaller proportion of the national resource than the North Pennine Dales Meadows, the meadows of this site have been managed at an extremely low level of agricultural intensification and show good conservation of habitat structure and function. There are important populations of an extensive suite of hay meadows species, including several rare species of lady's-mantle (*Alchemilla acutiloba*, *A. monticola* and *A. subcrenata*) and abundant globeflower *Trollius europaeus* **7130 Blanket bogs (* if active bog) * Priority feature** This site in the northern Pennines represents **Blanket bogs** in the north of England. The site includes the least damaged and most extensive tracts of typical M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire in England and shows this community type up to its highest altitude in England. This large expanse of peat displays the full range of features typical of the Pennines, with extensive erosion, mainly on higher areas, interspersed with large swathes of bog dominated by heather *Calluna vulgaris* or cottongrasses *Eriophorum* spp. A few areas display small-scale surface patterning, with distinct *Sphagnum* hollows and intervening ridges. Some	

Site Name	Reason for Designation	Site Vulnerability

parts of the site show characteristics of the western-type Scottish **Blanket bogs**, whereas the lichen-rich areas are a feature of bogs in Fennoscandia.

7220 Petrifying springs with tufa formation (Cratoneurion) * Priority feature

This is one of three sites in northern England that have extensive series of **petrifying springs with tufa formation**. At this site Carboniferous limestones are thinly-bedded amidst shales, sandstones and slates. Tufa springs often occur at the junction between limestone and these other, less permeable, rocks at a range of altitudes. Tufa springs are associated with calcareous glacial drift and can be found in calcareous grasslands, in fen systems of grazed pastures, associated with limestone scar cliffs and screes and amidst acid heathland and grassland. The flora is exceptionally rich and includes rare northern species such as bird's-eye primrose *Primula farinosa* and Scottish asphodel *Tofieldia pusilla*.

7230 Alkaline fens

This is one of two upland sites in northern England selected for **Alkaline fens**. Spring-fed flush fens of NVC type M10 *Carex dioica – Pinguicula vulgaris* mire are widespread on the moors amidst calcareous grassland, limestone scars, heath and bog, in enclosed pastures amidst a range of acid and calcareous grasslands and in meadows, often as part of complex vegetation mosaics. The site has an exceptionally important rare plant flora associated with flush vegetation, including species such as bird's-eye primrose *Primula farinosa* and Scottish asphodel *Tofieldia pusilla*. On the highest and coldest parts of the site fen grades into Annex I type **7240 Alpine pioneer formations of the *Caricion bicoloris-atrofuscae***, and intermediate examples occur.

7240 Alpine pioneer formations of the Caricion bicoloris-atrofuscae * Priority feature

This site in northern England is the largest and most diverse example of **Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*** south of the Highlands. It is a southern outlier with an extensive area of the habitat type, and is a southern outpost for many of the rarer arctic-alpine plants characteristic of this habitat type, with a unique relict mountain flora. Teesdale sandwort *Minuartia stricta* is restricted to Upper Teesdale, and other rare species found in this habitat type include false sedge *Kobresia simpliciuscula*, hair sedge *Carex capillaris* and Scottish asphodel *Tofieldia pusilla*. The NVC types represented are M10 *Carex dioica – Pinguicula vulgaris* mire and M11 *Carex demissa – Saxifraga aizoides* mire.

8110 Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)

Moor House – Upper Teesdale is representative of communities on both low and high altitude **siliceous scree** in northern England. Screes are extensive, with diverse plant communities. Cross Fell is a southern outlier of high-altitude gritstone scree, with a flora including rare lichens and some widespread montane vascular plants. Ferns including parsley fern *Cryptogramma crispa* and holly fern *Polystichum lonchitis* occur on extensive whin-sill screes at lower altitudes.

8120 Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)

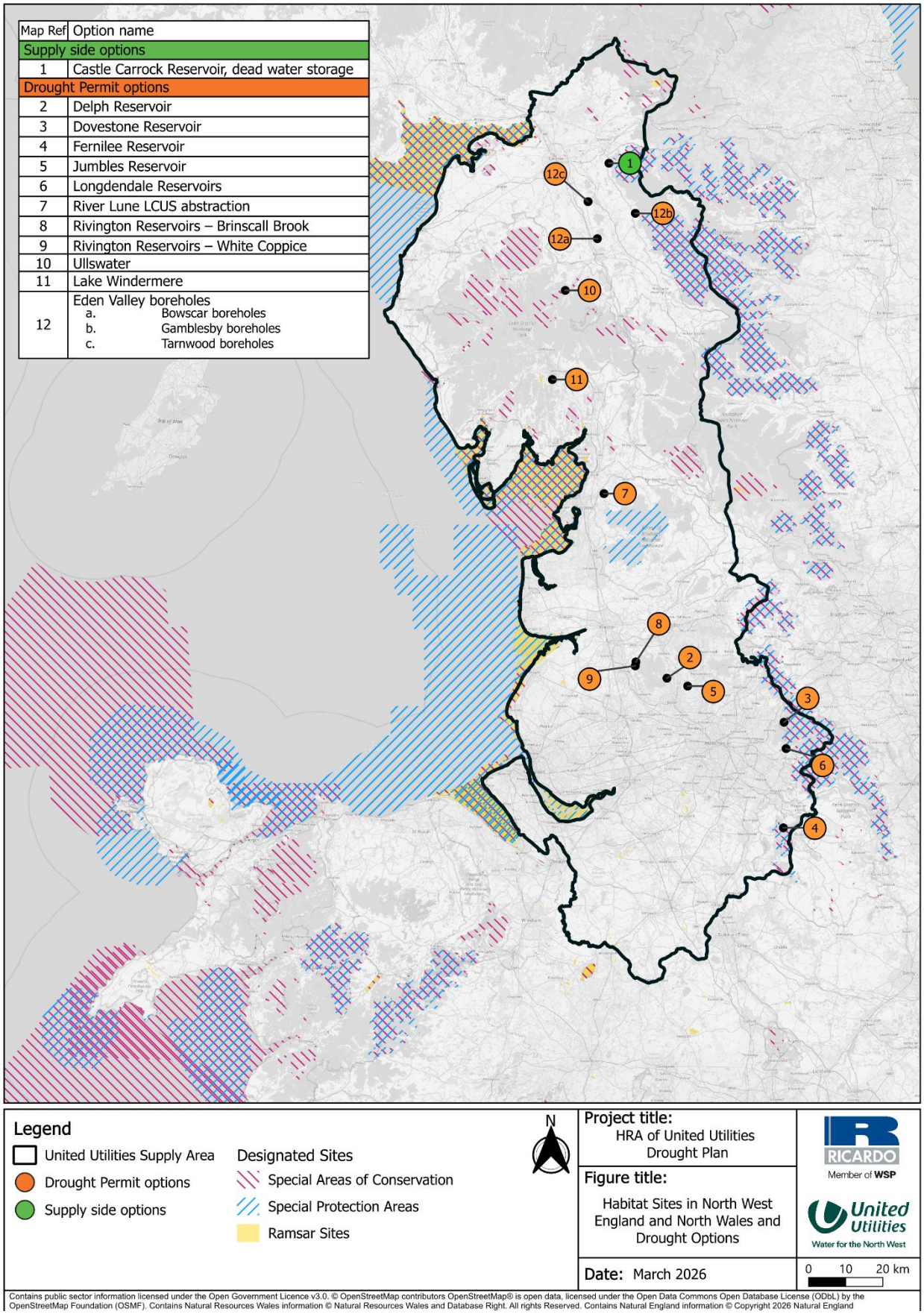
This site is representative of the communities of **calcareous and calcshist screes** in the north of England up to an altitude of 760 m. This site has the most extensive areas of calcareous and calcshist scree in the UK, consisting of Carboniferous limestone. Communities are diverse and there is a mix of northern and southern floristic elements, including holly-fern *Polystichum lonchitis*, rigid buckler-fern *Dryopteris submontana*, limestone fern *Gymnocarpium robertianum*, musk thistle *Carduus nutans* and mossy saxifrage *Saxifraga hypnoides*. Hairy stonecrop *Sedum villosum* occurs where scree is flushed by springs.

8210 Calcareous rocky slopes with chasmophytic vegetation

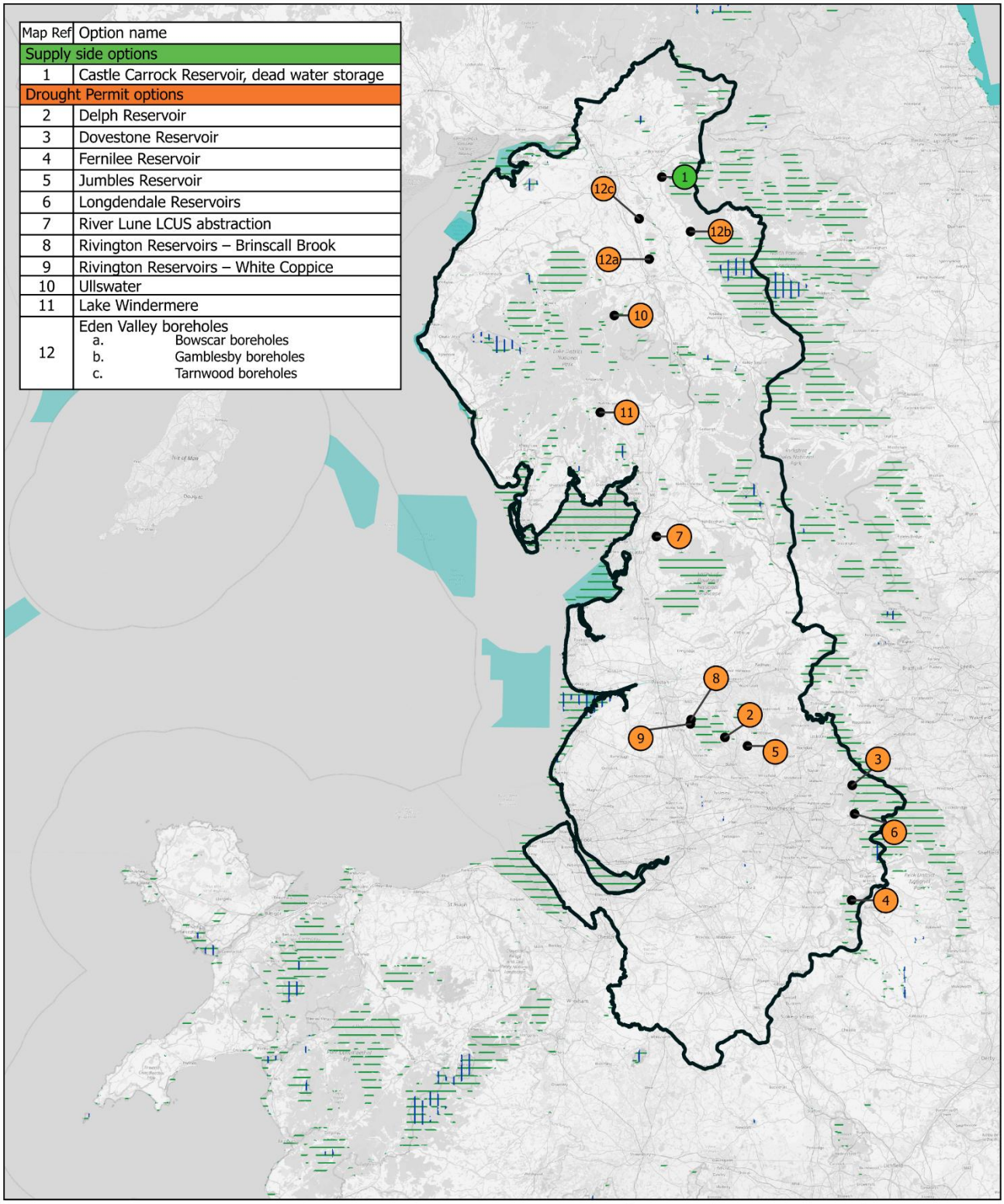
This is one of three sites representing **Calcareous rocky slopes with chasmophytic vegetation** in the north of England. Crevice communities occur on extensive limestone scars, especially along the Pennine escarpment and around the summits of hills. Cliff crevice

Site Name	Reason for Designation	Site Vulnerability
	vegetation occurs extensively and to an altitude of 760 m. The most extensive community present is characterised by green spleenwort *Asplenium viride* and brittle bladder-fern *Cystopteris fragilis*. Less common species found in this community include hoary whitlowgrass *Draba incana*, alpine cinquefoil *Potentilla crantzii* and holly-fern *Polystichum lonchitis*. The site is also of interest for its combination of southern and northern flora. Rarer southern species include bird's-foot sedge *Carex ornithopoda* and horseshoe vetch *Hippocrepis comosa*. The whitebeam *Sorbus rupicola*, which is widely distributed but found at only a few sites, is also present. **8220 Siliceous rocky slopes with chasmophytic vegetation** Moor House – Upper Teesdale, which includes the highest point of the Pennines, has a mixed geology of Carboniferous sandstones, mudstone and limestones, that have influenced the important plant communities that are found there. This cSAC is one of only a very few sites in England supporting **Siliceous rocky slopes with chasmophytic vegetation**. The most extensive occurrences of this community type are where the Whin Sill outcrops at Falcon Clints, Ravenscar, Holwick Scars and High Force. Some examples also occur at Middle Tongue and alongside Cash Burn. Characteristic species present include parsley fern *Cryptogramma crispa*, mountain male-fern *Dryopteris oreades* and northern buckler-fern *D. expansa*. Bearberry *Arctostaphylos uva-ursi* and starry saxifrage *Saxifraga stellaris* also occur in this community.	
Cumbrian Marsh Fritillary Site SAC (UK0030126)	**1065 Marsh fritillary butterfly** *Euphydryas (Eurodryas, Hypodryas) aurinia* This is a complex of three **marsh fritillary *Euphydryas aurinia*** populations which may form a single metapopulation. They inhabit a damp purple moor-grass *Molinia caerulea* grassland/scrub mosaic. This and the Bassenthwaite Moss population at River Derwent and Bassenthwaite Lake cSAC comprise a north-western set of populations which are genetically different to the other English populations.	The site is subject to threats and pressures from; Biocenotic evolution, succession, Other ecosystem modifications.

Appendix C: Figures



Map Ref	Option name
Supply side options	
1	Castle Carrock Reservoir, dead water storage
Drought Permit options	
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	Ullswater
11	Lake Windermere
12	Eden Valley boreholes a. Bowscar boreholes b. Gamblesby boreholes c. Tarnwood boreholes



Legend

United Utilities Supply Area

Drought Permit options

Supply side options

Designated Sites

Marine Conservation Zones

National Nature Reserves

Sites of Special Scientific Interest

N

Project title: HRA of United Utilities Drought Plan

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

Date: March 2026

0 10 20 km

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