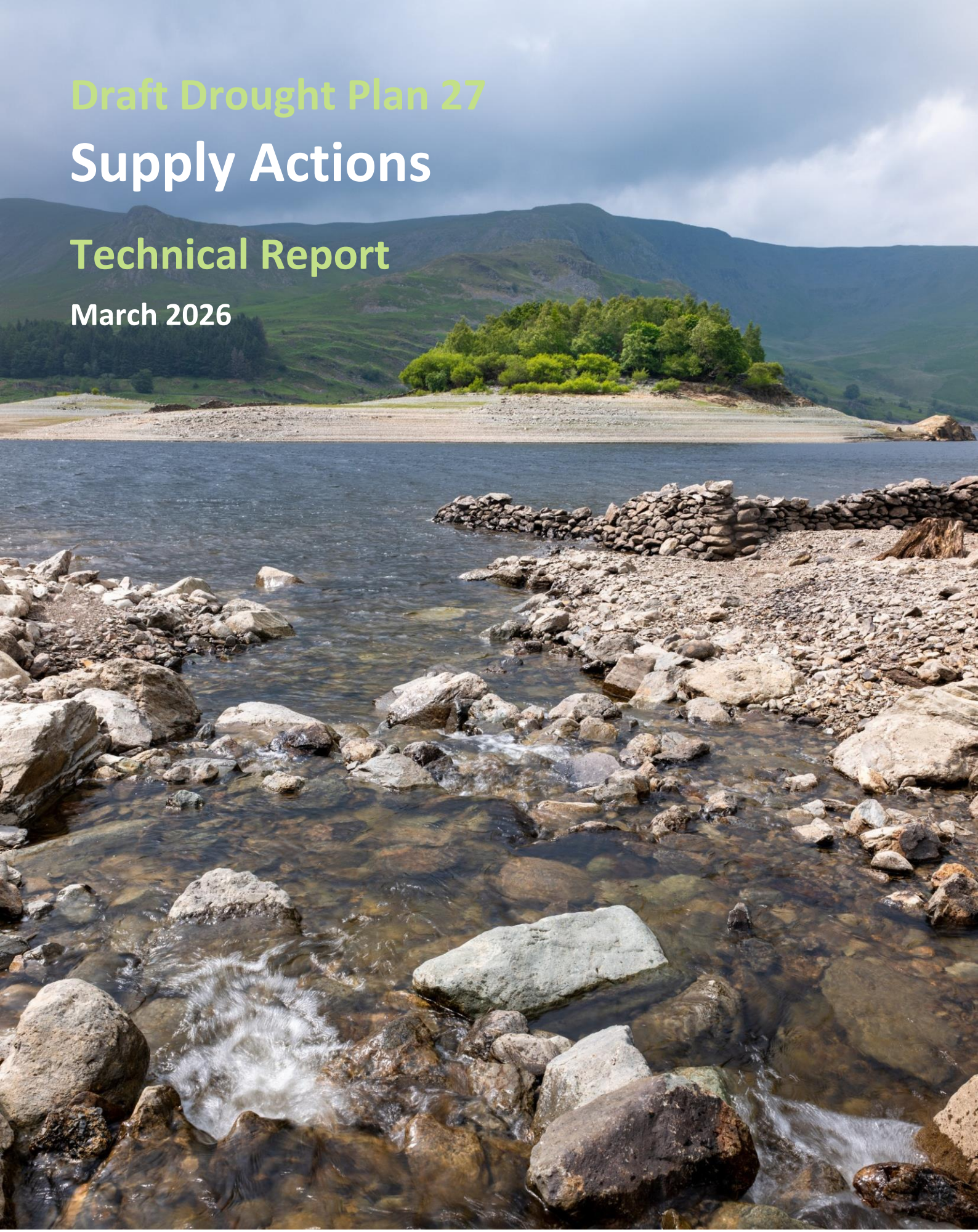


Draft Drought Plan 27

Supply Actions

Technical Report

March 2026

United Utilities

Water for the North West

Contents

1. Introduction

Our supply-side options and permits strategy forms a critical component of our Drought Plan. It is designed to:

- **Ensure continuity of public water supply during drought conditions by identifying and implementing appropriate supply-side interventions, including increasing abstraction at certain sources and temporary changes to abstraction licences.**
- **Support environmental protection and regulatory compliance through robust environmental assessments, monitoring, and engagement with statutory bodies.**

This strategy outlines the range of supply-side actions available to us during drought events, including the use of dead water reservoir storage (Carlisle), increased abstraction from existing sources, and the application of drought permits or orders. These actions are considered in accordance with the severity of the drought and the specific conditions at the time and are implemented in a phased and proportionate manner.

Our approach is fully aligned with the principles set out in the UKWIR Drought Code of Practice (2023) and supports the delivery of our Water Resources Management Plan 2024. It ensures that operational decisions taken during droughts are broadly consistent with long-term planning assumptions, while allowing for the flexibility required to respond to real-time hydrological and operational challenges.

We are committed to:

- A transparent and evidence-led decision-making process, with formal review points at each drought level;
- Maintaining compliance with environmental legislation, including the Water Framework Directive, Habitats Regulations, and relevant abstraction licence conditions; and
- Engaging proactively with regulators and stakeholders, including the Environment Agency, Natural England, and local communities, to ensure that all actions are justified, proportionate, and environmentally responsible.

This appendix sets out the full suite of supply-side options and drought permits we may consider before drought level 3, the conditions under which they would be implemented, and the environmental safeguards in place to support their use. It details the preparatory work undertaken to ensure we are ready to apply for drought permits in a timely and effective manner, including the development of Environmental Assessment Reports and Environmental Monitoring Plans.

Our strategy reflects lessons learned from previous drought events and incorporates the latest guidance from the Environment Agency (2025), ensuring that we remain fully prepared to manage future droughts in a resilient and sustainable manner.

2. Supply-side options

These options provide additional water during a severe drought. They include using reservoir dead water, increasing outputs from certain sources, and tightening the control of compensation flow releases from reservoirs. The purpose of these supply-side options is to reduce the risk of further drought measures (i.e. drought permits) being required. We may use some supply-side measures proactively as a precaution against more severe droughts.

Drinking water quality and source recommissioning

We have several licensed abstraction sources that are not routinely used throughout the year. The recommissioning of these sources will be considered when the enhanced monitoring and operations status is reached at any of our drought level locations.

Maintaining drinking water quality during drought is essential, and statutory standards continue to apply. Any source that has been out of operation undergoes sampling in accordance with section 15 of the Water Supply (Water Quality) Regulations 2000 (as amended) before being returned to service. This ensures that water can be treated to potable standards and complies with all regulatory requirements. Sampling may take several weeks to complete, so sources will only be considered for use if the enhanced monitoring and operations curve is reached. Some sources may remain temporarily unavailable if they cannot meet regulatory standards or if treatment performance is insufficient during dry weather conditions.

Use of boreholes and customer acceptability

During a drought we may increase borehole use to support supply, provided abstraction remains within licence limits. Boreholes are a reliable source of groundwater and can be operated flexibly to offset reductions in reservoir levels or to manage peaks in demand. Operationally, we carefully manage how groundwater is blended with surface water to ensure final water quality remains within acceptable taste, hardness, and chemical parameters. Switching between soft surface water and harder groundwater can result in noticeable changes to water characteristics. To maintain customer confidence, we proactively inform them of expected changes in taste or hardness.

Where customer acceptability issues exist, such as sudden shifts in taste or hardness, certain boreholes may be temporarily withheld from use. We aim to avoid abrupt changes by gradually blending supplies, maintaining a smooth transition between sources. Borehole operation requires consideration of groundwater sustainability and licence compliance, and abstraction rates are monitored to avoid adverse environmental impacts. Any water quality concerns identified during borehole operation will be addressed in close collaboration with the Drinking Water Inspectorate, the UK Health Security Agency and local authorities, ensuring compliance with both statutory and operational requirements.

Compensation flow management

Compensation flows from impounding reservoirs ensure a continuous downstream flow and support ecological and public water supply requirements. During a drought, flows are subject to heightened levels of assessment and management to ensure statutory compliance while minimising unnecessary over-release. Several factors influence flow management, including wind and wave action on the reservoir surface, location of measurement points relative to release points, downstream abstractions, and increasing head loss at lower reservoir levels.

By actively monitoring and adjusting compensation releases, we preserve water storage to maintain both future compensation flows and public supply abstraction. Flows will only be reduced below licensed minimums when authorised by a drought permit or order, supported by an environmental assessment that considers ecological, hydrological, and water quality impacts. Drought permits or orders may include monitoring conditions and adaptive management measures to minimise potential environmental harm. This approach ensures regulatory

compliance while optimising the use of available water resources to maintain resilience during prolonged dry periods.

Sustainable abstraction and long-term planning
We continue to work with the Environment Agency to assess the long-term sustainability of our abstractions, supported by AMP8 (2025–2030) WINEP investigations into the environmental impacts of abstraction. Findings, expected in 2027, will inform sustainability reductions and future water resources management plans. In parallel, we collaborate with Water Resources West to align with regional approaches to sustainable abstraction.

Operationally, abstraction patterns may need to evolve during periods of low rainfall or increased demand. Temporary increases above historical averages, within licence limits, can provide operational flexibility. Such adjustments are evaluated using environmental risk assessments, operational monitoring data, and modelling to ensure abstraction does not compromise ecological sustainability. Any operational changes identified through these processes will be incorporated into future water resources management plan updates and discussed with the Environment Agency. This ensures abstraction remains sustainable, environmentally compliant, and aligned with long-term strategic planning objectives.

Environmental protection during drought
We remain committed to protecting the environment during drought periods. Reservoir trigger levels guide water quality monitoring and inform any necessary fish and/or crayfish rescues. We support multi-agency responses to events such as moorland fires and continue to provide operational assistance to mitigate environmental risks associated with prolonged dry weather.

Implementation of drought plan actions
During a drought, we will implement the supply-side actions identified in this drought plan wherever feasible. We do not intend to rely on emergency licence conditions or informal arrangements outside the formal framework of drought permits or orders. Any unforeseen actions will be discussed with the Environment Agency to ensure appropriate regulatory oversight. Permanent increases in available water resulting from drought actions will be reflected in future deployable output assessments within the water resources management plan, as well as the annual review of the water resources management plan between planning rounds.

Dead water (Carlisle only)
A review of the Castle Carrock dead water option has confirmed its potential to provide up to 170 million litres of additional water (deployable output) during drought conditions. The option is considered technically viable and offers a valuable contribution to drought resilience. However, as it has not been previously implemented, there remains some uncertainty regarding the operational performance. Further validation is required around water quality and treatability under low turnover conditions, as well as the infrastructure required to reliably access the dead water volume. These aspects will be monitored and refined through the annual drought plan health check.

Table 1: Supply-side options associated with each drought level

Source	Deployable output (Ml/d) (estimated in a drought)	Estimated time to implement	Benefit
Castle Carrock reservoir, dead water storage	2	1 month	Carlisle resource zone

Catchment-based measures
Wider catchment interventions, including peatland restoration, rewetting, and ‘slow the flow’ techniques, can help retain water within surface water catchments and maintain baseflows during dry periods. We have a comprehensive programme of current and planned catchment measures. However, because these interventions typically take several years to deliver measurable benefits, they cannot form part of reactive drought management and therefore sit outside the scope of this document.

New options
Experience during recent dry weather events has highlighted that identifying specific supply-side options in advance of the event, that can be delivered within required timescales, is very challenging. While options beyond business-as-usual dry-weather operations may arise under certain circumstances, their feasibility is dependent on

conditions at the time. Accordingly, this plan allows for the consideration and high-level appraisal of potential drought specific supply options, where relevant, in response to prevailing conditions and operational constraints.

3. Drought permits and orders

Drought permits and drought orders are drought management actions that, if granted, allow additional flexibility to respond to the impacts of drought on both public water supplies and the environment. These measures are typically considered when normal operational strategies are no longer sufficient to maintain supply or protect the environment under prolonged dry weather conditions.

Drought permits are issued by the Environment Agency or Natural Resources Wales depending on the geographical location of the affected water source. These permits allow temporary changes to the conditions of existing abstraction and impoundment licences, such as increasing the volume of water that can be abstracted, reducing the compensation flow or altering the timing of abstraction, to help maintain public water supplies during periods of low rainfall. These may include:

- **Reducing compensation flow releases** from reservoirs into downstream rivers to conserve storage for future use. This helps ensure sufficient water is available both for public supply and for maintaining essential river flows in the future.
- **Relaxing abstraction licence limits**, such as the total volume of water that can be abstracted annually or thresholds based on river flow or groundwater levels, below which abstraction is normally restricted.
- **Reducing prescribed flow constraints** (*hands-off flows*) in rivers to allow continued abstraction for public water supply, even when flow conditions would normally require abstraction to stop.

Drought orders are granted by the Secretary of State or Welsh Ministers and consent some additional actions (over and above those provided by drought permits) and are usually applied for when the actions proposed are concluded to result in adverse impacts on designated sites. We do not have any drought orders relating to reservoirs in our Drought Plan with the exception of compensation only reservoirs[1]. In the situation of a drought order, we will adhere to the procedures set out in the Drought Orders (Inquiries Procedure) Rules 1984 (SI 1984 No. 999) at all stages of the inquiry, including before, during, and after a potential hearing.

For drought permits the water company is responsible for the application for sources used for public water supply and must prove that a serious deficiency of public water supplies exists or is threatened because of an exceptional shortage of rain. Table 2 explains drought permits and orders further.

In the case of reservoirs whose sole purpose is to provide a compensation flow release to the downstream river (i.e. they are not used for public water supply), the Environment Agency are responsible for applying for a drought order to Defra (see technical report 'Compensation only reservoirs' for further information), however it is the water company's responsibility to provide the relevant supporting information .

While there is potential for a drought permit or order to be required at any of our abstraction sites across the region, this is unlikely for most locations. Figure 1 highlights the specific sites where we believe there is a reasonable likelihood of applying for a drought permit or order in the future. These areas, known as drought permit catchments, are used to determine whether rainfall levels meet the criteria for an *exceptional shortage of rain*.

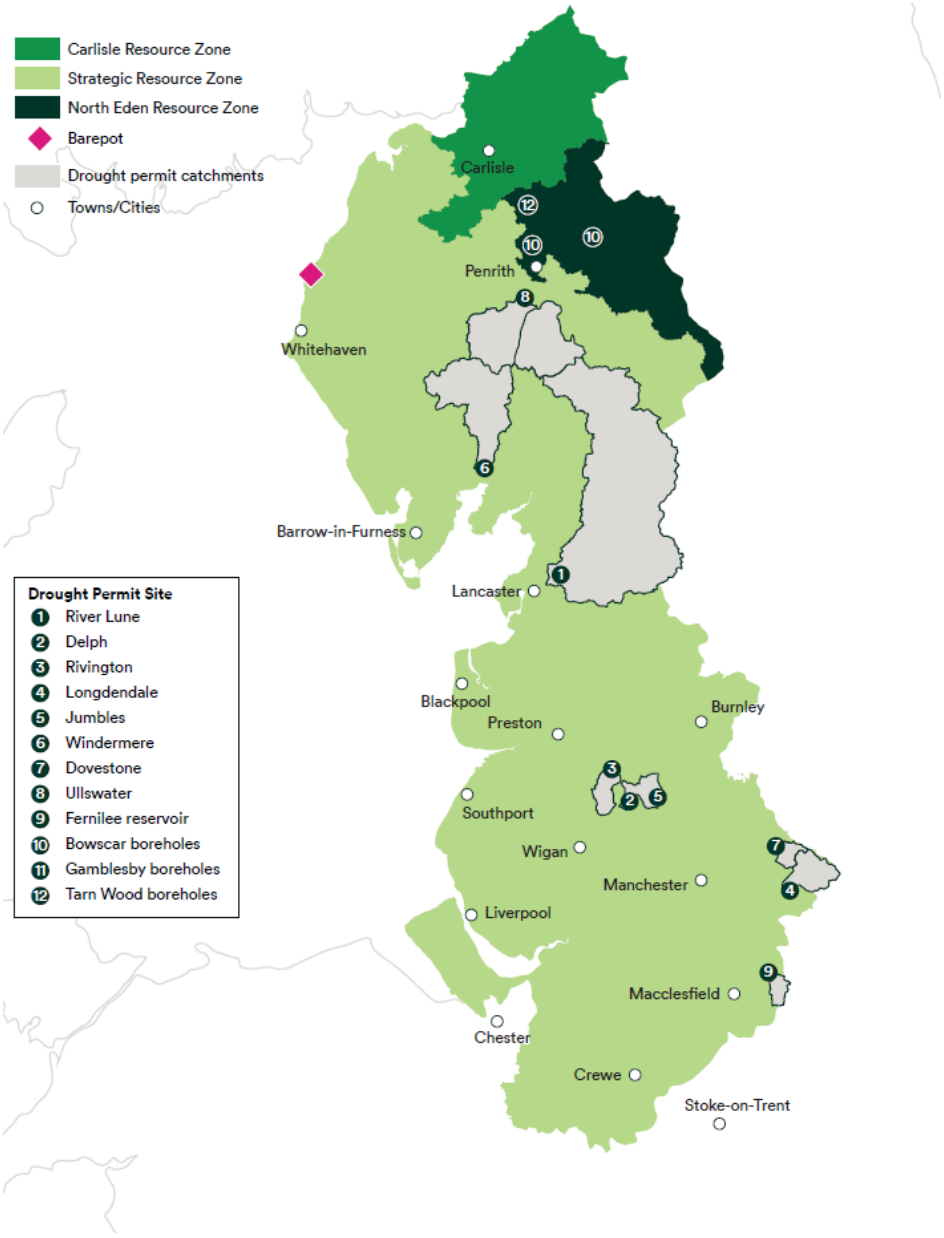
To ensure we remain adaptable in our drought response, this list is not exhaustive. Additional locations may require drought permit or order applications depending on evolving conditions. In such cases, we would work closely with the Environment Agency and other relevant stakeholders to assess needs and coordinate actions appropriately.

[1] Further information can be found in our 'Compensation only reservoirs' technical report.

Table 2: Drought permits and orders explained

Legislation allows water companies to apply for both drought permits and drought orders to manage a drought situation	
Drought Permits: Environment Act 1995	The Environment Act 1995 introduced drought permits – prior to this only drought orders existed. Drought permit applications are determined by the Environment Agency or Natural Resources Wales. They can alter an abstraction or impoundment licence e.g. to allow abstraction by pumping or to increase the volume of water allowed to be abstracted. The Environment Agency or Natural Resources Wales can hold a local public hearing to discuss the application if deemed necessary. A drought permit lasts for a maximum of six months but can be extended by a further six months if necessary.
Drought Orders: Water Resources Act 1991	Drought order applications are determined by the Secretary of State or Welsh Ministers and they have the same powers as drought permits. They can authorise the water company to enter/occupy land to carry out necessary works and to discharge water. Defra expects water companies to submit applications for drought orders, rather than drought permits, when the measures involved are likely to have significant impacts on flora, fauna, or designated sites. A local public hearing or public inquiry can be called if deemed necessary. A drought order lasts for a maximum of six months but can be extended by a further six months if necessary (note that water companies can apply for drought orders to restrict the non-essential use of water).

Figure 1: Map of drought permit sites



This plan comprises only drought permits linked to our public water supply reservoirs and river abstractions. These are shown in Table 3, which lists our drought permit sites, together with details of the change that could be sought in a future application. The actual powers applied for in the future would depend on the severity of the drought event, the time of year and the prevailing situation at that time and therefore at some sites, there are two potential options. Not all actions would necessarily be implemented to their full extent or for the full period of a permit. It is possible that additional drought permits or orders at sites not included in Table 3 may be required. There is no guarantee that applications for drought permits or orders will be granted as each application needs to be assessed by the Environment Agency, Natural Resources Wales, the Secretary of State, and Welsh Ministers (as appropriate) taking account of current conditions in the specific drought situation.

The need for drought permits will be assessed at drought level 2, following the implementation of a temporary use ban and other measures such as enhanced leakage detection and repair, pressure reduction, and outage management. At this stage, we will begin preparing the necessary information to support any potential permit applications. We will engage with the relevant environmental regulators, including the Environment Agency, Natural England, Natural Resources Wales and Defra, to discuss our proposals and assess whether grouping drought permit applications is appropriate.

Where required, we anticipate submitting applications for drought permits during drought level 2, with implementation to follow if approved. When prioritising permit applications, we will focus on those where there is a high degree of confidence that environmental impacts will be minimal. However, we recognise the need to consider applications that offer the greatest overall benefit, which may not always correspond with the lowest environmental risk. In such cases, we will engage with the Environment Agency ahead of submitting the application.

Table 3: Potential drought permit sites

Drought permit site	Drought permit conditions	Resource zone	Area affected
Delph	Reduce compensation flow from 3.7 to 1.0 Ml/d	Strategic Resource Zone	Bolton
Dovestone	Reduce compensation flow from 15.9 to 10.0 Ml/d or 5.0 Ml/d	Strategic Resource Zone	Tameside
Fernilee	Reduce maintained flow from 13.6 to 6.8 Ml/d	Strategic Resource Zone	Stockport
Jumbles	Reduce compensation flow from 19.9 to 12.0 Ml/d or 6.0 Ml/d	Strategic Resource Zone	Bolton
Longdendale	Reduce compensation flow from 45.5 to 22.5 Ml/d or 15.0 Ml/d	Strategic Resource Zone	Tameside
River Lune LCUS	Reduce hands-off flow from 365 to a minimum of 200 Ml/d	Strategic Resource Zone	Strategic
Rivington (Brinscall Brook)	Reduce compensation flow from 3.9 to 2.0 Ml/d	Strategic Resource Zone	Wigan
Rivington (White Coppice)	Reduce compensation flow from 4.9 to 2.0 Ml/d	Strategic Resource Zone	Wigan
Ullswater	Reduce hands-off flow to a minimum of 175 Ml/d and relax 12-month rolling abstraction licence limit	Strategic Resource Zone	Strategic

Drought permit site	Drought permit conditions	Resource zone	Area affected
Windermere	Reduce hands-off flow to a minimum of 95 Ml/d and relax 12-month rolling abstraction licence limit	Strategic Resource Zone	Strategic
Bowscar boreholes	Increase annual licence limit to enable continuation at the maximum daily abstraction rate	North Eden Resource Zone	North Eden
Gamblesby boreholes	Increase annual licence limit to enable continuation at the maximum daily abstraction rate	North Eden Resource Zone	North Eden
Tarn Wood boreholes	Increase annual licence limit to enable continuation at the maximum daily abstraction rate	North Eden Resource Zone	North Eden

3.1 Drought permit applications

Over recent years we have completed work to ensure we are prepared for drought permit applications (for permits up to and including drought level 3) and are able to produce the information required in a timely manner. This has included collating the following information, as shown in Table 4, for each drought permit site.

Table 4: Drought permit application preparation

Drought permit application preparation
Drought permit application form WR80 and cover letter
A draft of the drought permit
Draft statement in support of the application
Location map (included in supporting statement)
Draft notice of application (as will appear in newspapers and sent to relevant parties)
Contact details for those on whom notice would be served – both statutory and out of courtesy
Abstraction/impoundment licence(s) and associated agreement(s) including relevant Act(s) of Parliament
Environmental Assessment Report (including an Environmental Monitoring Plan)
Details of newspapers where notice will be advertised
Details of local venues suitable for the public to view a copy of the application

In accordance with the Environment Agency's water company drought plan guideline (March, 2025) we have:

- Prepared environmental assessments for all our drought permit sites using the latest available data. In a drought event we will update and tailor the relevant environmental assessment report to reflect the timing of the permit being applied for and include recent data (where relevant to do so). The environmental assessment reports also include our proposals for monitoring, both before and during implementation of the drought permit and post drought recovery. Our Environmental Monitoring Plans have been agreed with the environmental regulators and are reviewed annually. We review the need to update any of the 'shelf-copy' Environmental Assessment Reports annually;
- Identified and undertaken baseline monitoring required to support our drought permit applications;
- Identified potential environmental mitigation measures that might be required;

- Discussed our drought permits with key stakeholders. For each of our drought permit environmental assessments we establish a Project Steering Group comprising the environmental regulators. We engage with key stakeholders where identified;
- Identified the advertising arrangements for each of our drought permits including local newspapers and venues for displaying the application documents;
- Identified potential venues for public hearings; and
- Set out the process we will follow to demonstrate an exceptional shortage of rain (see Section 7).

Our supporting statement, to accompany a drought permit application, will include:

- An assessment of the benefit of the drought permit and the risks to the water supply situation if the application is not granted;
- Proof that a serious deficiency of water supplies exists or is threatened due to an exceptional shortage of rain;
- Details of the actions we have taken to manage the water resources situation and conserve supplies including demand management actions, operational actions, and communication actions;
- In addition, we will hold pre-application discussions with the Environment Agency and/or Natural Resources Wales at least two weeks before submitting a drought permit application; and,
- Where feasible, we will look to prioritise applications based on various factors including potential benefit and environmental impact.

As part of the Annual Drought Health Check, we will review all our drought permits, where necessary, to ensure we remain fully prepared. This includes permits that are less frequently used, helping us stay familiar with the requirements and understand the time and resources needed to prepare these applications. The process includes engagement with regulators to address any feedback or concerns, ensuring alignment and maintaining a high level of drought readiness.

4. Aligning operations with our Water Resources Management Pan

Prior to drought permit applications, the Environment Agency (in line with their water company drought plan guideline, March 2025), expects full use of all available water sources in line with our Water Resources Management Plan 2024[2]. Maintaining close alignment between our operational drought response and the supply modelling assumptions set out in our Water Resources Management Plan is essential to delivering a resilient water supply and meeting our customer service level commitments. Our Water Resources Management Plan 2024 provides a robust foundation for future planning, supported by long-term hydrological modelling and demand forecasts that guide how we prioritise and operate water sources under both normal and drought conditions.

Droughts are inherently variable however and can present unique hydrological patterns and operational challenges that don't always match modelled scenarios. This requires a flexible and adaptive operational approach that enables us to respond effectively as conditions evolve, manage risks in real time, and maintain service resilience, all while still following the principles in our plan. In developing our Water Resources Management Plan 2024 we incorporated stochastic hydrological datasets to strengthen water resources and drought planning. These datasets are 19,200 years long and provide a large range of plausible droughts. While this represents a significant advancement over relying solely on historical data, no stochastic dataset can fully replicate the complex and dynamic conditions experienced during an actual drought.

Such variations can affect the availability, operation, and prioritisation of water sources particularly where constraints or interdependencies exist between systems. The supply forecasts in our current water resources management plan are based on calibrated hydrological models using historical catchment data, however uncertainties remain. As a result, the actual drought risk at specific locations may differ from modelled predictions, influencing:

- The yield of individual water sources;
- The timing and way sources are deployed; and,
- The operational prioritisation of interconnected systems, especially where constraints or dependencies exist between different reservoirs, boreholes, or treatment facilities.

Operational decisions must therefore account for this variability to optimise the use of resources, maintain supply, and protect the environment under dynamic drought conditions.

4.1 Local drought permits

A local drought permit is typically sought when the affected source (or group of sources) provides the majority of water used to supply the local area, with additional support from the regional system as required. The permit is issued under the relevant statutory drought regulations to manage localised supply risks. For local drought permits, such as those at Fernilee, Delph, and Jumbles, which depend on nearby groundwater sources to support compensation flows, we will ensure that borehole operations are broadly consistent with the operational use assumed in our Water Resources Management Plan 2024. Our operational practice is to start to bring these supporting sources online once the associated local reservoir storage has begun to deteriorate, judged using a combination of its designated control curve and historic operational data. This approach ensures we are making best use of supporting sources and maintaining environmental safeguards. In instances where supporting sources are unavailable due to an operational outage, we would engage with regulators regarding evidence to pursue a drought permit for that source.

For other drought permits, such as at Longdendale, where operations are more integrated within wider sub-regional networks (while still potentially providing significant local benefits to Manchester and Tameside), we will

[2] unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/

seek to optimise the operation of interconnected sources to support efficient water delivery. This includes balancing flows, managing transfers, and making best use of available storage, in line with the planning assumptions in our Water Resources Management Plan 2024.

If such optimisation proves unachievable, for example due to unplanned outages, asset constraints, or local demand being higher than anticipated, these limitations will be documented in our drought permit applications. Supporting evidence will include operational context, asset status, and any deviation from water resources management plan expectations, allowing the regulators to assess applications on a fully informed basis.

4.2 Strategic drought permits

A strategic drought permit is considered to apply to sources which are interlinked with major supply components, strategic transfers, or reservoir systems that support multiple areas.

We seek to operate our strategic sources, such as Windermere and Ullswater, in line with the principles and assumptions set out in our Water Resources Management Plan 2024. These sources play a key role in supporting the resilience of the wider Strategic Resource Zone, enabling inter-zone transfers and blending activities, particularly during dry weather and drought conditions.

System performance and hydrological conditions are regularly monitored to inform decisions on how these sources are used. During drought conditions, this enables us to respond flexibly, for example by adjusting abstraction volumes, or using alternative transfers, while still aiming to remain broadly consistent with Water Resources Management Plan 2024 planning expectations (see section 5).

We acknowledge that a degree of operational flexibility is sometimes necessary. There may be legitimate reasons why certain licensed sources are not fully utilised, such as:

- Planned or unplanned maintenance affecting key infrastructure;
- Blending requirements at groundwater sources;
- Reservoir safety inspections requiring specific operational constraints; and,
- Temporary reduction in asset capability including planned and unplanned outages (temporary loss of maximum sustainable production capacity) or water quality issues at abstraction points or associated assets.

Actual drought conditions may not follow modelled patterns exactly (especially as outage is not directly included in baseline modelling assumptions, i.e. we include an additional outage allowance in line with water resources planning guidelines). In such instances, short-term operational decisions may need to diverge from the water resources management plan to maintain system resilience. Where this occurs, we will provide a clear and reasoned explanation, supported by evidence, as part of any drought permit application. This includes outlining the drivers for deviation from base modelling assumptions, risk management actions, and how our decisions remain aligned with the overall intent of our Water Resources Management Plan 2024.

As detailed in our technical report ‘Communications actions’, we maintain regular engagement with the Environment Agency to ensure transparency on source status, operational decisions, and emerging risks. Our aim is to provide assurance that source management remains responsible and proportionate, reflecting both long-term planning principles and real-time operational realities.

5. Operation of strategic pumping

We routinely monitor a range of water resources indicators to guide operational decisions and ensure we are prepared to protect water supplies during a dry year or drought. This includes balancing and managing risks across the Strategic Resource Zone using hydrological data and modelling tools. The process is continuous and reviewed on a weekly basis and our approach is designed to minimise potential risks through close and ongoing monitoring.

Haweswater Reservoir is a key source and one of our drought level locations within the Strategic Resource Zone. Support from Ullswater and Windermere lakes allows us to offset abstraction from Haweswater to retain storage and reduce the likelihood of requiring drought actions. Direct abstraction from Haweswater can be reduced to help preserve storage. Since its commissioning in 2012, the West East Link Main has enabled increased transfers from the south and west parts of the Strategic Resource Zone to support supply in the east. These interventions, alongside other operational actions, help to reduce demand on Haweswater and ensure risk is managed across the entire zone.

5.1 Operational decision-making process

To support Haweswater and balance risk across the Strategic Resource Zone, strategic pumping from Ullswater and Windermere will be optimised when storage in Haweswater falls below the relevant resource state curve. The decision to implement pumping will take into account a range of operational and environmental considerations, illustrated in Figure 2 and including the following:

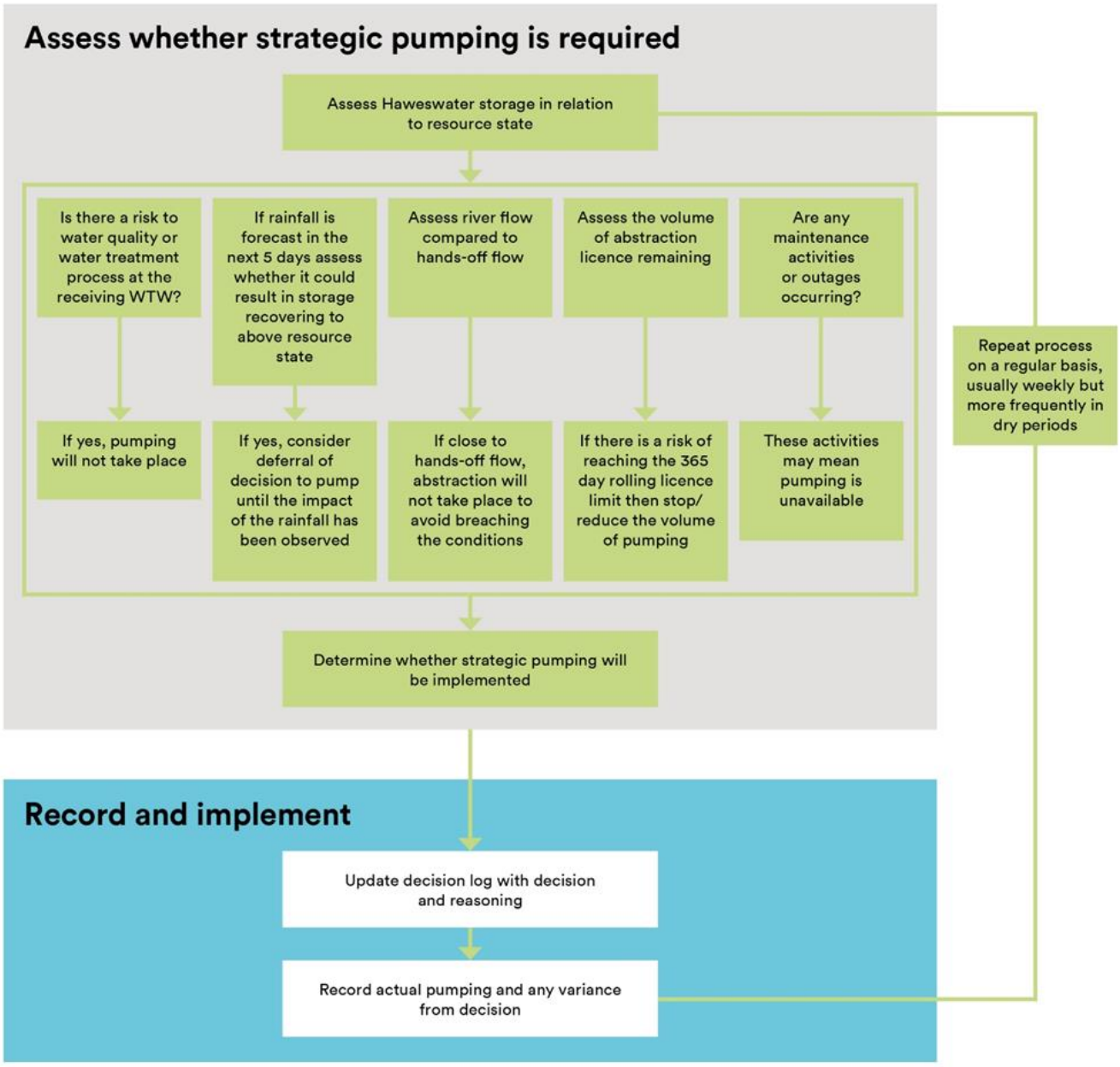
- If there is a risk to water quality or the treatment process at the receiving water treatment works, then pumping will not proceed;
- If rainfall is forecast within the next five days and is expected to increase Haweswater storage above the resource state curve, the decision to pump may be deferred until the impact of the rainfall has been assessed;
- If downstream river flows are close to the hands-off flow condition, abstraction will not occur in order to remain compliant with licence requirements;
- If abstraction is close to the 365-day rolling licence volume limit, pumping may be curtailed; and
- Planned maintenance activities or unplanned outages may sometimes result in pumping being unavailable.

Wherever operationally possible, decisions will reflect the sequencing and assumptions used in water resources management planning to ensure consistency with modelled drought management pathways. This helps demonstrate that forecast and planned drought actions have been appropriately deployed and is a key consideration in evidencing that all reasonable steps have been taken before applying for a drought permit.

The decision-making process consists of two key phases:

1. **Assessment**: Determine whether strategic pumping is required, based on current storage levels at Haweswater and consideration of the operational and environmental factors outlined above; and
2. **Implementation and Recording**: Document the decision, record the actual abstraction rate achieved, and provide an explanation for any deviation from the intended action.

Figure 2: Strategic pumping decision flow diagram



6. Environmental assessments

6.1 Statutory duties for designated sites

At all times, not just in times of drought, we adhere to our statutory duties for designated sites. This is particularly important due to the location of many of our water abstractions within, adjacent to, or upstream of designated sites, and the large area of catchment land owned by us. The relevant statutory duties include:

- Conservation of Habitats and Species Regulations 2017. Statutory responsibilities to Special Areas of Conservation (SAC) and Special Protection Areas (SPA);
- Government policy is to apply the same protection framework to Ramsar sites as to SPAs and SACs (Defra, 2006);
- The Environment Act, 1995. Section 62 to have regard to the purposes for which National Parks are designated;
- The Water Resources Act 1991 (as amended by the Water Act 2003). Any work which may affect SSSIs, or other land of special interest, must involve consultation with Natural England before authorisation of the works;
- Section 28G of the Wildlife and Countryside Act 1981, as inserted by Section 75 and Schedule 9 to the Countryside and Rights of Way Act 2000. This places a duty on public authorities, including water companies, to take reasonable steps consistent with the proper exercise of their functions to further the conservation and enhancement of SSSIs;
- The Wildlife and Countryside Act 1981 and Section 85 of the Countryside and Rights of Way Act 2000. To have regard to the purpose of conserving and enhancing an Area of Outstanding Natural Beauty (AONB) when exercising or performing any function that will affect land in an AONB;
- The Natural Environment and Rural Communities (NERC) Act 2006. An extension of the Countryside and Rights of Way Act 2000 biodiversity duty to ensure due regard to the conservation of biodiversity (particularly Section 40);
- The Environment (Wales) Act 2016; and,
- Water Industry Act 1991: Code of Practice on Conservation, Access and Recreation – Guidance for the Environment Agency and Water and Sewerage Undertakers.

The drought option proformas in section 9 identify if potential supply-side option or drought permit sites are associated with statutory designated sites (including SACs, SPAs, Ramsar sites, and SSSIs).

6.2 Drought permit environmental assessments

6.2.1 Drought permits

The Environment Agency's Water Company Drought Plan Guideline (March 2025) requires water companies to carry out a comprehensive environmental assessment and prepare an Environmental Monitoring Plan for each supply-side action proposed in their drought plans, including drought permits. These assessments are critical in ensuring that any temporary measures taken to secure public water supplies during droughts are balanced with the need to protect the environment. Each environmental assessment must identify potential risks, propose suitable mitigation measures, and set out how the impacts will be monitored before, during, and after the implementation of the action. We update the environmental assessments regularly to ensure they reflect the latest information and context.

According to the Environment Agency's supplementary guidance on environmental assessment, each assessment must:

- Clearly identify the supply-side action being proposed (e.g. temporary abstraction increases, flow reductions);

- Describe the anticipated changes to the flow or water level regime and how these could affect surrounding habitats;
- Identify the key environmental features likely to be influenced by these changes, and assess their sensitivity to hydrological or water quality variation;
- Evaluate the potential impact on each feature, categorising them as major, moderate, minor, or uncertain, and assign a corresponding level of confidence to the assessment;
- Propose mitigation measures aimed at avoiding, reducing, or offsetting potential adverse effects; and,
- Present a detailed Environmental Monitoring Plan, covering all relevant phases: baseline, pre-implementation, implementation, and post-implementation of the drought permit.

In line with this guidance, we have undertaken detailed environmental assessment studies for each of the drought permit sites listed in Table 3. These studies assess the potential impacts of implementing a drought permit on a wide range of environmental aspects, including:

- **Hydrology**, including alterations to surface water flows or reservoir levels, and **hydrogeology** where relevant (e.g. for groundwater sources);
- **Water quality**, considering potential changes in chemical and biological parameters;
- **Ecology**, including effects on aquatic and riparian ecosystems, the ecological and quantitative status of groundwater (as defined in **River Basin Management Plans**), and **fish populations**;
- **Habitats** and **geomorphological features**, including sediment transport and channel form;
- **Water Framework Directive (WFD)** status or potential, ensuring that any deterioration in ecological or chemical status is identified and addressed;
- **Designated sites**, such as Sites of Special Scientific Interest (SSSIs), **priority habitats**, and **protected species** under national and international conservation frameworks;
- Broader **biodiversity conservation** objectives;
- Other **physical, economic, cultural, or heritage** issues, including potential impacts on **landscape**, **visual amenity**, and access to recreational areas; and,
- The potential for increased spread of **invasive non-native species (INNS)** due to changes in flow or disturbance to the aquatic environment.

Each environmental assessment was developed in close collaboration with statutory environmental bodies, including the Environment Agency and Natural England, ensuring that all relevant expertise and regulatory expectations were incorporated.

The reports provide a thorough description of the environmental baseline for each site. This includes detailed information on the local catchment area, geomorphology, habitat types, species present, designated sites, and existing environmental pressures (e.g. low flow, pollution). The zone of influence, the area likely to be affected by the drought permit, is clearly defined and used as the basis for impact assessment.

Predicted physical changes resulting from drought permit implementation are clearly described. These include changes to river flow, groundwater levels, and connectivity of aquatic habitats. This information is then used to assess the potential impact on sensitive features and inform the development of targeted mitigation measures. Where significant environmental risks are identified, bespoke mitigation strategies are proposed to avoid, reduce, or, where necessary, offset those impacts and protect environmental integrity throughout the drought permit period.

Figure 3 and Figure 4 show the location of drought permit sites in relation to statutory designated sites. The impacts on any designated sites are assessed within each environmental assessment report.

Figure 3: Map of designated sites showing drought permit sites and supply-side options (Ramsar, Special Areas of Conservation (SAC), and Special Protection Areas (SPA))

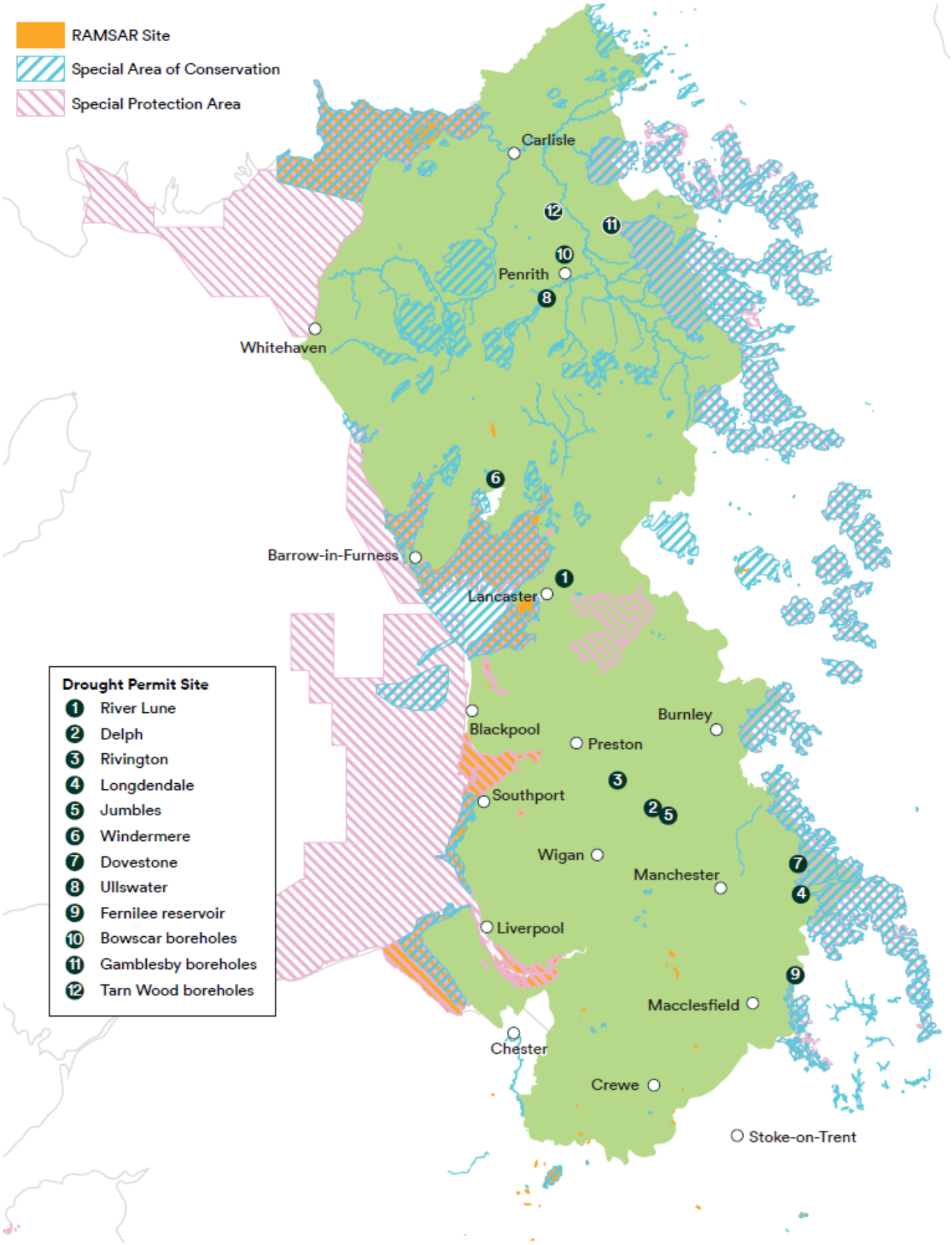
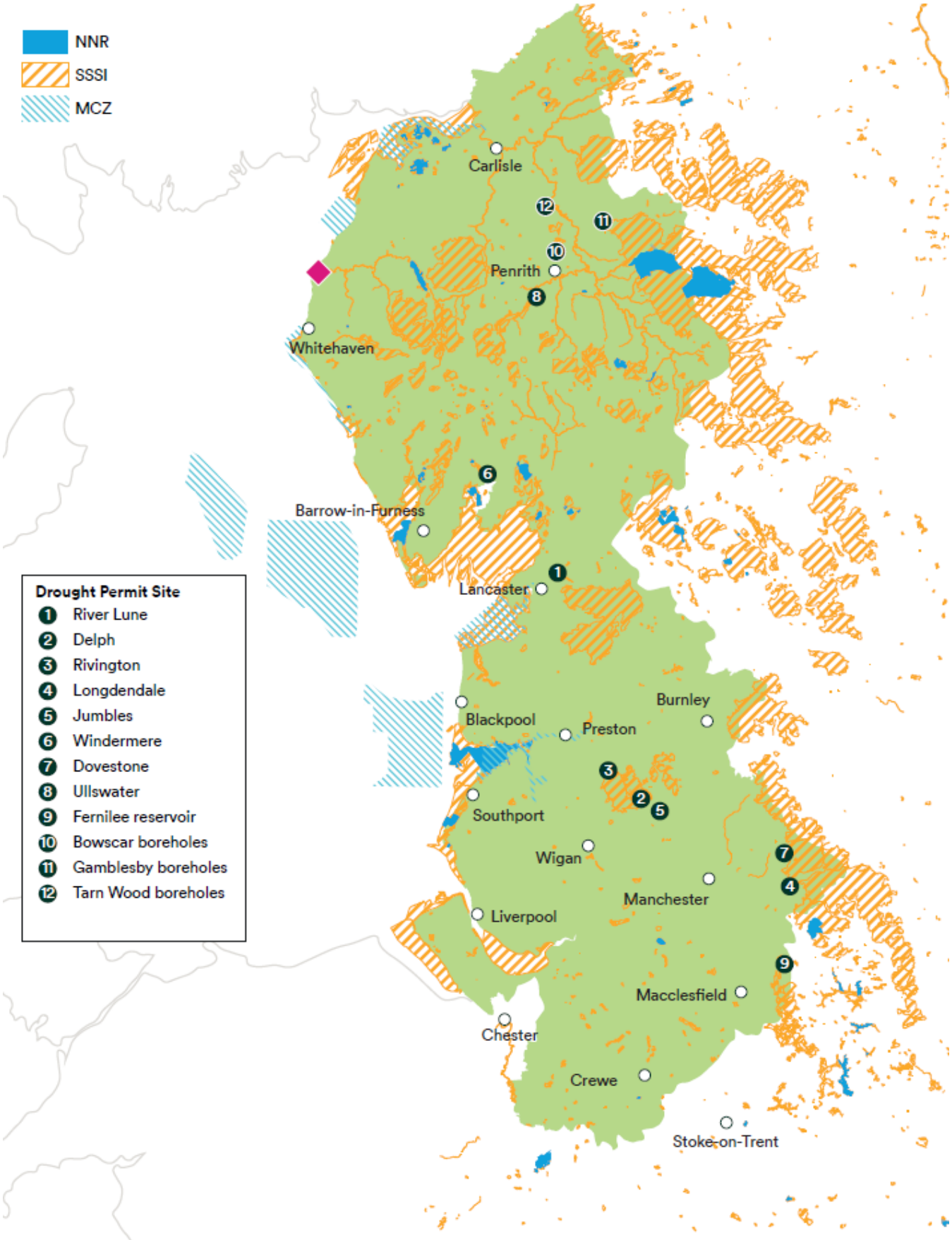


Figure 4: Map of nationally designated sites showing drought permit sites and supply-side options (Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), and Marine Conservation Zones (MCZ))



Each environmental assessment report includes an Environmental Monitoring Plan tailored to the specific drought permit site. The Environmental Monitoring Plan outlines any additional baseline data collection required to strengthen the assessment, for example to address data gaps in existing monitoring records or to improve the robustness of impact predictions. It sets out the monitoring activities required immediately prior to and during implementation of a drought permit, as well as the post-implementation monitoring needed to assess potential environmental impacts and to track the recovery of the site following the temporary measures.

Monitoring requirements have been defined on a site-by-site basis, depending on the sensitive environmental features present and the predicted scale and nature of the potential impacts. The environmental monitoring programme includes both:

- Routine monitoring data that is regularly collected, such as water levels or river flows; and,
- Targeted survey data collected by specialist environmental consultants commissioned by United Utilities to investigate particular ecological, hydrological, or water quality issues.

All monitoring during and after drought permit implementation is the responsibility of United Utilities. We are committed to transparency and routinely share all environmental monitoring data with the Environment Agency and Natural England. To ensure coordinated planning and oversight, we maintain a single master record of the Environmental Monitoring Plan requirements for all our drought permit sites. This master record is reviewed annually and shared with the Environment Agency to ensure it remains current and relevant.

Further detail on the individual drought permit sites is provided in Section 9, where each site summary includes:

- The key impacts identified through the environmental assessment;
- The specific monitoring requirements; and,
- The mitigation measures proposed to manage potential risks to the environment.

Full copies of our Environmental Assessment Reports for each drought permit are available upon request. Interested stakeholders can contact us at water.resources@uuplc.co.uk to obtain these documents.

To ensure readiness, all environmental assessments have been prepared as ‘shelf-copy’ reports. This means they are structured to be readily adapted if we need to apply for a drought permit. In such cases, the relevant report will be updated to reflect prevailing environmental conditions at the time of application and incorporate any new data or relevant information that has emerged since the original study was completed.

We are committed to maintaining the relevance and accuracy of our environmental assessments. Accordingly, we review and agree the need for revisions or updates on an annual basis in collaboration with the Environment Agency and Natural England.

6.2.2 Drought orders

A compensation-only reservoir is a type of reservoir whose primary, and often sole, function is to provide compensation flow to a downstream river. Importantly, they have no direct or indirect connection to a water company’s public water supply network.

Although compensation-only reservoirs do not supply water for public consumption, there are certain drought-related scenarios where a drought order may be necessary. For example, during a prolonged natural drought, it may become necessary to reduce compensation flows temporarily to preserve the reservoir’s remaining storage. This action is intended to ensure that the reservoir retains sufficient water to continue supporting essential downstream ecology, particularly flora and fauna, until significant rainfall restores reservoir levels. In such cases, the Environment Agency is responsible for applying to the Secretary of State at Defra for the necessary drought order.

For our Drought Plan 2022 the Environment Agency issued a position statement in June 2019 setting out updated roles and responsibilities for compensation-only reservoirs. At that time, the Environment Agency had previously taken the lead in preparing drought order applications and supporting Environmental Assessment Reports for compensation-only reservoirs, with these activities embedded within its own drought planning framework. Under the revised June 2019 position statement, water companies were expected to adopt a more proactive role in

planning for drought events at compensation-only reservoirs. This approach has since been reinforced through the updated Water Company Drought Plan Guideline (Environment Agency, 2025) for use in preparing 2027 drought plans, which incorporates lessons from recent droughts and clarifies water company responsibilities in planning and environmental assessment. Specifically, the guidance sets out the following responsibilities for water companies:

- Develop drought triggers for each compensation-only reservoir to support timely decision-making during dry weather. These triggers should inform both the company's own drought plan and the Environment Agency's local drought planning;
- Prepare an Environmental Assessment Report in support of potential drought order applications. This should include a comprehensive Environmental Monitoring Plan and appropriate mitigation proposals; and,
- Collaborate with the Environment Agency to draft the necessary written documentation that would accompany a formal drought order application to Defra. However, it remains the Environment Agency's role to submit the drought order application to Defra during an actual drought event.

In response to the 2019 guidance, we have worked closely with the Environment Agency to refine and agree a definitive list of compensation-only reservoirs for which future drought management planning may be relevant. As part of this process, it was agreed that 'shelf-copy' environmental assessment reports are not required for compensation-only reservoirs where the risk of needing a drought order is considered low, for instance where the compensation flow is small in proportion to the reservoir's overall storage volume. A summary of the risk levels associated with compensation-only reservoirs is shown in Table 5. For further information on risk levels of compensation only reservoirs', please refer to sections 2.2 to 2.4 in our drought plan 'Compensation only reservoirs' technical report.

Table 5: Summary of compensation only reservoir risk levels

Risk level	Reservoir (s)	Notes/Actions
Higher risk	Meadley	Alternative options are being explored, including potential dam decommissioning
Medium risk	Belmont, Blackmoss, Hollingworth, Worthington, Rumworth	Shelf-copy EAR to support future drought orders for Belmont and Blackmoss. Hollingworth: Potential compensation variation to be agreed with Canal and River Trust so no shelf-copy EAR required. Rumworth: Under the Act of Parliament, no drought order is required. To maintain downstream flows and protect the environment, if it becomes necessary to reduce compensation releases from Rumworth Reservoir to preserve storage, equivalent flows will, where feasible, be released from High Rid Reservoir. Worthington: discussions to be undertaken with Canal and Rivers Trust to determine how the compensation flow can be managed in a drought.
Low risk	Ennerdale, Crummock, Hoddlesden, Dubbs, Borrans	Hoddlesden previously considered high risk due to very small storage, however relative inflows are significant therefore risk is low.

6.3 Habitats Regulations Assessment

As a competent authority under the Habitats Regulations (Conservation of Habitats and Species Regulations 2017), we must ensure that the drought plan meets the requirements of the Habitats Directive. Therefore, the drought plan has been subject to Habitats Regulations Assessment (HRA). There are four stages of assessment:

- Stage 1: Screening to determine if drought options are likely to have a significant effect on Habitats Regulations designated sites;
- Stage 2: Appropriate Assessment of options with likely significant effects to determine if they adversely impact the integrity of the designated site (both alone and in-combination with other plans and projects);

- Stage 3: Consideration of alternative options where significant adverse effects are identified at Stage 2; and,
- Stage 4: Compensatory measures in the case that no alternative options exist and where Imperative Reasons of Overriding Public Interest can be demonstrated.

6.3.1 Stage 1 HRA Screening

Stage 1 HRA screening has been undertaken on all supply-side options and drought permits proposed in this drought plan. For drought permit sites, the environmental assessment reports we have prepared have been used to inform the assessment.

The HRA screening assessment identifies potential impacts of the options that are included in this plan to determine whether they could adversely affect the integrity of a designated site, including Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar and candidate SACs or SPAs. If this is the case, then a detailed Appropriate Assessment of the option is required (HRA Stage 2). HRA screening considered:

- Whether a scheme is likely to have a significant effect on a designated site(s);
- Whether the option would have an in-combination effect with existing consents; and
- Whether there would be an in-combination effect with other drought options in the plan.

The HRA screening report is published alongside this plan. The European designated sites associated with each drought permit and the conclusions of HRA screening are identified in Table 6. Details of the designated sites associated with the supply-side options are listed in the HRA screening report.

Table 6: Details of drought permit environmental studies and conclusions of HRA Screening

Drought permit/order site	Resource zone	Date of environmental study report	Statutory designated sites considered in the Environmental Assessment	Conclusion of HRA Screening – will the option result in likely significant effects on European sites?
Delph	Strategic	2026	None	No
Dovestone	Strategic	2025	Rochdale Canal SAC	No
Fernilee	Strategic	2026	None	No
Jumbles	Strategic	2025	None	No
Longdendale	Strategic	2026	South Pennine Moors SAC	No
River Lune LCUS	Strategic	2021 (update currently in draft)	Morecambe Bay SPA/SAC/SSSI/Ramsar	No
Rivington (White Coppice and Brinscall Brook)	Strategic	2026	None	No
Ullswater	Strategic	2025	River Eden SAC/SSSI	No
Windermere	Strategic	2021 (update currently in draft)	Morecambe Bay SPA/SAC/SSSI/Ramsar Low Wray Bay SSSI, Roudsea Wood & Mosses SAC & SSSI	No
North Eden boreholes — Bowscar	North Eden	2025	River Eden SAC/SSSI, River Eden SAC, North Pennine Moors SPA	No
North Eden boreholes — Gamblesby	North Eden	2025	River Eden SAC/SSSI, River Eden SAC, North Pennine Moors SPA	No

Drought permit/order site	Resource zone	Date of environmental study report	Statutory designated sites considered in the Environmental Assessment	Conclusion of HRA Screening – will the option result in likely significant effects on European sites?
North Eden boreholes — Tarn Wood	North Eden	2025	River Eden SAC/SSSI, River Eden SAC, North Pennine Moors SPA	No

HRA Screening of supply-side and drought permit options has concluded that none of the options will result in likely significant effects on European designated sites (both alone and in-combination with other plans or projects), and therefore no further stages of HRA are required.

6.4 Strategic Environmental Assessment

6.4.1 Requirements for Strategic Environmental Assessment

Strategic Environmental Assessment (SEA) of plans and programmes is a statutory requirement under the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations). The purpose of SEA is to provide high level and strategic protection of the environment by incorporating environmental considerations into the preparation of plans and policy. In the context of drought planning, SEA assists in the identification of the likely significant environmental effects of our drought options and determines how any adverse impacts might be mitigated.

The key stages of SEA are:

- Screening to determine if SEA is required. Environment Agency, Natural England, Natural Resources Wales, Cadw, and Historic England should be consulted before taking the screening decision;
- Deciding the scope and level of detail required for the SEA;
- Assessing the effects of the plan/programme and its reasonable alternatives, and preparing an environmental report;
- Consultation on the environmental report and draft plan/programme;
- Adoption of the plan/programme and monitoring of any significant environmental effects;

This section of the plan details the process which we have taken in preparing the SEA, and the outcomes and influences on this drought plan. The SEA was undertaken in line with government best practice guidance and UKWIR guidance which has been prepared specifically for water resource management plans and drought plans.

6.4.2 SEA Screening

The first step of the SEA process is to carry out a screening assessment to determine whether an SEA is required. We believe that an SEA is required because this plan includes drought options that require assessment under the Habitats Regulations. This was confirmed with the statutory consultees for SEA who are Natural England, Natural Resources Wales, Environment Agency, Cadw, and Historic England.

6.4.3 SEA Scoping

SEA scoping presents information on the scope of, and approach to, work to be carried out to inform the SEA assessments presented in the Environmental Report. A scoping report was produced describing: the types of alternative drought measures that might be available to meet the need for water during a drought; the policies and other plans and programmes influencing the selection of measures that may be used; the environmental issues which will need to be considered; and the assessments that will be carried out to identify the environmental effects of saving and supplying water which will assist in the identification of preferred measures for implementation during a drought scenario.

Under the SEA Regulations, when deciding upon the scope and level of detail of the information to be included in an Environmental Report, we are required to undertake consultation with statutory consultees (Natural England, Natural Resources Wales, Environment Agency, Cadw, and Historic England). The scoping report was used as the basis of the consultation process and was subject to a statutory five week consultation period during January and February 2025. Feedback from the Project Steering Group of statutory consultees was incorporated into the SEA Draft Environmental Report.

6.4.4 SEA Environmental Report

The findings of the SEA are reported in the SEA Environmental Report. A SEA Post Adoption Statement will be published alongside the final Drought Plan, explaining how the SEA has influenced the final plan. The assessment adopted an 'objectives-led' approach, with SEA objectives derived from environmental objectives established in law, policy, or other plans and programmes, and a baseline information review. The objectives were categorised under the following topic areas: biodiversity; flora and fauna; population and human health; material assets and resource use; water; soil, geology and land use; air and climate; archaeology and cultural heritage; landscape and visual amenity; and inter-relationships. The overall findings of the SEA describe the extent to which objectives for each topic are met by each of the drought options.

The outputs of the assessment are a completed appraisal framework table for each drought option with a colour coded summary matrix (ranging from major beneficial impacts to major adverse impacts). This provides a comparative assessment of the residual environmental effects of implementing each drought option (i.e. those impacts remaining after the implementation of mitigation measures). The visual evaluation matrix and key for drought permit and order options is presented in Table 7.

A cumulative, or in-combination, assessment has been undertaken which involved examining the likely significant effects of each of the drought options in combination with each other (both intra- and inter- water resources zone) and in combination with the implementation of other relevant plans and programmes. A range of minor and moderate impacts were identified. Where possible we will aim to prioritise permits with the lowest environmental impact.

Table 7 Visual evaluation matrix summary for drought permit options

Option		SEA Topics and Objectives																				Commentary
		Biodiversity, flora and fauna			Population and human health			Material assets and resource use		Water				Soil, geology and land use		Air and climate			Archaeology and Cultural Heritage	Landscape and Visual Amenity	Inter-relationships	
		1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	4.4	5.1	5.2	6.1	6.2	6.3	7.1	8.1	9.1	
Supply Side Options																						
Castle Carrock Reservoir, dead water storage	Adverse								None				None		None			None				The implementation of this drought option would result in a minor adverse impact on biodiversity and population and human health, due to potential impacts on fish populations and resulting impacts on angling. There are also anticipated to be temporary minor adverse impacts on river flows and water quality. Reservoir drawdown and exposure of shoreline margins may result in minor adverse impacts to soil, geology and land use. The impact of the drought option on landscape and visual amenity is considered to be moderate adverse but temporary. Impacts to inter-relationships between topics have been summarised as moderate adverse.
	Beneficial	None	None	None		None		None		None	None		None	None	None	None	None		None	None	None	Overall, five minor beneficial effects were identified. These were in relation to population and human health based on continued supply of drinking water and a beneficial impact on adaptation to climate change. The remaining impacts on water, soil and geology, and inter-relationships would be negligible.
Demand Side Options																						
Drought Publicity	Adverse	None	None	None	None		None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	A negligible adverse impact has been identified on recreation due to potential for changes in public perception of water-based recreation. This impact is however anticipated to be temporary.
	Beneficial			None										None	None	None			None	None		Minor beneficial effects have been identified relating to Population and Human Health, Biodiversity, Flora and Fauna, Material Assets and Resource Use, Air and Climate, and Water, relating to reduced requirement for abstraction and increased climate resilience. The effect on inter-relationships was also assessed to be minor beneficial.
Enhanced leakage detection and repair	Adverse								None	None		None	None					None			None	Minor adverse impacts have been identified for the topics Biodiversity, Flora and Fauna as a result of construction impacts on ecosystem services.
	Beneficial			None		None								None					None			Moderate beneficial impacts have been identified for Population and Human Health, Water, and Air and Climate in relation to water savings and improving adaptation to climate change. Minor beneficial effects have been identified for the topics of Biodiversity, Flora and Fauna, Material Assets and Resource Use, Soil, Geology and Land Use and Inter-relationships, relating to a reduction in water lost and consequently, a reduced need for abstraction.
Campaign for voluntary water use restraint	Adverse	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Overall, no adverse effects have been identified.
	Beneficial			None										None	None	None			None	None		Moderate beneficial effects have been identified for the topics of Water through the promotion of water efficiency measures. Minor beneficial effects have been identified for Population and Human Health, Material Assets and Resource Use and Water, Soil, Geology and Land Use and Air and Climate relating to reduced need for abstraction and improving adaptation to climate change. A minor beneficial impact is anticipated for inter-relationships.

Option		SEA Topics and Objectives																				Commentary
		Biodiversity, flora and fauna			Population and human health			Material assets and resource use		Water				Soil, geology and land use		Air and climate			Archaeology and Cultural Heritage	Landscape and Visual Amenity	Inter-relationships	
		1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	4.4	5.1	5.2	6.1	6.2	6.3	7.1	8.1	9.1	
Temporary Use Ban (TUB)	Adverse	None	None	None				None	None	None	None	None	None	None	None	None	None	None	None	None	None	Minor adverse impacts are anticipated towards Population and Human Health relating to restricting recreational use and the potential to disturb economic activity.
	Beneficial			None										None	None	None			None	None		Moderate beneficial impacts are anticipated towards Water as a result of promoting water efficiency. Minor beneficial impacts are anticipated towards Population and Human Health and Water, relating to water savings and to Material Assets and Resource Use, Water, Soil, Geology and Land Use, and Air and Climate, relating to improving water efficiency, reducing demand and improving adaptation to climate change.
Ordinary Drought Order (Non-Essential Use Ban)	Adverse	None	None	None				None	None	None	None	None	None	None	None	None	None	None	None	None	None	Adverse effects are anticipated in relation to Population and Human Health; a major adverse effect as a result of economic impacts to certain business sectors, a moderate adverse effect due to potential for impacts on recreation and a minor adverse effect due to potential short-term impacts on standard of living.
	Beneficial			None										None	None	None			None	None		Moderate beneficial impacts are anticipated towards population and human health relating to water savings. Moderate beneficial impacts are also anticipated towards Material Assets and Resource Use, Water and Air and Climate, relating to reduced need for abstraction and improving adaptation to climate change. Minor beneficial impacts are anticipated towards Water and Air and Climate, also relating to reduced requirement for abstraction at source. Minor beneficial impacts are anticipated for Inter-relationships.
Pressure management	Adverse	None	None	None				None	None	None	None	None	None	None	None	None	None	None	None	None	None	Minor adverse impacts are anticipated towards Population and Human Health due to potential delays in water provision caused by pressure management.
	Beneficial			None		None							None	None	None	None			None	None		Moderate beneficial impacts are anticipated for Population and Human Health, Material Assets and Resource Use and Water and Air and Climate, reflecting reduced water consumption, reduced abstraction, lower greenhouse gas emissions and improved adaptation to climate change. Additionally, minor beneficial impacts are noted for Water, resulting from the reduced need for abstraction. A minor beneficial impact is also identified for Inter-relationships.
Drought Permit Options																						
Delph Reservoir	Adverse				None		None	None	None				None		None	None	None	None				Overall, minor adverse effects were identified relating to the impact of the drought option on a number of NERC and notable species, impact of riverine flow reduction on biodiversity, water quality and fluvial geomorphology. The impact of inter-relationships has been assessed as minor.
	Beneficial	None	None	None						None	None	None	None	None	None	None	None		None		None	Minor beneficial effects were identified relating to population and human health based on continued supply of drinking water and benefits associated with the landscape amenity of the reservoir. Improved resilience of water supplies to drought is assessed to have a minor beneficial impact on adaptation to climate change.

Option		SEA Topics and Objectives																			Commentary
		Biodiversity, flora and fauna			Population and human health			Material assets and resource use		Water				Soil, geology and land use		Air and climate			Archaeology and Cultural Heritage	Landscape and Visual Amenity	Inter-relationships	
		1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	4.4	5.1	5.2	6.1	6.2	6.3	7.1	8.1	9.1	
Dovestone Reservoir 10 Ml/d	Adverse				None		None	None	None				None		None	None	None	None	None			Minor adverse effects were identified relating to the impact of river flow reduction on biodiversity, water quality, and landscape and visual amenity. The effect on Inter-relationships has been assessed as minor.
	Beneficial	None	None	None					None		None		None		None	None	None		None	None	None	Overall moderate beneficial effects were identified relating to population and human health, and air and climate, based on continued supply of drinking water and improving adaptation to climate change. As the drought permit will slow the rate of drawdown, it is also predicted to have a minor positive effect on reservoir water level and exposure.
Dovestone Reservoir 5 Ml/d	Adverse				None		None	None	None				None		None	None	None	None	None			Minor adverse effects were identified relating to the impact of river flow reduction on biodiversity, water quality, and landscape and visual amenity. The effect on Inter-relationships has been assessed as minor.
	Beneficial	None	None	None					None		None		None		None	None	None		None	None	None	Overall moderate beneficial effects were identified relating to population and human health, and air and climate, based on continued supply of drinking water and improving adaptation to climate change. As the drought permit will slow the rate of drawdown, it is also predicted to have a minor positive effect on reservoir water level and exposure.
Fernilee Reservoir	Adverse				None		None	None					None		None	None	None	None				Minor adverse effects are anticipated to biodiversity, water flow and levels and fluvial geomorphology. The effect on Inter-relationships has also been assessed as minor.
	Beneficial	None	None	None		None				None	None	None	None	None	None	None	None		None	None		Overall, minor beneficial effects are anticipated to population and human health based on continued provision of public water supplies. Improved resilience of water supplies to drought is assessed to have a minor beneficial impact on adaptation to climate change.
Jumbles Reservoir 12 Ml/d	Adverse				None			None	None				None		None	None	None	None	None			The implementation of this drought option would result in minor adverse effects on the spread of INNS, water levels and flows, water quality, fluvial geomorphology and visual amenity. Subsequently, the impacts on inter-relationships have been assessed as minor.
	Beneficial	None	None	None							None	None	None	None	None	None	None		None			Minor beneficial effects were identified relating to population and human health based on continued supply of drinking water. Improved resilience of water supplies to drought is assessed to have a minor beneficial impact on adaptation to climate change. Minor beneficial impacts were assessed due to the drought option resulting in more water being retained in Jumbles Reservoir, which would be expected to have a positive impact on aesthetics.
Jumbles Reservoir 6 Ml/d	Adverse				None			None	None				None		None	None	None	None				The implementation of this drought option would result in moderate adverse impacts to water levels and flows and fluvial geomorphology. Moderate adverse impacts are anticipated to biodiversity in terms of impact upon a number of NERC and notable fish species. A reduction in water levels would also result in minor adverse impacts upon potential spread of INNS and WFD status. Therefore, the impact upon inter-relationships has been assessed as moderate adverse.

Option		SEA Topics and Objectives																			Commentary
		Biodiversity, flora and fauna			Population and human health			Material assets and resource use		Water				Soil, geology and land use		Air and climate			Archaeology and Cultural Heritage	Landscape and Visual Amenity	Inter-relationships	
		1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	4.4	5.1	5.2	6.1	6.2	6.3	7.1	8.1	9.1	
	Beneficial	None	None	None						None	None	None	None	None	None	None	None		None			Improved resilience of water supplies to drought is assessed to have a moderate beneficial impact on adaptation to climate change. Moderate beneficial effects were also identified in relation to population and human health based on continued supply of drinking water. More water retained in the reservoir is anticipated to have a minor beneficial impact on recreation and landscape and visual amenity.
Longdendale Reservoirs 25 Ml/d	Adverse				None		None	None	None				None		None	None	None	None				Moderate adverse impacts are anticipated on water levels and flow. The implementation of this drought option would result in minor adverse impact on a number of NERC and notable species, water quality and on water dependent ecosystems in the affected reach. There would also be minor adverse impacts on the aesthetics and landscape of the study area.
	Beneficial	None	None	None		None				None	None	None	None	None	None	None	None		None	None		Overall, two major beneficial effects were identified relating to population and human health based on continued supply of drinking water. There would also be a minor beneficial impact from the drought option for adaptation to climate change. The remaining beneficial impacts on material assets and resources would be negligible.
Longdendale Reservoirs 15 Ml/d	Adverse				None		None	None	None				None		None	None	None	None				Moderate adverse impacts are anticipated on water levels and flow. The implementation of this drought option would result in minor adverse impact on a number of NERC and notable species, water quality and on water dependent ecosystems in the affected reach. There would also be minor adverse impacts on the aesthetics and landscape of the study area
	Beneficial	None	None	None		None				None	None	None	None	None	None	None	None		None	None		Overall, two major beneficial effects were identified relating to population and human health based on continued supply of drinking water. There would also be a minor beneficial impact from the drought option for adaptation to climate change. The remaining beneficial impacts on material assets and resources would be negligible.
River Lune LCUS abstraction	Adverse							None	None				None		None	None	None	None				Minor adverse effects were identified relating to population and human health due to the impact upon recreation including angling and navigation. The effect on Inter-relationships has also been assessed as minor.
	Beneficial	None	None	None						None	None	None	None	None	None	None	None		None	None		Major beneficial effects were identified relating to population and human health based on continued supply of drinking water. Improved resilience of water supplies to drought is assessed to have a minor beneficial impact on adaptation to climate change.
Rivington Reservoirs – Brinscall Brook	Adverse				None		None	None	None				None		None	None	None	None				Overall moderate adverse effects were identified relating to the impact of riverine flow reduction on biodiversity, flora and fauna, with respect to fish populations, surface water levels and flows and water quality. Minor adverse effects were assessed for fish populations, ecosystem functions and services and fluvial geomorphology. Negligible adverse impacts are anticipated to the spread of INNS, angling, archaeology and landscape and visual amenity. The impact upon inter-relationships has been assessed as moderate.

Option		SEA Topics and Objectives																			Commentary
		Biodiversity, flora and fauna			Population and human health			Material assets and resource use		Water				Soil, geology and land use		Air and climate			Archaeology and Cultural Heritage	Landscape and Visual Amenity	Inter-relationships	
		1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	4.4	5.1	5.2	6.1	6.2	6.3	7.1	8.1	9.1	
	Beneficial	None	None			None					None	None	None	None	None	None	None		None			One moderate beneficial effect was identified relating to population and human health based on continued supply of drinking water. Improved resilience of water supplies to drought is assessed to have a minor beneficial impact on adaptation to climate change.
Rivington Reservoirs – White Coppice	Adverse				None		None	None	None				None		None	None	None	None				Overall moderate adverse effects were identified relating to the impact of riverine flow reduction on biodiversity, flora and fauna, with respect to fish populations, surface water levels and flows and water quality. Minor adverse effects were assessed for fish populations, ecosystem functions and services and fluvial geomorphology. Negligible adverse impacts are anticipated to the spread of INNS, angling, archaeology and landscape and visual amenity. The impact upon inter-relationships has been assessed as moderate.
	Beneficial	None	None								None	None	None	None	None	None	None		None			Overall, three minor beneficial effects were identified relating to population and human health based on continued supply of drinking water. Improved resilience of water supplies to drought is assessed to have a minor beneficial impact on adaptation to climate change.
Ullswater	Adverse				None		None		None				None		None			None				Minor adverse effects were identified for Biodiversity, Flora and Fauna, Material Assets and Resource Use, and Air and Climate relating to increased abstraction impacting water levels, as well as the associated rise in energy requirements and resulting greenhouse gas emissions.
	Beneficial	None	None	None		None				None	None		None		None	None	None		None	None		Major beneficial effects are anticipated for Population and Human Health, as well as Air and Climate, through the continued provision of public water supplies. Moderate beneficial impacts are expected on Material Assets, Resource Use, and Water due to maintaining essential public water supplies during drought conditions.
Lake Winder-mere	Adverse				None		None		None				None		None			None				Minor adverse impacts were identified relating to Biodiversity and Material Assets and Resource Use. The abstraction of water from Windermere will increase energy consumption and, therefore, greenhouse gas emissions, having a minor adverse impact upon Air and Climate. The effect on Inter-relationships has also been assessed as minor.
	Beneficial	None	None	None		None			None	None	None	None	None	None	None	None	None		None	None		The impact of the drought option on population and human health has been assessed as major beneficial based on continued provision of public water supplies. Improved resilience of water supplies to drought is assessed to have a moderate beneficial impact on adaptation to climate change.
Eden Valley boreholes - Bowscar boreholes	Adverse			None			None						None	None				None				Overall minor adverse effects were identified for Biodiversity, Flora and Fauna and Population and Human Health relating to the potential impact of the increase in groundwater drawdown on nearby receptors and third-party groundwater abstractions.
	Beneficial	None	None	None		None		None		None	None		None		None	None	None		None	None		Overall, minor beneficial effects are anticipated for Population and Human Health and Air and Climate based on continued provision of public water supplies and improved adaptation to climate change.

Option		SEA Topics and Objectives																			Commentary
		Biodiversity, flora and fauna			Population and human health			Material assets and resource use		Water				Soil, geology and land use		Air and climate			Archaeology and Cultural Heritage	Landscape and Visual Amenity	Inter-relationships	
		1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	4.4	5.1	5.2	6.1	6.2	6.3	7.1	8.1	9.1	
Eden Valley boreholes - Gamblesby boreholes	Adverse						None						None					None				Overall minor adverse effects were identified for Biodiversity, Flora and Fauna relating to the impact of increased groundwater drawdown on nearby receptors and INNS fitness.
	Beneficial	None	None	None		None		None		None	None	None	None	None	None	None	None		None	None		Overall, minor beneficial effects are anticipated for Population and Human Health and Air and Climate based on the continued provision of public water supplies and improved adaptation to climate change.
Eden Valley boreholes - Tarn Wood boreholes	Adverse			None			None						None					None				Overall minor adverse effects were identified for Biodiversity, Flora and Fauna and Population and Human Health relating to the potential impact of the increase in groundwater drawdown on nearby receptors and third-party groundwater abstractions.
	Beneficial	None	None	None		None		None		None	None	None	None	None	None	None	None		None	None		Overall, minor beneficial effects are anticipated for Population and Human Health and Air and Climate based on continued provision of public water supplies and improved adaptation to climate change.

Option

SEA Topics and Objectives	Commentary
Major Beneficial	
Moderate Beneficial	
Minor Beneficial	
Negligible	
Minor Adverse	
Moderate Adverse	
Major Adverse	
NOT APPLICABLE	None
Uncertain — Insufficient data available to undertake assessment	

In summary, the SEA Environmental Report concluded:

- Supply side options: Minor construction works are required to allow access to Castle Carrock deadwater, and few residual environmental effects are anticipated. Operationally, the supply side option is within existing licensed abstraction limits, and it is assumed that the existing abstraction licence would not have been granted if these options resulted in unsustainable abstraction. Overall, most of the impacts of implementing this option are anticipated to be negligible or minor adverse, with minor beneficial impacts associated with the benefits to the security of public water supply and climate change adaptation.
- Demand side options: Demand side measures serve to reduce pressure on water resources by reducing customer demand for water. Reducing abstraction at the source reduces the amount of energy needed for water abstraction, treatment and distribution. Overall, impacts of these drought options are considered to range from negligible to major beneficial. Adverse impacts on population and human health were associated with options involving water use restrictions.
- Drought permit options: The magnitude of impacts on SEA objectives for drought permit options (i.e. where there is modification to the conditions of an existing abstraction licence) varies between and within the options, ranging from major beneficial for the SEA objective for population and human health to major adverse for the SEA objective for biodiversity, flora and fauna. The latter were associated with adverse changes to surface water levels and flows.
- Cumulative impacts: The cumulative, or in-combination, assessment identified the potential for adverse impacts if two drought options were to be implemented simultaneously, either intra- or inter-WRZ. In the majority of combinations, no impacts are considered likely. However, in some cases, impacts have been identified where, for example, both options draw on the same water resource (e.g., the same groundwater catchment or the same river). Due to the uncertainty surrounding the timing and sequencing of drought option implementation, cumulative or in-combination effects will be reviewed at the point at which drought options are triggered, based on the outcomes of the individual (project-level) assessments.
- Assessment of United Utilities' Draft Drought Plan 2027 with other plans and programmes, including United Utilities' Water Resources Management Plan 2024, Environment Agency / Natural Resources Wales Drought Plans, other water company Drought Plans and National Policy Statements, concluded that no significant cumulative or in-combination effects are anticipated.

Consideration of mitigation measures has been an integral part of the SEA process. The SEA appraisals have been based on residual impacts, that is, the likely environmental effects remaining after the implementation of reasonable mitigation measures. These mitigation measures are described in the environmental assessment reports that have been prepared for each drought permit option.

Prior to implementation, we will review the specific environmental monitoring requirements for each option in consultation with the Environment Agency, Natural England, and Natural Resources Wales. During implementation, appropriate monitoring will be undertaken to track potential environmental effects , with the findings used to trigger the deployment of suitable and practicable mitigation measures where required.

6.4.5 Consultation

The findings of the SEA are reported in the SEA Environmental Report, which is open for public consultation alongside the draft Drought Plan 2027.

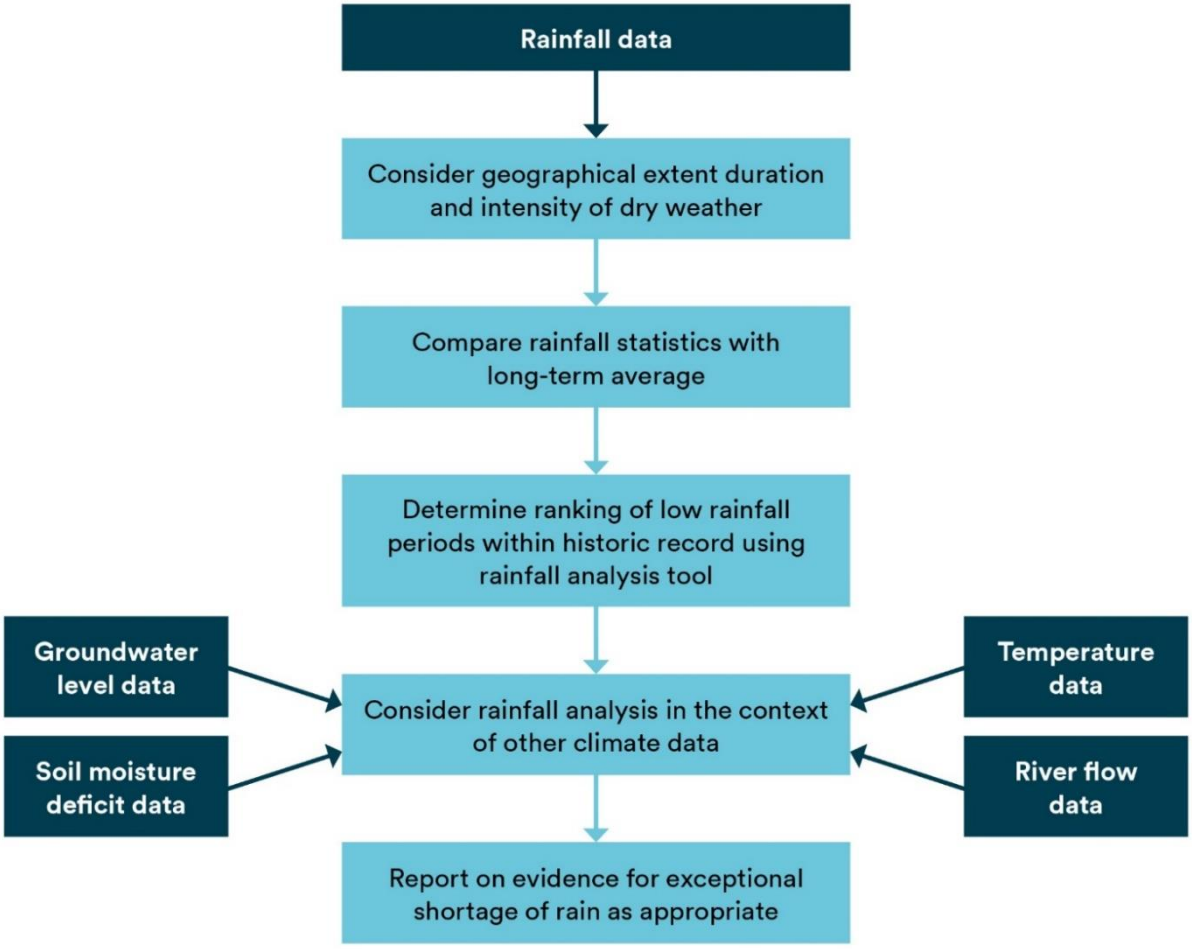
Throughout the SEA process we have worked closely with a project steering group comprising representatives from Natural England, Natural Resources Wales, Environment Agency, Cadw, and Historic England.

7. Exceptional shortage of rainfall

It is a statutory requirement for any drought permit or order application to demonstrate that "*…by reason of an exceptional shortage of rain, a serious deficiency of supplies of water in any area exists or is threatened…*". To support this, the Environment Agency has published guidance outlining the principles for assessing exceptional shortage of rain and the evidential requirements for drought permits and orders (Environment Agency, 2025). Our process for demonstrating exceptional shortage of rain aligns with this guidance and involves analysis of recent and historical rainfall data, soil moisture deficits, and hydrological indicators such as reservoir levels, river flows, and groundwater conditions. This ensures that applications (including for grouped permits) are based on robust evidence and only pursued in genuinely exceptional circumstances.

A summary of the process involved in analysing rainfall and other climate data and reviewing the evidence for an exceptional shortage of rain is shown in Figure 5 below.

Figure 5: Summary of rainfall analysis process



In providing an Exceptional Shortage of Rainfall (ESoR) assessment we must consult with the Environment Agency hydrology technical specialists, Area Drought Coordinator, and water company lead (Operations Catchment Services) at the earliest stage possible. This early engagement is essential for preparing for possible drought permits/orders and agreeing on the approach.

A key indicator in assessing drought conditions is a significant shortage of rainfall in the period leading up to a drought. Rainfall data is routinely collected and analysed as part of our ongoing water situation monitoring, with enhanced analysis undertaken as drought conditions emerge.

Each drought event is unique in its timing, severity and spatial extent, so it is not possible to define a single, fixed process for rainfall assessment ahead of a drought. Instead, a range of data sources and analytical approaches,

both technical and statistical, may be applied to assess and report on the rainfall deficits contributing to drought development. Rainfall data is considered alongside other relevant climate variables, including temperature, soil moisture deficit and effective rainfall (rainfall remaining after evapotranspiration losses), all of which influence the hydrological and water resources response to drought.

The Environment Agency provides daily areal rainfall data for catchment areas bespoke to the drought permit/order of interest. For each catchment, rainfall records extend back to 1871, and monthly long-term averages are based on the 30-year period from 1991 to 2020 to ensure consistency in comparison across sites.

The selection of the time period to support a drought permit or order application depends on the duration, intensity, and geographical extent of the dry weather conditions experienced. For single-season droughts, it is often appropriate to assess rainfall over a six-month period from April to September (or from the point when reservoir drawdown began). However, if the drought continues into autumn or winter, a longer period may be required to fully reflect the dry conditions. In contrast, shorter periods may be considered, particularly for compensation only reservoirs where reservoir drawdown can occur rapidly in response to rainfall deficits. Since the full duration of a drought can only be known in hindsight, the time window used for rainfall analysis at the time of applying for drought powers may be shorter than the eventual total length of the dry period. When dry weather impacts are localised, analysis may be focused on specific affected catchments, whereas for widespread droughts, regional averages (e.g. across the ten catchments in our Strategic Resource Zone) are also included for consideration.

The primary data source is areal rainfall data, which is supplemented, depending on the timing of the application, with more recent point rainfall data from the Environment Agency and forecast rainfall data from the Met Office[3] to complete the most recent monthly totals.

7.1.1 Areal rainfall analysis

As part of the Exceptional Shortage of Rain application process, a robust approach to rainfall data analysis is essential to ensure that hydrological assessments are underpinned by consistent and credible evidence. Areal rainfall analysis plays a central role in characterising catchment-wide rainfall patterns over time and space, providing a more representative view than point rainfall data alone. The following principles outline the intended approach for sourcing and applying rainfall data, ensuring alignment with Environment Agency guidance and relevant standards:

- Areal rainfall data for the relevant catchment will be sourced from the Environment Agency's HadUK/DRT dataset, in line with current guidance;
- No alternative areal rainfall datasets will be used. If considered in future, full justification will be provided, including evidence of improved quality or hydrological relevance compared to HadUK/DRT;
- Any future areal rainfall calculations will be carried out in accordance with British Standard BS7843-4:2012;
- Point rainfall data, where used for supporting information, will be sourced from Environment Agency rain gauges. These will be quality controlled, with minimal missing data, and operated in line with British Standards;
- Individual rain gauges will not be used as standalone evidence but may be referenced to demonstrate spatial variation where appropriate; and
- Radar-derived rainfall data will not be used due to its inherent uncertainties, in line with Environment Agency guidance.

The period of analysis for an Exceptional Shortage of Rain assessment will be agreed in advance with the Environment Agency, with clear evidence provided to support the start and end dates. This will include charts or graphs demonstrating when rainfall dropped below normal levels (based on Cunnane analysis) and when a drought permit became necessary. At the time of application, the most up-to-date rainfall data available will be

[3] The Met Office forecast is received on a Monday and Thursday providing detailed information for the following five days, and a higher level forecast for the next ten days.

used, and applications will be submitted promptly once the need is identified. Short-term forecasts (up to 15 days) may be used to support the assessment, while longer-term projections may be referenced qualitatively. Periods of analysis shorter than three months are generally not appropriate for an Exceptional Shortage of Rain, but may be included as supplementary evidence if clearly justified. The geographical extent of analysis will be clearly defined and justified, based on Environment Agency hydrological units, bespoke catchments, or water resource zones, with evidence provided to demonstrate that the rainfall deficit affects relevant sources or the wider water resource zone. Where possible, the selected catchments will include one or more Met Office-registered rain gauges.

Monthly rainfall totals (using HADUK[4] gridded rainfall estimates) are calculated for each catchment and analysed within our rainfall analysis tool, which enables recent rainfall totals to be ranked within the overall historic data record using the Cunnane plotting position for the r^{th} ranked (from largest to smallest) datum from a sample of size n. It is used when quantile unbiased values are desired.

This statistical analysis takes a selected catchment area and provides an unbiased ranking for the rainfall over varying periods. Table 8 below shows the Cunnane analysis for Longdendale in 2018. The plotting position shows the 4-month period from May to August as being ranked second out of 130 years' worth of data. In total there were 11 cells categorised as 'Exceptionally low' based on the Cunnane index. For an Exceptional Shortage of Rain case to be justified, rainfall conditions during the analysis period are expected to meet the 'exceptionally low' or 'notably low' ranking categories as defined by the Environment Agency's drought classification.

[4] HADUK rainfall datasets are gridded, long-term UK climate datasets produced by the Met Office, providing high-resolution daily, monthly, and annual rainfall data across the UK for climate analysis and monitoring.

Table 8: Cunnane plotting position for Longdendale in 2018

Rainfall ranking (out of 130 years) Shaded cells show periods classified as 'exceptionally low' according to the Cunnane plotting position												
Duration (months) Month ending	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Jan – 2018	120	105	101	104	119	113	114	119	114	105	111	117
Feb – 2018	51	98	88	90	93	108	104	109	115	110	100	110
Mar – 2018	93	70	106	98	96	100	113	105	111	115	110	103
Apr – 2018	108	106	89	111	109	101	108	116	114	118	120	117
May – 2018	20	60	84	67	102	97	93	100	109	104	108	115
Jun – 2018	3	1	12	34	28	70	69	67	72	94	91	91
Jul – 2018	25	3	1	6	20	11	50	53	53	61	81	74
Aug – 2018	19	14	3	2	5	12	7	31	35	40	42	66
Sep – 2018	92	56	32	15	8	14	27	17	42	48	48	51
Oct – 2018	24	52	31	17	10	5	10	15	11	30	35	36
Nov – 2018	31	16	32	20	11	6	5	7	12	8	24	27
Dec – 2018	101	68	36	52	30	22	13	9	13	20	14	35

Table 9: Cunnane calculation and index

$Cunnane\ plotting\ position = \frac{Rank - 0.4}{n + 0.2}$ Category	Probability of value being surpassed by lower value P (X)	Probability of occurrence in any year
Exceptionally high	**>0.95**	**0.05 (5%)**
Notably High	**0.87 - 0.95**	**0.08 (8%)**
Above normal	**0.721 - 0.869**	**0.15 (15%)**
Normal	**0.28 - 0.72**	**0.44 (44%)**
Below normal	**0.131 - 0.279**	**0.15 (15%)**
Notably low	**0.05 - 0.13**	**0.08 (8%)**
Exceptionally low	**<0.05**	**0.05 (5%)**

Standardised precipitation index

The Standardised Precipitation Index (SPI) is a key element in an Exceptional Shortage of Rain assessment. It is particularly important for drought permit applications and for the Environment Agency's own assessments under drought orders or Section 57 restrictions. The Environment Agency considers SPI its preferred rainfall index, and its use is strongly recommended for all Exceptional Shortage of Rain assessments. If an applicant chooses not to use SPI, a clear and thorough explanation is required. SPI is an internationally recognised statistical indicator that measures how observed cumulative rainfall compares to long-term climatological averages. It provides a standardised indication of dryness or wetness, based on rainfall totals over a specified period and location. SPI is generally calculated on a monthly basis using a moving window, enabling assessments of drought severity, duration, and intensity. For SPI calculations, several inputs and considerations are essential:

- Areal rainfall data must be used instead of single rain gauge data. This approach better represents catchment-scale conditions, meets legislative requirements, and reduces uncertainty. The Environment Agency's HadUK/DRT dataset is typically recommended for consistency and data quality;
- The period of record should extend back to 1871 to ensure a robust long-term baseline for monthly rainfall comparisons; and
- The period of analysis refers to the time window supporting the Exceptional Shortage of Rain case. It should be determined in advance and agreed early with the relevant Environment Agency hydrologist. The period must begin when rainfall is demonstrably below normal. Its length should reflect the vulnerability of the water source to rainfall. Short periods (e.g., under three months) are typically insufficient for Exceptional Shortage of Rain cases, as water company systems are expected to manage short-term dry weather. Both the start and end of the period must be supported with clear evidence, such as graphs or charts.

Interpreting SPI values requires professional judgement. Although there is no single SPI threshold that automatically defines an Exceptional Shortage of Rain, values below -2.0 typically indicate 'exceptionally dry' conditions. If the entire analysis period does not show SPI < -2.0, but a shorter, critical period (e.g., winter refill) does, that may still support an Exceptional Shortage of Rain case.

Table 10 presents a summary of SPI values alongside associated descriptive categories (such as moderate or severe drought) and provides an indicative estimate of the rarity or return period of such events. By using SPI, it is possible to make consistent and meaningful comparisons between current and past droughts or wet periods, as well as across different climatic zones and geographic locations, supporting robust drought monitoring and decision-making processes. An SPI value of less than -2.0 ('exceptionally dry') is likely evidence of an Exceptional Shortage of Rain.

Table 10: Standardised precipitation index summary

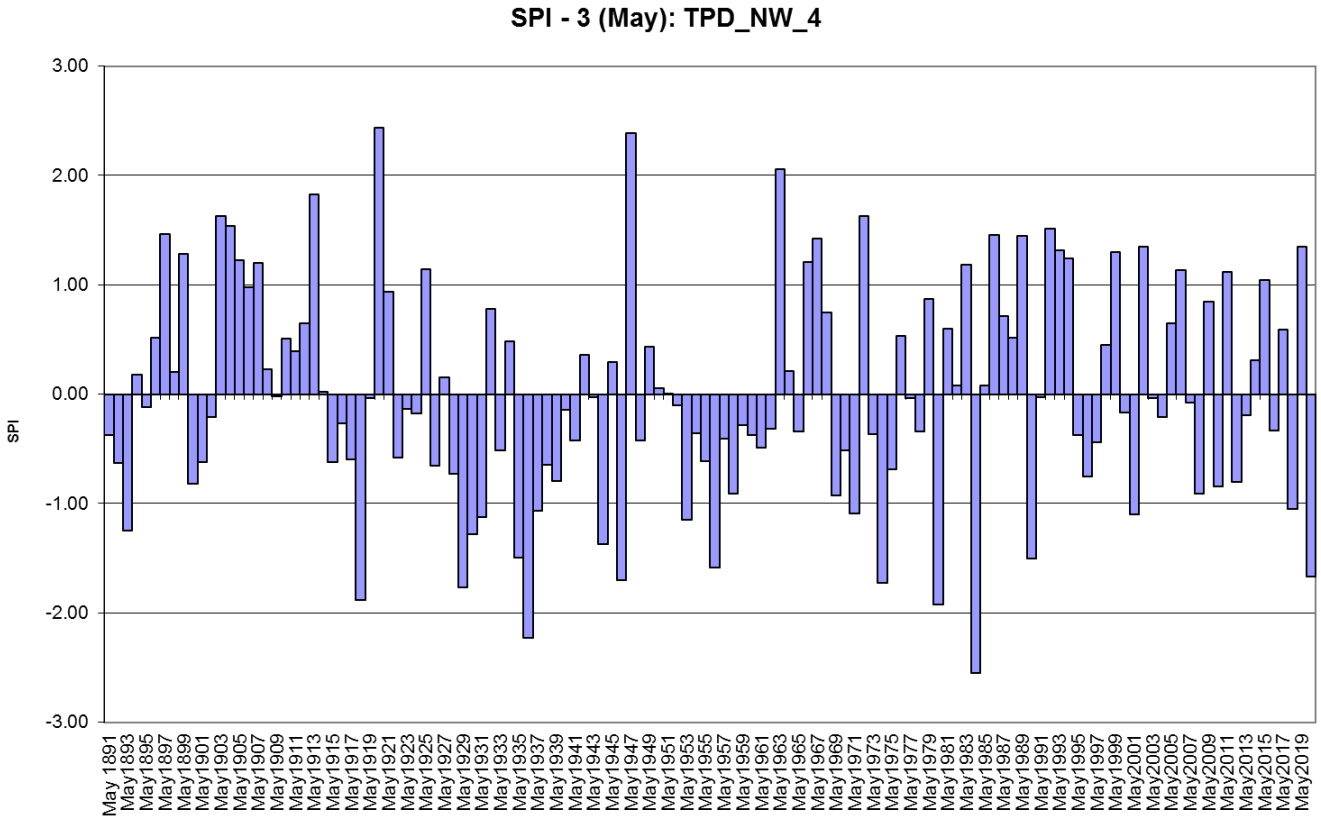
SPI value	SPI category	Probability of occurrence in any year
>=2.0	Extremely wet	~2.5%
+1.5 to 1.99	Severely wet	~5%
+1.0 to +1.44	Moderately wet	~10%
-0.99 to +0.99	Near normal	~65%
-1.0 to -1.44	Moderately dry	~10%
-1.5 to -1.99	Severely dry	~5%
<=-2.0	Extremely dry	~2.5%

As good practice, it is not appropriate to cherry-pick the most extreme SPI value by testing every possible duration and start month. Instead, each period analysed must have a clear hydrological justification, showing its relevance to the water resources situation. Ranking SPI values within the historic record can help contextualise

current conditions. The Standardised Precipitation Evapotranspiration Index (SPEI) is an extension of SPI that includes evapotranspiration, making it useful when examining temperature effects during droughts. While SPEI may be helpful as supporting evidence, it does not replace SPI, which remains a core requirement for Exceptional Shortage of Rainfall assessments.

Figure 6 shows the entire time series of SPI values for the Ennerdale catchment. The chart title denotes the cumulative period that is plotted on the chart, in this example 'SPI – 3 (May)' indicates that this is a three month accumulation ending in May (March – May).

Figure 6: Example SPI bar chart for Ennerdale catchment



7.1.2 Supportive data analysis

Other types of analysis include comparing current rainfall patterns with those experienced during recent notable drought events, such as in 1995/96, as well as calculating percentage deficits relative to expected long-term average rainfall over monthly or longer periods. When monthly or cumulative rainfall deficits are substantial, and periods of low rainfall rank highly compared to the historic data record, this provides strong evidence of an exceptional shortage of rain, supporting drought permit or order applications. Figure 7 illustrates this by comparing the monthly rainfall totals for Longdendale for 2017 and 2018 against the long-term average[5].

[5] Monthly totals calculated using areal catchment data.

Figure 7: Comparison of 2017 and 2018 Longdendale monthly rainfall totals against the long term average

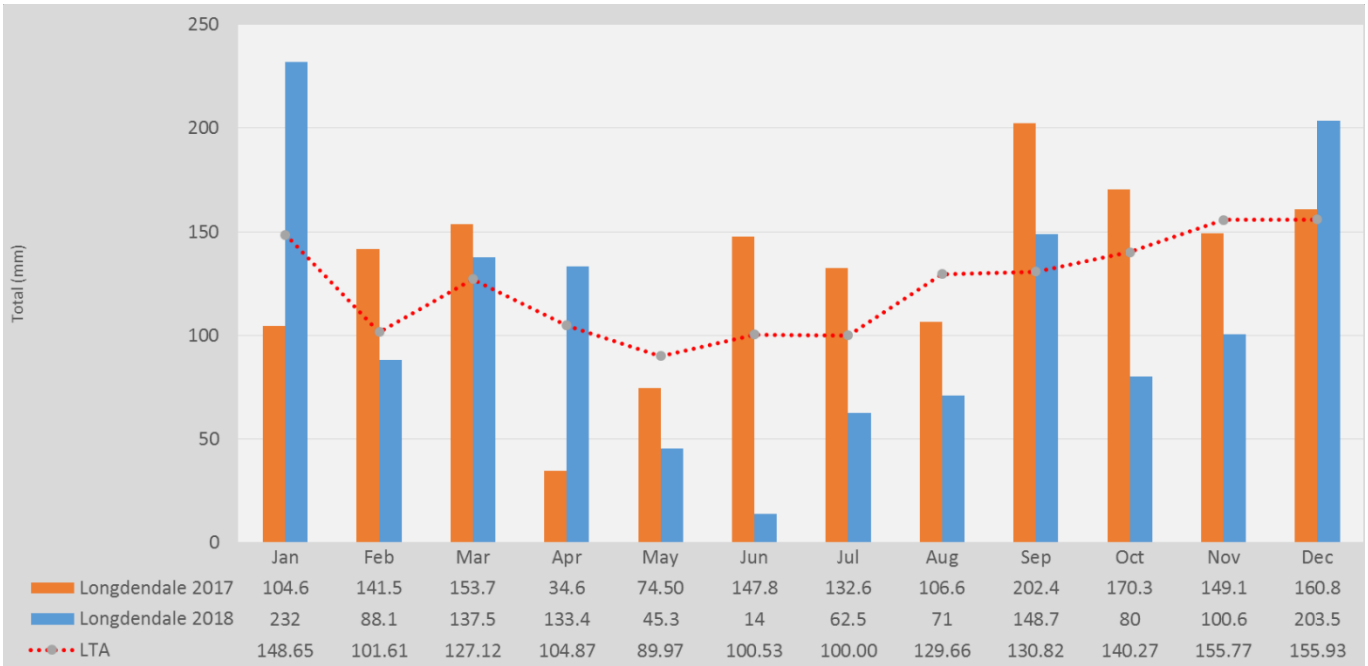
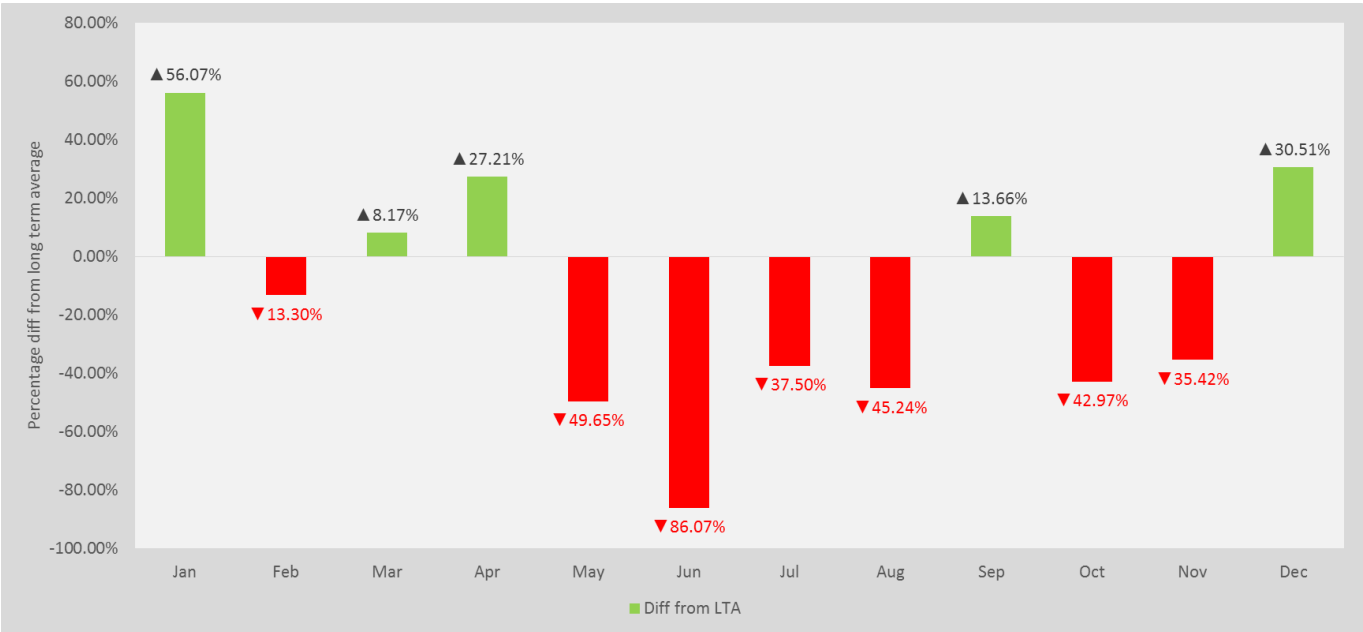


Figure 8 shows the percentage difference for Longdendale 2018 monthly totals against the long term average. This highlights that each month from May to August fell below the long term average, providing further evidence of an exceptional shortage of rain.

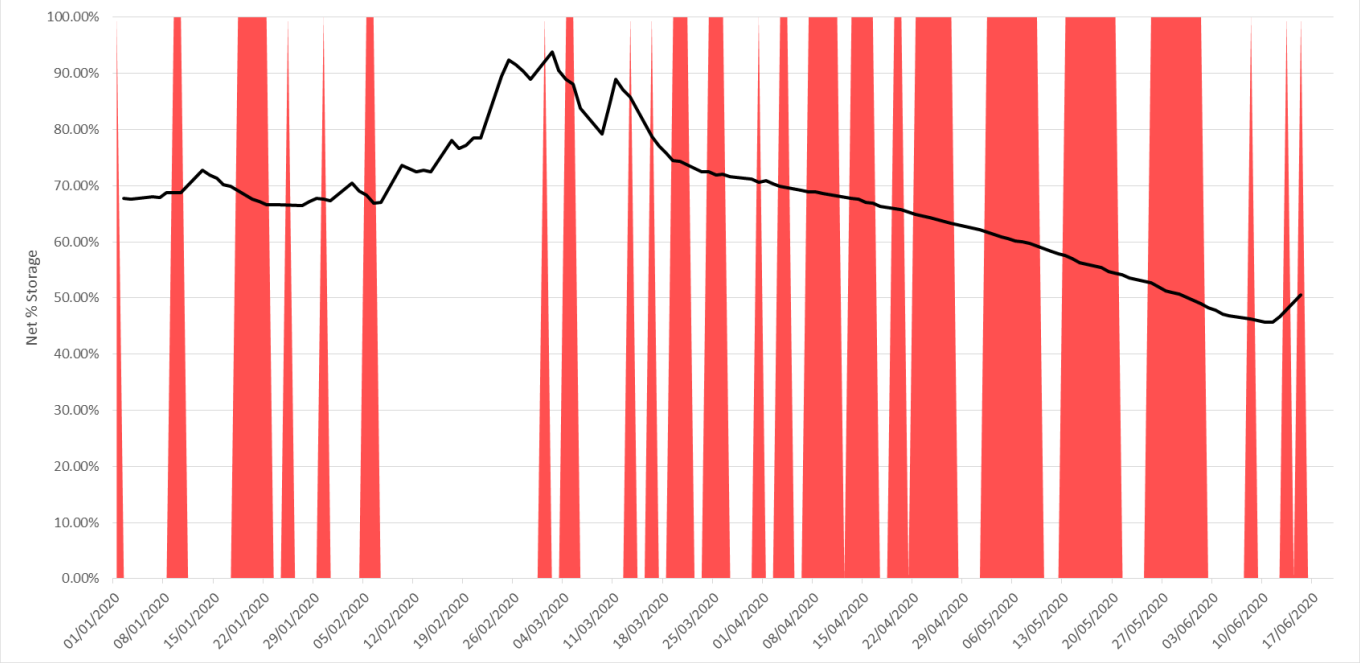
Figure 8: Percentage difference of monthly total from the long term average



Another method of analysis carried out is looking at the number of days without rainfall (however this wasn't used in the 2025 drought). Figure 9 shows the number of days without rainfall in the period 1 January 2020 to 16 June 2020 at Longdendale. This displays how the no rainfall days coincided with the drop in water level in the Longdendale reservoirs[6].

[6] No rainfall days analysis uses Environment Agency point data which is received on a Wednesday (Woodhead point data).

Figure 9: No rainfall days since 1 January 2020 to 16 June 2020 (Data provided by the Environment Agency and the Meteorological Office © Crown Copyright 2020, the Met Office)



7.1.3 Additional analysis

While the primary focus of the Exceptional Shortage of Rain case must remain on demonstrating that the serious deficiency is due to an exceptional shortage of rainfall, additional supporting evidence may be included where relevant. This can help strengthen the narrative by clearly illustrating the link between rainfall and wider hydrometeorological impacts. Supporting information may include temporal distribution of rainfall, groundwater levels, soil moisture deficit (Figure 12), temperature (Figure 11), river flows, Potential Evapotranspiration (PET) or PET with Interception (PETI), reservoir storage, and the Standardised Precipitation Evapotranspiration Index (SPEI). It should be noted that SPEI is not a substitute for SPI analysis but may be included as supplementary context. While water demand does not form part of the Exceptional Shortage of Rain justification itself, it can be referenced within the broader statement of reasons where appropriate.

In each case, recent data for the relevant time period is compared to the corresponding long term average values to assess the severity of the developing dry conditions.

Figure 10: Groundwater levels, or rising soil moisture deficit values, are additional indicators of developing drought conditions

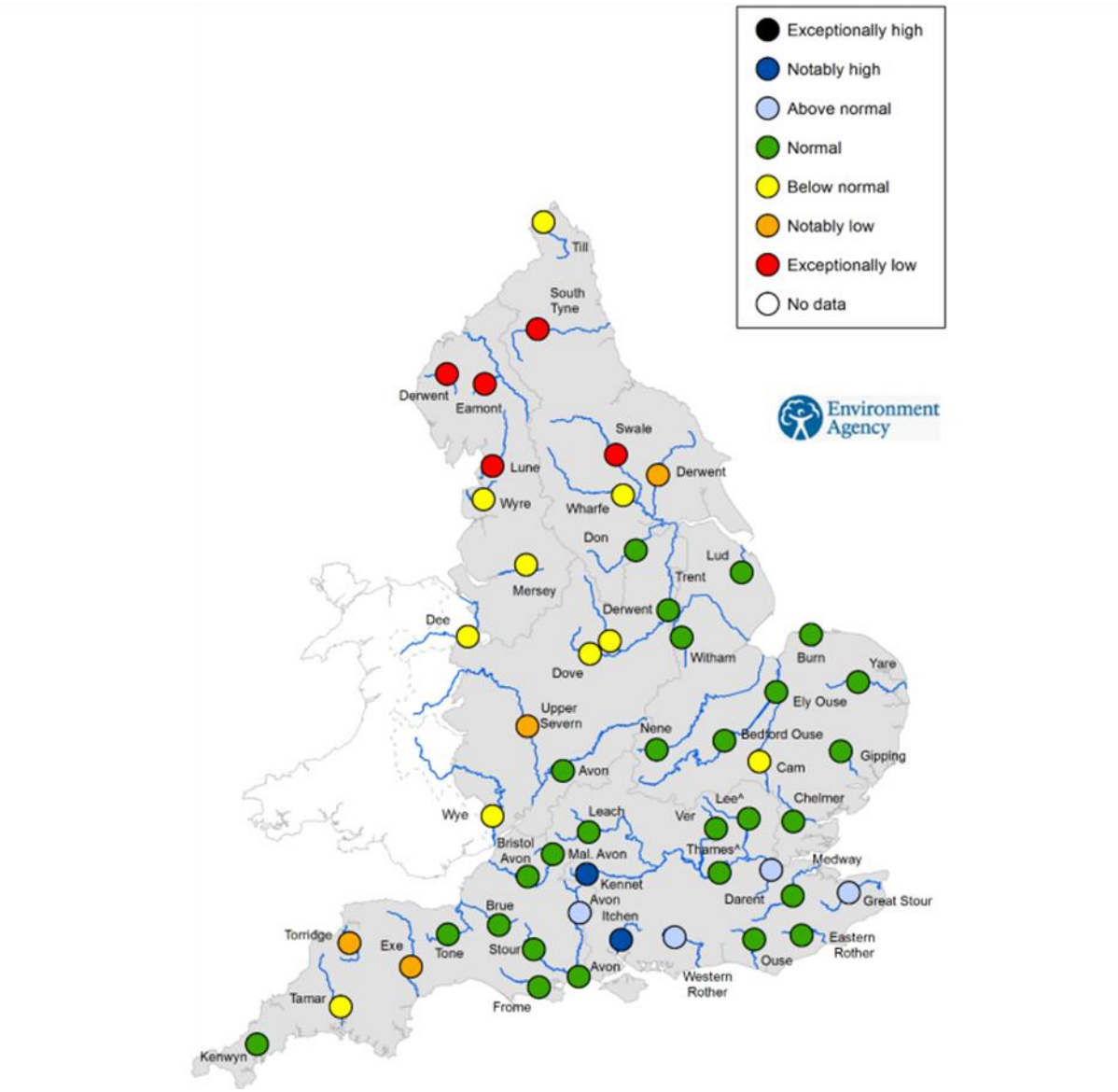


Figure 11: Temperature analysis for support statement (Data supplied by the Meteorological Office © Crown Copyright. Data for Woodford/Ringway/Rostherne No.2 in Manchester and St Bees Head No.2)

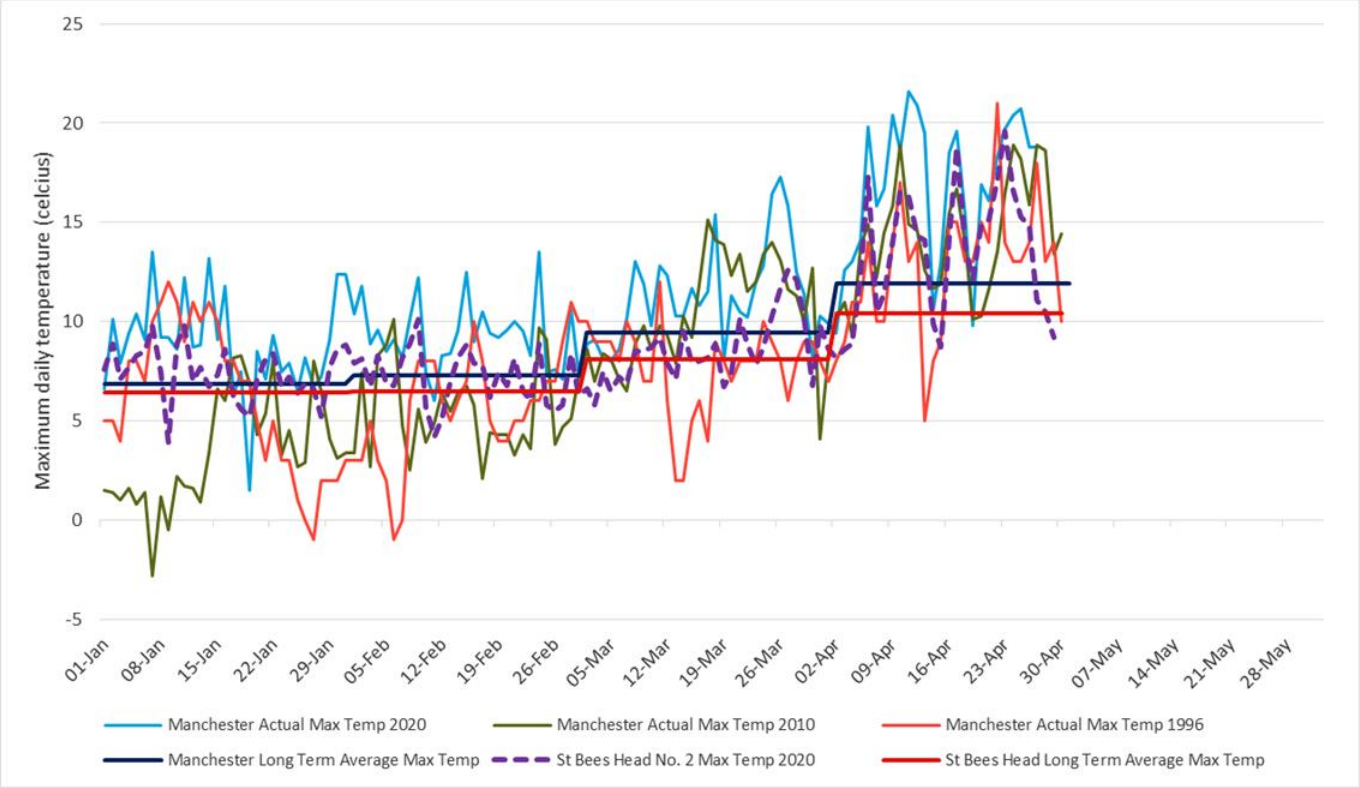


Figure 12: Soil Moisture Deficit (SMD) analysis for support statement (Data supplied by the Meteorological Office © Crown Copyright)

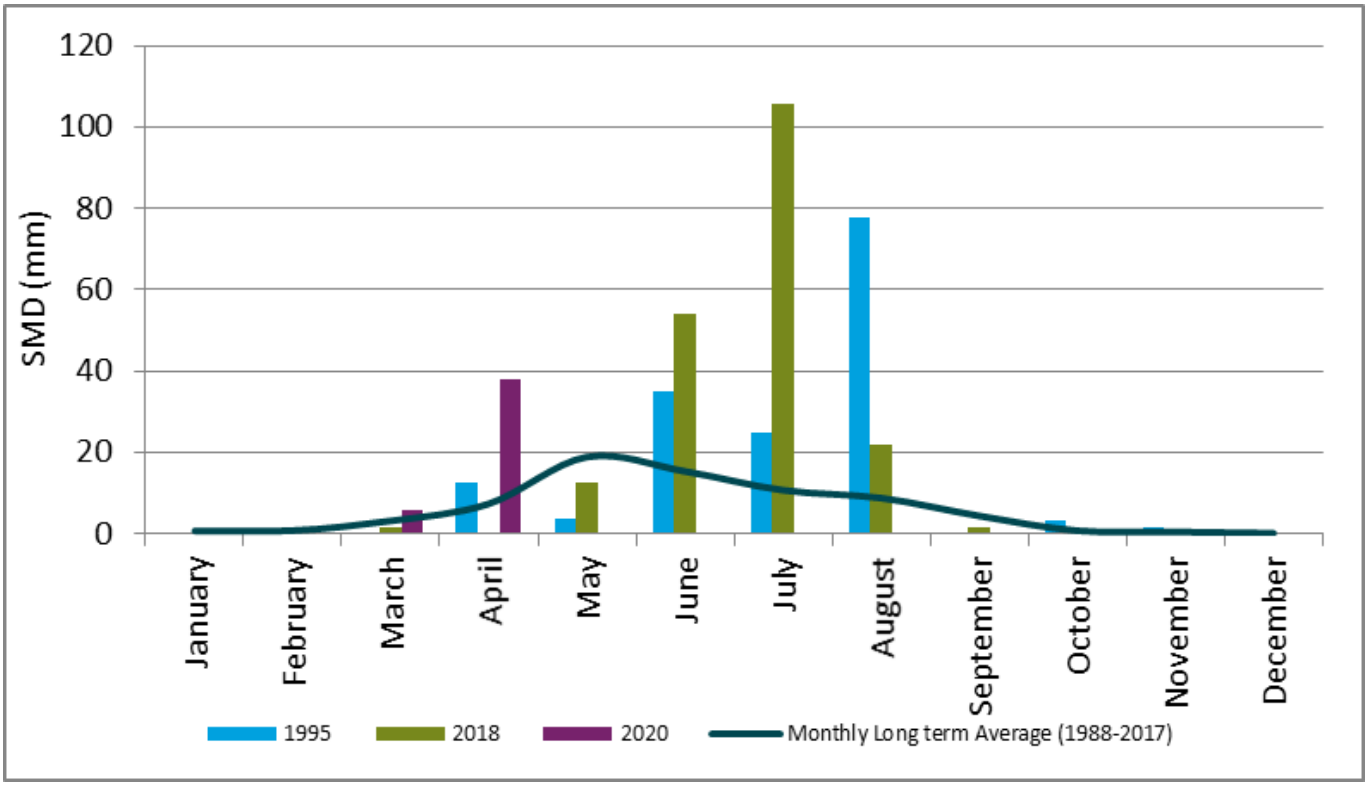
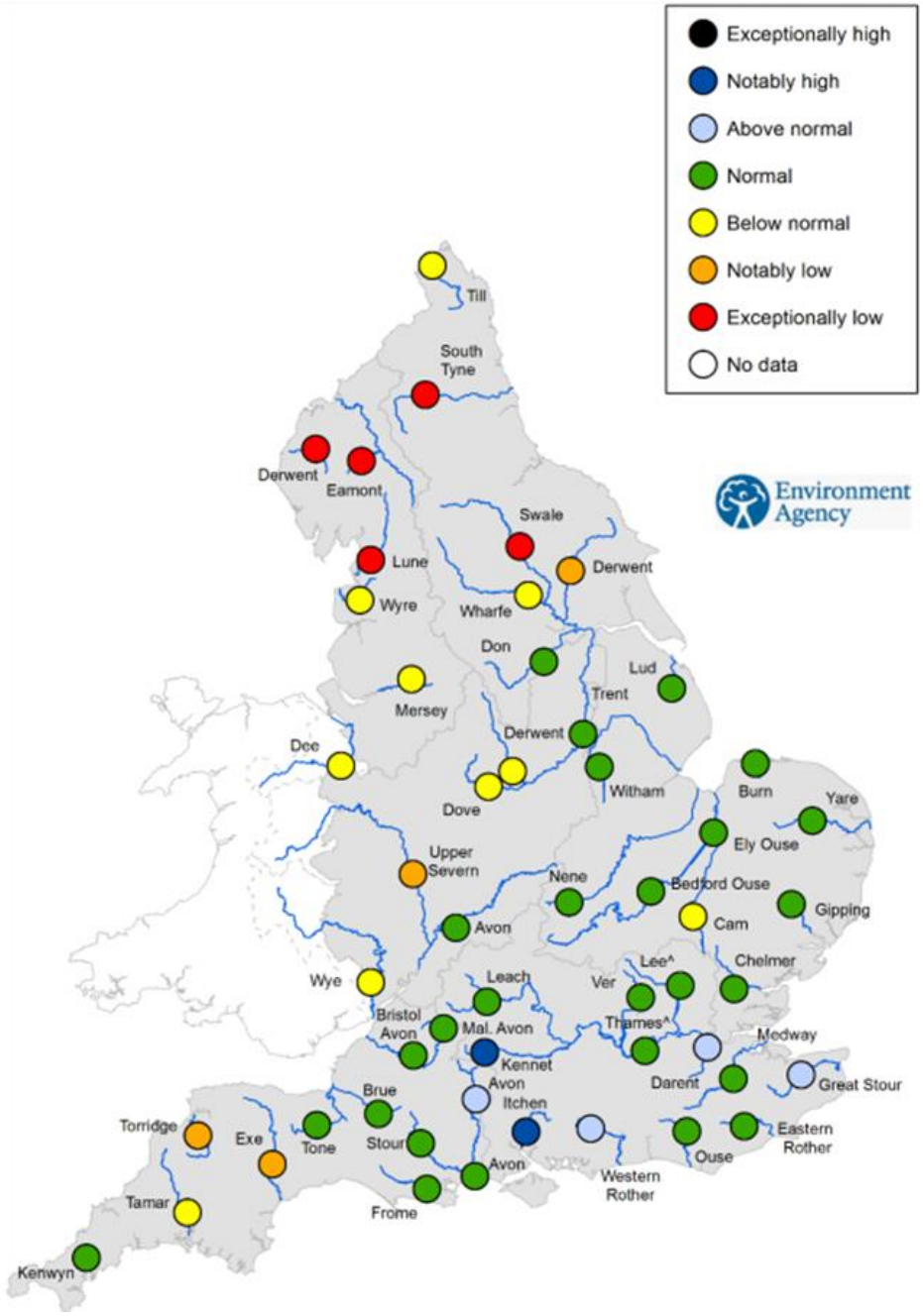


Figure 13: River flow data from the EA's weekly rainfall and river flow summary *(Latest daily mean river flow, relative to an analysis of historic daily mean flows, classed by flow percentile for the same time of year (Source: Environment Agency). Crown copyright. All rights reserved. Environment Agency, 100026380, 2018)*



8. Environmental triggers

The Environment Agency has the lead role in coordinating drought-related actions across sectors to ensure a joined-up response to environmental pressures. We will support this coordination where necessary, sharing data, engaging in joint planning, and contributing to sector-wide understanding of water use and environmental risk. This will ultimately help to minimise the potential environmental impacts associated with prolonged dry weather and drought. We will continue to work closely with the regional water resources group to ensure alignment with broader drought management strategies. Engagement with other sectors, including agriculture, navigation, and industry, will further strengthen this joined-up approach. We will continue to collaborate with local environmental groups, whose local insight and knowledge are vital to identifying sensitive ecological areas and informing appropriate responses. The Water Industry National Environment Programme (WINEP) remains a key mechanism for identifying specific actions to ensure our abstraction protects and improves the environment which in turn will support building environmental resilience to drought

Many of the actions set out in our drought plan (and Water Resources Management Plan) will help reduce pressure on the environment by leaving more water in rivers during periods of dry weather. This, in turn, will help to mitigate some of the environmental risks associated with our abstractions during a drought. These actions include:

- Demand reduction measures, such as enhanced customer communications, pressure management and leakage reduction (see 'Demand' Technical Report). By encouraging customers to use water more efficiently and tackling leakage across the network, we can reduce the overall volume of water that needs to be abstracted from the environment;
- Increased frequency of environmental monitoring at sensitive sites during drought, including river flows, water quality, and ecology, to inform operational decisions and support regulatory compliance;
- Fish rescues and aeration interventions where necessary, to maintain habitat conditions and oxygen levels during low flow or critically low water periods. Such actions ensure the protection of aquatic species and the broader ecosystem;
- Support farmers and other non-public water supply users during drought by maintaining open communication, sharing relevant data where possible, and promoting efficient water use. Where necessary, in emergencies, to facilitate the switching of non-public water supply sources onto our potable network;
- Stream augmentation, using groundwater sources in the Fylde area to support flows during low flow conditions, where permitted by licence. This helps maintain ecological function in rivers that may otherwise experience critically low flows, particularly in catchments with known sensitivities; and
- WINEP investigations and implementations: Through discussion with the Environment Agency, we have identified opportunities to amend abstraction licences to better reflect environmental flow needs, particularly during low flow periods. These licence changes, some of which are already in place and others proposed for AMP8, AMP9, and beyond, are expected to improve the sustainability of our abstractions (both in the short term and long term). In parallel, a range of catchment management schemes – including river restoration, habitat enhancement, and peatland restoration– aim to improve the overall health and resilience of catchments, making them better able to cope with the pressures of drought.

For our Drought Plan 2027 we have decided not to set specific environmental triggers for our current drought levels. In the North-West, we operate across a very diverse range of environments, each with its own ecological characteristics and thresholds for environmental stress. Given this variability, a one-size-fits-all approach to environmental triggers may not be appropriate.

However, in locations where we are aware of increased sensitivity to environmental stress, we will consider the use of additional, locally targeted messaging to customers, particularly where local abstraction to customers may influence conditions in the surrounding environment. This would be alongside to our wider targeted communications activity aimed at encouraging demand reduction during dry weather.

Throughout any dry weather period, we would continue with our business-as-usual environmental activities. These include the delivery of ongoing river restoration schemes, implementation of sustainability reductions, and extensive environmental monitoring. Many of these actions form part of our wider WINEP commitments. While not specifically triggered by drought conditions, they contribute to the resilience of the environment during drought, and the sustainability of the water resources we manage.

9. Summary of environmental studies

Updates since Drought Plan 2022

In developing our draft Drought Plan 2027, we have undertaken a detailed review of potential drought permits included in the drought plan. Following recent review and discussions with Natural Resources Wales and the Environment Agency, it has been concluded that implementation of a drought order to reduce compensation flow from Lake Vyrnwy has the potential to result in impacts on the integrity of the Severn Estuary SAC/Ramsar, through impacts on key migratory fish species such as salmon and lamprey, which are part of the fish assemblage of the estuary. This would trigger a Stage 3 Habitats Regulations Assessment, which is expected to identify alternative options within the Strategic Resource Zone that avoid impacting this SAC.

Additionally, proposals to align compensation flow reductions with River Severn regulation releases have been ruled out by the Environment Agency, as they would likely require increased releases from Vyrnwy, offsetting any water resources gain. Given these constraints, we have removed the Vyrnwy drought order from our draft Drought Plan 2027. All other drought permits remain unchanged from our Drought Plan 2022.

We have reviewed and updated the EARs for our drought permits to include updates to baseline data and ensure they take into account any changes to assessment guidance. Updates to these assessments are complete for all drought permit sites with the exception of the River Lune (LCUS) and Windermere which are currently in draft and will be finalised before final drought plan submission. There have been no significant changes in impact magnitudes identified in any of the 2025/2026 updates to shelf copy EARs.

9.1 Strategic Resource Zone drought permits

Option Name: Delph Reservoir drought permit: reduce compensation flow from 3.7 to 1.0 Ml/d	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	The drought option involves reducing the statutory compensation flow from Delph Reservoir from 3.7 Ml/d to 1.0 Ml/d, resulting in a temporary reduction in releases to Delph Brook. The precise reduction would be agreed with the Environment Agency, taking into account water supply need, time of year, and prevailing environmental conditions. The estimated increase in reservoir yield from the drought permit is approximately 2.7 Ml/d, depending on the magnitude of the compensation flow reduction applied for and the time of year. This estimate is based on the reduction in compensation flows that could be retained within the reservoir system during drought conditions. Alternatively, this water could be retained in the reservoirs to help maintain compensation flows. The wider Strategic Resource Zone deployable output benefit depends on the characteristics of the drought event
Location Area affected or whole supply zone	The main local impact is within the Bolton supply area. Conserving storage in Delph Reservoir benefits the Strategic Resource Zone by reducing reliance on alternative local or regional sources, thereby maintaining system resilience during drought conditions
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessment: Delph Reservoir drought permit: reduce compensation flow from 3.7 to 1.0 Ml/d	
Overall environmental impact (minor, moderate, major or uncertain)	Overall minor (moderate impacts on brown trout spawning and egg incubation if implemented in the period October to May, minor or negligible impacts on all other receptors at all other times) Environmental assessment report completed in 2025
Level of confidence (H, M, L)	Medium – environmental assessment report completed in 2025 which identifies the level of confidence for each receptor
Summary of likely environmental impacts	• Designated sites are present however significance of impact from this drought permit is considered minor (negligible)

		• The environmental study identified a moderate adverse environmental impact on brown trout spawning and egg incubation if implemented in the period October-May, and impacts at all other times and to all other features were concluded to be minor or negligible. • Habitats Regulations Assessment Screening for this drought plan concluded no likely significant effects of implementation of this drought permit on European designated sites
Information used to understand conditions before drought or any drought actions are implemented		The updated environmental study used historical data on reservoir levels, river flows, ecological monitoring (fish, macroinvertebrates, macrophytes), and water quality. Recent baseline datasets include habitat transect surveys (undertaken in 2023) for Eagley Brook and spot flow gauging used to validate catchment flow accretion assessments. Hydraulic modelling was employed to translate flow changes into habitat parameter changes, including depth, velocity, and wetted perimeter
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Fish — quantitative surveys on the Delph Brook (undertaken in 2014, 2015, 2016, and more recently in 2023)
	Pre- and during drought permit monitoring	Walkover surveys — during drought permit implementation weekly walkover surveys, looking for signs of fish in distress or other unforeseen effects. Water quality – spot sampling at two sites and spot measurements using hand-held probe during walkover surveys. Water quality sampling of Eagley Well and the downstream watercourse will be undertaken.
	Post- drought permit monitoring	Fish — repeat baseline fish monitoring survey in year following implementation then review
Summary of mitigation measures		The environmental study identified potential mitigation measures to address impacts during drought conditions. If monitoring under a drought permit indicates significant ecological effects, measures that may be implemented include (but are not limited to) temporary or permanent reinstatement of the statutory compensation flow, fish rescue and relocation, habitat modifications to concentrate remaining water within the stream channel, and installation of fish refugia within the watercourse.
Permits/approvals needs for mitigation measures		Dependent on measures identified through monitoring at the time of implementation. This may include obtaining consent from the Environment Agency for fish rescue, or securing an environmental permit and landowner consent for in-stream works, where required.
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

Option Name: Dovestone Reservoir drought permit: reduce compensation flow from 15.9 to 10.0 or 5.0 Ml/d	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions, and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	The drought option would reduce the compensation flow requirement from 15.9 Ml/d to between 10 Ml/d and 5 Ml/d. This would result in a temporary reduction in flows from Dovestone Reservoir to Chew Brook. The precise reduction would be agreed with the Environment Agency and would depend on the need for additional water, the time of year, and prevailing environmental conditions.

	The estimated increase in reservoir group yield from the drought permit is approximately 5.9 Ml/d to 10.9 Ml/d, depending on the magnitude of the compensation flow reduction applied for and the time of year. This estimate is based on the reduction in compensation flows that could be retained within the reservoir system during drought conditions. Alternatively, this water could be retained in the reservoirs to help maintain compensation flows. The wider Strategic Resource Zone deployable output benefit depends on the characteristics of the drought event.
Location Area affected or whole supply zone	Local impact within the Tameside and Oldham areas. The benefit to the Strategic Resource Zone arises from conserving storage in Dovestone Reservoir, reducing the need to support the area with water from other local or regional sources.
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved. In 1995, one objection was made to the proposed compensation flow reduction at Dovestone reservoir due to concern about the impact on fisheries and ecology in Chew Brook and the River Tame. A local public hearing was held, but the Inspector recommended that the permit be granted
Summary of environmental assessment: Dovestone Reservoir drought permit: reduce compensation flow from 15.9 to 10.0 or 5.0 Ml/d	
Overall environmental impact (minor, moderate, major or uncertain)	Overall minor (moderate adverse impacts are predicted for brown trout spawning and egg incubation if implemented in the period November to May, and moderate impact on bullhead spawning and egg incubation in March to May in Chew Brook; impacts to all other receptors at all other times were concluded to be minor or negligible)
Level of confidence (H, M, L)	Medium – environmental assessment report completed in 2025 which identifies the level of confidence for each receptor
Summary of likely environmental impacts	• The environmental study identified impacts on designated sites to be negligible (categorised as minor significance). The environmental study identified a moderate adverse environmental impact on brown trout spawning and egg incubation in Chew Brook if implemented in the period November–May, and a moderate impact on bullhead spawning and egg incubation in March–May. Impacts to most other receptors (including macrophytes, macroinvertebrates, and protected species) were concluded to be minor or negligible. • Habitats Regulations Assessment (HRA) Screening, informed by the findings of this report, concluded no likely significant effects of implementation of this drought permit on European designated sites

Information used to understand conditions before drought or any drought actions are implemented		The environmental study used historical data on river flow and reservoir levels, alongside recent ecological monitoring (including 2023/24 fisheries surveys) and water quality data. Updated SIMCAT water quality models were used to predict pollutant dilution. In addition, 1D hydraulic modelling, informed by baseline habitat transects from 2009 and updated surveys in September 2022 and 2023, was used to translate flow changes into habitat parameter changes such as depth and velocity.
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Hydrodynamics — cross-section surveys on River Tame, River Mersey, Chew Brook undertaken in 2014
	Pre- and during drought permit monitoring	Hydrodynamics cross-section surveys on River Tame, River Mersey, Chew Brook Once, within two weeks of drought permit implementation, then review Walkover surveys — during drought permit implementation weekly walkover surveys, looking for signs of fish in distress or other unforeseen effects Water quality — spot measurements using hand-held probe at specific sites identified in the environmental assessment and during walkover surveys
	Post- drought permit monitoring	None identified
Summary of mitigation measures		The environmental study identified potential mitigation measures to address impacts during drought conditions. If monitoring under a drought permit indicates significant ecological effects, measures that may be implemented include (but are not limited to) temporary or permanent reinstatement of the statutory compensation flow, fish rescue and relocation, habitat modifications to concentrate remaining water within the stream channel, and installation of fish refugia within the watercourse
Permits/approvals needs for mitigation measures		Dependent on measures identified by monitoring undertaken at time of implementation. May include consent from the Environment Agency for fish rescue or an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

Option Name: Fernilee Reservoir drought permit: reduce maintained flow from 13.63 to 6.8 Ml/d	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions, and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	The drought option would reduce the maintained flow requirement from 13.63 Ml/d to 6.8 Ml/d. This would result in a temporary reduction in the flow from Fernilee reservoir to the River Goyt. The precise reduction would be discussed fully with the Environment Agency and would depend upon the need for additional water, time of year and current environmental circumstances. The estimated increase in reservoir group yield from the drought permit is approximately 6.8 Ml/d, depending on the magnitude of the compensation flow reduction applied for and the time of year. This estimate is based on the reduction in compensation flows that could be retained within the reservoir system during drought conditions. Alternatively, this water could be retained in the reservoirs to help maintain compensation flows. The wider Strategic Resource Zone deployable output benefit would depend on the characteristics of the drought event.

Location Area affected or whole supply zone	Local impact in Stockport and Macclesfield areas. Benefit to Strategic Resource Zone due to conservation of reservoir storage in the Wybersley system, resulting in reduced need to support the area from other local and regional water sources.
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessments: Fernilee Reservoir drought permit: reduce maintained flow from 13.63 to 6.8 Ml/d	
Overall environmental impact (minor, moderate, major or uncertain)	Overall moderate; specifically moderate negative impacts on fish spawning and egg incubation (brown trout, bullhead, and lamprey) and lamprey ammocoetes in the upper River Goyt. Impacts on juvenile brown trout and bullhead are considered minor, and all other receptors are predicted to experience minor or negligible impacts. Environmental assessment report completed Environmental assessment report completed in March 2025
Level of confidence (H, M, L)	Medium – environmental assessment report completed in 2025 which identifies the level of confidence for each receptor
Summary of likely environmental impacts	• No designated sites are impacted by this drought permit. • Moderate negative effects are predicted for brown trout spawning and egg incubation (October – February), bullhead spawning and egg incubation (March – June), lamprey spawning (March – July), and lamprey ammocoetes (year-round) in the River Goyt from the source to Randall Carr Brook. Impacts on juvenile brown trout and bullhead are now considered minor negative, and impacts on all other receptors and water bodies are predicted to be minor or negligible. Habitats Regulations Assessment (HRA) screening concluded no likely significant effects of implementation of this drought permit on European designated sites
Information used to understand conditions before drought or any drought actions are implemented	The updated environmental study used historical data on reservoir levels, river flows, ecological monitoring (fish, macroinvertebrates, macrophytes), and water quality. Recent baseline datasets include habitat transect surveys (undertaken in 2022) and spot flow gauging used to validate catchment flow accretion assessments. Hydraulic modelling was employed to translate flow changes into habitat parameter changes, including depth, velocity, and wetted perimeter

Environmental Monitoring Plan for sensitive features	Baseline monitoring	Fish — Baseline quantitative electric fishing survey at existing monitoring sites, three years, then review
	Pre- and during drought permit monitoring	Hydrodynamics – cross-section surveys – one event pre-implementation and during implementation fortnightly. Walkover surveys — during drought permit weekly walkover surveys, looking for signs of fish in distress or other unforeseen effects, including water quality spot measurements using hand-held probe.
	Post- drought permit monitoring	Fish — repeat baseline quantitative electric fishing survey at existing monitoring sites, in year following drought permit implementation
Summary of mitigation measures		The environmental study identified potential mitigation measures to address impacts during drought conditions. If monitoring under a drought permit indicates significant ecological effects, measures that may be implemented include (but are not limited to) temporary or permanent reinstatement of the statutory compensation flow, fish rescue and relocation, habitat modifications to concentrate remaining water within the stream channel, and installation of fish refugia within the watercourse
Permits/approvals needs for mitigation measures		Dependent on measures identified by monitoring undertaken at time of implementation. May include consent from the Environment Agency for fish rescue or an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

Option Name: Jumbles Reservoir drought permit: reduce compensation flow from 19.9 to 12.0 or 6.0 Ml/d	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	The drought option would reduce the compensation flow requirement from 19.9 Ml/d to between 12 Ml/d and 6 Ml/d. This would result in a temporary reduction in the flow from Jumbles reservoir to Bradshaw Brook. The precise reduction would be discussed fully with the Environment Agency and would depend upon the need for additional water, time of year, and current environmental circumstances. The estimated increase in reservoir group yield from the drought permit is approximately 7.9 Ml/d to 13.9 M/d, depending on the magnitude of the compensation flow reduction applied for and the time of year. This estimate is based on the reduction in compensation flows that could be retained within the reservoir system during drought conditions. Alternatively, this water could be retained in the reservoirs to help maintain compensation flows. The wider Strategic Resource Zone deployable output benefit depends on the characteristics of the drought event.
Location Area affected or whole supply zone	Local impact in Bolton area. Benefit to Strategic Resource Zone due to conservation of reservoir storage in Jumbles reservoir for the purpose of providing a compensation flow release to Bradshaw Brook, resulting in reduced need to support the area from other local and regional water sources

Implementation timetable		• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints		Approval of the application
Risks associated with option		That the application, as applied for, is not approved
Summary of environmental assessment: Jumbles Reservoir drought permit: reduce compensation flow from 19.9 to 12.0 or 6.0 Ml/d		
Overall environmental impact (minor, moderate, major or uncertain)		12 Ml/d option - Minor or negligible impacts on all receptors at all times.) 6 Ml/d option — moderate (moderate impacts on fish species, minor or negligible impacts on all other receptors) Environmental assessment report completed in 2025
Level of confidence (H, M, L)		Medium – environmental assessment report completed in 2025 which identifies the level of confidence for each receptor
Summary of likely environmental impacts		• The environmental study identified impacts on designated sites to be negligible (categorised as Minor significance). • The study identified moderate impacts in Bradshaw Brook for the spawning and egg incubation life stages of bullheads and rheophilic coarse fish under both the 12 Ml/d and 6 Ml/d drought permit options. The 6 Ml/d option is additionally predicted to result in moderate impacts for juvenile brown trout, juvenile rheophilic fishes, and all life stages of eurytopic fishes in Bradshaw Brook. • Predicted impacts on all other receptors (including macrophytes, macroinvertebrates, and protected species) across all water bodies are of minor or negligible significance. Habitats Regulations Assessment (HRA) screening for this drought plan concluded no likely significant effects of implementation of this drought permit on European designated sites
Information used to understand conditions before drought or any drought actions are implemented		The environmental study utilised updated historical datasets for river flow, reservoir levels, water quality, and ecological monitoring. In addition to existing records, targeted surveys undertaken in 2023 provided new spot flow gauging and resurveyed habitat transects on Bradshaw Brook to improve the accuracy of hydraulic modelling. This modelling translates predicted flow changes into habitat parameter changes, such as depth and velocity, across the study area
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Hydrodynamics — cross-section surveys on Bradshaw Brook and River Irwell undertaken in 2023
	Pre- and during drought permit monitoring	Hydrodynamics — cross-section surveys on River Tame, River Mersey, Chew Brook, one event pre-implementation and during implementation. Walkover surveys — during drought permit implementation weekly walkover surveys, looking for signs of fish in distress or other unforeseen effects.

		Water quality — spot measurements using hand-held probe at specific sites identified in the environmental assessment and during walkover surveys
	Post- drought permit monitoring	None identified
Summary of mitigation measures		The environmental study identified potential mitigation measures to address impacts during drought conditions. If monitoring under a drought permit indicates significant ecological effects, measures that may be implemented include (but are not limited to) temporary or permanent reinstatement of the statutory compensation flow, fish rescue and relocation, habitat modifications to concentrate remaining water within the stream channel, and installation of fish refugia within the watercourse.
Permits/approvals needs for mitigation measures		Dependent on measures identified by monitoring undertaken at time of implementation. May include consent from the Environment Agency for fish rescue or an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

Option Name: Longdendale Reservoirs drought permit: reduce compensation flow from 45.5 to 22.5 or 15 Ml/d	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	The drought option would reduce the compensation flow requirement from 45.5 Ml/d to 22.5 Ml/d or 15 Ml/d. This would result in a temporary reduction in flow from the Longdendale reservoirs to the River Etherow. The precise reduction would be discussed fully with the Environment Agency and would depend upon the need for additional water, time of year and current environmental circumstances. The estimated increase in reservoir group yield from the drought permit is approximately 23–30.5 Ml/d, depending on the magnitude of the compensation flow reduction applied for and the time of year. This estimate is based on the reduction in compensation flows that could be retained within the reservoir system during drought conditions. Alternatively, this water could be retained in the reservoirs to help maintain compensation flows. The wider Strategic Resource Zone deployable output benefit depends on the characteristics of the drought event.
Location Area affected or whole supply zone	Local impact in Tameside and Manchester areas, as well as support to the wider Strategic Resource Zone
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessment: Longdendale Reservoirs drought permit: reduce compensation flow from 45.5 to 22.5 or 15 Ml/d	
Overall environmental impact (minor, moderate, major or uncertain)	22.5 Ml/d and 15 Ml/d options – moderate impacts to juvenile young-of-year fish (brown trout, bullhead, brook lamprey, and rheophilic coarse fish) between May and September, and to spawning and egg incubation for coarse fish (March to July) and brown trout (October to May) in the River Etherow; minor or negligible impacts on all other receptors. Environmental assessment report completed in 2025
Level of confidence (H, M, L)	Medium – environmental assessment report completed in 2025 which identifies the level of confidence for each receptor

Summary of likely environmental impacts		• No designated sites impacted by this drought permit. The Longdendale reservoirs are located just within the Peak District National Park, however the downstream watercourse (River Etherow) is outside the boundary. • The updated environmental study identified moderate impacts for both compensation flow reduction options (22.5 Ml/d and 15 Ml/d) on specific fish life stages in the River Etherow: spawning and egg incubation for brown trout (October to May) and coarse fish (March to July), and juvenile young-of-year brown trout, bullhead, brook lamprey, and rheophilic coarse fish (May to September). • Habitats Regulations Assessment Screening for this drought plan concluded no likely significant effects of implementation of this drought permit on European designated sites.
Information used to understand conditions before drought or any drought actions are implemented		The environmental study utilised historical datasets up to 2024 for river flow, reservoir levels, and water quality. Water quality was assessed using updated SIMCAT modelling, which includes improved data for wastewater treatment works, intermittent discharges, and dissolved oxygen. To translate flow changes into habitat parameter changes (such as depth, velocity, and wetted perimeter), the study employed hydraulic models. These models were supported by habitat transects updated in 2021 and repeat channel geometry surveys undertaken in September 2022 to account for physical riverbed changes following extreme high-flow events.
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Hydrodynamics — cross-section surveys on River Etherow, River Goyt and River Mersey, undertaken in 2014 and updated in 2021 and 2022 Fish — quantitative surveys on River Etherow, and lamprey surveys on River Etherow and River Goyt (undertaken in 2014, 2015 and 2016) Wet woodland/fen habitat - baseline survey of species composition and water level preferences 2 sites in SSSI (undertaken in 2014)
	Pre- and during drought permit monitoring	Hydrodynamics — cross-section surveys, one event pre-implementation then fortnightly and review. Walkover surveys — during drought permit implementation weekly walkover surveys, looking for signs of fish in distress or other unforeseen effects. Water quality – spot measurements using hand-held probe at specific sites identified in the environmental assessment and during walkover surveys
	Post- drought permit monitoring	Fish and lamprey — repeat baseline quantitative electric fishing survey at existing monitoring sites, in year following drought permit implementation then review
Summary of mitigation measures		The environmental study identified potential mitigation measures to address impacts during drought conditions. If monitoring under a drought permit indicates significant ecological effects, measures that may be implemented include (but are not limited to) temporary or permanent reinstatement of the statutory compensation flow, fish rescue and relocation, habitat modifications to concentrate remaining water within the stream channel, and installation of fish refugia within the watercourse.
Permits/approvals needs for mitigation measures		Dependent on measures identified by monitoring undertaken at time of implementation. May include consent from the Environment Agency for fish rescue or an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

Option Name: River Lune LCUS drought permit: reduce prescribed flow from 365 to a minimum of 200 Ml/d	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	The drought option would reduce the prescribed flow requirement at Skerton Weir from 365 Ml/d to a minimum of 200 Ml/d. This would allow us to abstract from the River Lune (part of the Lancashire Conjunctive Use Scheme, LCUS) at lower river flows than normal. This would result in a temporary reduction in the flow in the River Lune. The precise reduction would be discussed fully with the Environment Agency and would depend upon the need for additional water, time of year and current environmental circumstances. The potential benefit of drought powers at River Lune (LCUS) is dependent upon the exact scope of the application and the pattern of weather conditions. Drought powers to allow increased abstraction from the River Lune (LCUS) will reduce demand on the Lake District and Pennine reservoirs. The benefits of drought powers would be greatest over a dry winter to aid refill of reservoirs. For this reason, the deployable output benefit based on Aquator modelling of historic drought conditions is small, however, greater benefits are likely to be realised under prolonged or multiple-season drought events that are more severe than historically experienced (and to supplement resources elsewhere in the zone to reduce risks). The wider Strategic Resource Zone deployable output benefit is dependent on the drought event.
Location Area affected or whole supply zone	Strategic Resource Zone
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessment: River Lune LCUS drought permit: reduce prescribed flow from 365 to a minimum of 200 Ml/d	
Overall environmental impact (minor, moderate, major or uncertain)	Minor Environmental study completed in 2021. The assessment is currently being updated and will be finalised in spring 2026. There are not anticipated to be significant changes to receptors or impact magnitudes between the 2021 published report and 2026 update.

Level of confidence (H, M, L)		Medium – environmental assessment report completed in 2021 which identifies the level of confidence for each receptor
Summary of likely environmental impacts		• No designated sites impacted by this drought permit (including the downstream Morecambe Bay SAC/SPA/Ramsar/SSSI). The LCUS abstraction site is located just within the Forest of Bowland AONB, however the downstream watercourse (River Lune) is outside the boundary. • The prescribed flow reduction would result in reduced river flows in the lower stretches of the River Lune. In drought conditions, the flow in the River Lune will naturally be lower than normal and the drought permit provisions will not result in any significant further reduction to low flows (as a prescribed flow, albeit lower, will still be in place to govern abstraction) although it could increase the number of days at lower flows. Impacts on all receptors were concluded to be minor or negligible. • Habitats Regulations Assessment Screening for this drought plan concluded no likely significant effects of implementation of this drought permit on European designated sites.
Information used to understand conditions before drought or any drought actions are implemented		The environmental study used historical data on river flow, ecological monitoring and water quality. In addition river cross-section measurements were taken to enable hydraulic modelling to translate flow changes into habitat parameter changes (e.g. depth, velocity). An extreme high tide occurred on 29 September 2015 (the highest predicted until 2035) and we used this to collect salinity measurements close to third party abstraction intakes (near Skerton weir). A walkover survey to map habitat was completed. Discussions were held with the Lancaster Port Commission to understand potential impacts near Glasson Dock and they made their historic reports and hard copy maps of their bathymetric mapping of the low flow channel of the approach to the port available to us. In 1995, following a public hearing, an application to reduce the prescribed flow to 200 Ml/d over the winter months was refused on grounds of adverse impacts on a specific genetic strain of spring salmon. Following this refusal, together with the Environment Agency we commissioned an independent report from environmental consultants APEM to assess the spring salmon issues and the impacts of winter River Lune drought powers. The final report by APEM (1999) concluded that a reduction to the prescribed flow from 365 Ml/d to 200 Ml/d during winter months would have little or no impact on spring salmon migration in the River Lune.
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Salinity — monitoring to identify saline incursion that may affect industrial users. Undertaken in 2015
	Pre- and during drought permit monitoring	Salinity — single survey to be conducted should an overtopping event (spring tides greater than MHWS) be predicted during drought permit implementation Walkover surveys — during drought permit implementation weekly walkover surveys, looking for signs of fish in distress or other unforeseen effects. Industrial abstractors — routine consultation with abstractors during drought permit operation for evidence of cavitation
	Post- drought permit monitoring	None required
Summary of mitigation measures		The environmental study considered mitigation measures. If monitoring during a drought permit indicates that significant impacts are occurring then various measures could be considered for implementation including: a temporary cessation of abstraction, fish rescue and relocation or aeration, installation of fish refugia within the watercourse and/or provision of appropriate assistance, and/ or funding of appropriate reasonable measures (e.g. habitat restoration).

	In the event of saline incursion negatively impacting upon industrial abstractions (which is not predicted to occur), it may be feasible to cease abstractions for short periods of time to facilitate dilution and flushing of salt water from the river or to provide temporary supply
Permits/approvals needs for mitigation measures	Dependent on measures identified by monitoring undertaken at time of implementation. May include consent from the Environment Agency for fish rescue or an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.	No significant impacts on other activities identified (other abstractors discussed above).

Option Name: Rivington Reservoir – Brinscall Brook drought permit: reduce compensation flow from 3.9 to 2.0 Ml/d	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	The drought option would reduce the compensation flow requirement from 3.9 Ml/d to 2 Ml/d. This would result in a temporary reduction in the flow from The Goit (a man-made channel linking Rake Brook and Anglezarke reservoirs) to Brinscall Lodge. The precise reduction would be discussed fully with the Environment Agency and would depend upon the need for additional water, time of year and current environmental circumstances. The estimated increase in reservoir group yield from the drought permit is approximately 2 Ml/d, depending on the magnitude of the compensation flow reduction applied for and the time of year. This estimate is based on the reduction in compensation flows that could be retained within the reservoir system during drought conditions. Alternatively, this water could be retained in the reservoirs to help maintain compensation flows. The wider Strategic Resource Zone deployable output benefit depends on the characteristics of the drought event
Location Area affected or whole supply zone	Local impact in Wigan and South Ribble areas
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessment: Rivington Reservoir – Brinscall Brook drought permit: reduce compensation flow from 3.9 to 2.0 Ml/d	

Overall environmental impact (minor, moderate, major or uncertain)		Moderate Environmental study completed in 2026. The assessment assumes that both Brinscall Brook and White Coppice drought permits would be applied for and implemented at the same time.
Level of confidence (H, M, L)		Medium – environmental assessment report completed in 2026 which identifies the level of confidence for each receptor.
Summary of likely environmental impacts		• No designated sites impacted by this drought permit. • The environmental study identified moderate impacts on fish species including trout, lamprey and bullhead. Impacts on all other receptors were concluded as minor or negligible. • Habitats Regulations Assessment Screening for this drought plan concluded no likely significant effects of implementation of this drought permit on European designated sites.
Information used to understand conditions before drought or any drought actions are implemented		The environmental study used historical data on river flow, reservoir level, ecological monitoring, and water quality. In addition river cross-section measurements were taken throughout the study area to enable hydraulic modelling to translate flow changes into habitat parameter changes (e.g. depth, velocity).
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Lamprey — surveys of the River Yarrow and Black Brook (carried out in 2014, 2015, and 2016) Fish – electric fishing surveys in 2022
	Pre- and during drought permit monitoring	Walkover surveys — during drought permit implementation weekly walkover surveys, looking for signs of fish in distress or other unforeseen effects. Habitat transect surveys – once to validate assessment predictions Water quality — spot measurements using hand-held probe during walkover surveys
	Post- drought permit monitoring	Fish and lamprey — repeat baseline survey at existing monitoring sites, in year following drought permit implementation then review.
Summary of mitigation measures		The environmental study identified potential mitigation measures to address impacts during drought conditions. If monitoring under a drought permit indicates significant ecological effects, measures that may be implemented include (but are not limited to) temporary or permanent reinstatement of the statutory compensation flow, fish rescue and relocation, habitat modifications to concentrate remaining water within the stream channel, and installation of fish refugia within the watercourse.
Permits/approvals needs for mitigation measures		Dependent on measures identified by monitoring undertaken at time of implementation. May include consent from the Environment Agency for fish rescue or an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

Option Name: Rivington Reservoir – White Coppice drought permit: reduce compensation flow from 4.9 to 2.0 Ml/d	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	The drought option would reduce the compensation flow requirement from 4.9 Ml/d to 2 Ml/d. This would result in a temporary reduction in the flow from The Goit (a man-made channel linking Rake Brook and Anglezarke reservoirs) to White Coppice Lodge. The precise reduction would be discussed fully with the Environment Agency and would depend upon the need for additional water, time of year and current environmental circumstances. The estimated increase in reservoir group yield from the drought permit is approximately 2.9Ml/d, depending on the magnitude of the compensation flow reduction applied for and the time of year. This estimate is based on the reduction in compensation flows that could be retained within the reservoir system during drought conditions. Alternatively, this water could be retained in the reservoirs to help maintain compensation flows. The wider Strategic Resource Zone deployable output benefit depends on the characteristics of the drought event.
Location Area affected or whole supply zone	Local impact in Wigan and South Ribble areas
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessment: Rivington Reservoir – White Coppice drought permit: reduce compensation flow from 4.9 to 2.0 Ml/d	
Overall environmental impact (minor, moderate, major or uncertain)	Moderate Environmental study completed in 2026. The assessment assumes that both Brinscall Brook and White Coppice drought permits would be applied for and implemented at the same time.
Level of confidence (H, M, L)	Medium – environmental assessment report completed in 2026 which identifies the level of confidence for each receptor
Summary of likely environmental impacts	• No designated sites impacted by this drought permit. • The environmental study identified moderate impacts on fish species including trout, lamprey and bullhead. Impacts on all other receptors were concluded as minor or negligible.

		• Habitats Regulations Assessment Screening for this drought plan concluded no likely significant effects of implementation of this drought permit on European designated sites.
Information used to understand conditions before drought or any drought actions are implemented		The environmental study used historical data on river flow, reservoir level, ecological monitoring and water quality. In addition river cross-section measurements were taken throughout the study area to enable hydraulic modelling to translate flow changes into habitat parameter changes (depth, velocity).
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Lamprey — surveys of the River Yarrow and Black Brook (carried out in 2014, 2015, and 2016). Fish – electric fishing surveys in 2022
	Pre- and during drought permit monitoring	Walkover surveys — during drought permit implementation weekly walkover surveys, looking for signs of fish in distress or other unforeseen effects. Habitat transect surveys – once to validate assessment predictions Water quality – spot measurements using hand-held probe during walkover surveys.
	Post- drought permit monitoring	Fish and lamprey – repeat baseline survey at existing monitoring sites, in year following drought permit implementation then review.
Summary of mitigation measures		The environmental study identified potential mitigation measures to address impacts during drought conditions. If monitoring under a drought permit indicates significant ecological effects, measures that may be implemented include (but are not limited to) temporary or permanent reinstatement of the statutory compensation flow, fish rescue and relocation, habitat modifications to concentrate remaining water within the stream channel, and installation of fish refugia within the watercourse.
Permits/approvals needs for mitigation measures		Dependent on measures identified by monitoring undertaken at time of implementation. May include consent from the Environment Agency for fish rescue or an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

Option Name: Ullswater drought permit: reduce hands-off flow and relax 12-month rolling abstraction licence limit	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	Drought powers could cover the following aspects to allow us to continue abstracting: • Reduce hands-off flow in the River Eamont at Pooley Bridge to a minimum of 175 Ml/d (the statutory prescribed flow varies throughout the year from January to December: 386 Ml/d, 386 Ml/d, 350 Ml/d, 273 Ml/d, 273 Ml/d, 195 Ml/d, 195 Ml/d, 195 Ml/d, 195 Ml/d, 195 Ml/d, 232 Ml/d, 232 Ml/d) • Relax 12-month rolling abstraction licence limit (45,634 Ml/yr) The scope of required powers would be discussed fully with the Environment Agency and Natural England and will depend upon the need for additional water, time of year and current environmental circumstances. The benefit to deployable output depends on the extent of the drought powers applied for and the pattern of weather conditions. Based on the 1995 to 1996 two-season drought event the deployable output benefit is 30.3 Ml/d, however the overall benefit to the wider Strategic Resource Zone is highly dependent on the characteristics of the drought event during such events. Winter refill is particularly critical to protect against a subsequent risk of a dry summer the following year.
Location Area affected or whole supply zone	Strategic Resource Zone
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at the beginning of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessment: Ullswater drought permit: reduce hands-off flow and relax 12-month rolling abstraction licence limit	
Overall environmental impact (minor, moderate, major or uncertain)	Negligible Environmental study completed in 2026
Level of confidence (H, M, L)	Medium

Summary of likely environmental impacts		• Ullswater and the River Eamont are within the River Eden SAC which is designated primarily for its oligotrophic to mesotrophic standing water habitats, water courses of plain to montane levels, and alluvial forest habitats. The primary designated species are white-clawed crayfish, sea/brook/river lamprey, Atlantic salmon, bullhead, and otter. The River Eden and Tributaries is also a SSSI. Ullswater is located within the Lake District National Park. • The environmental study concluded that the drought permit would have negligible hydrological and water quality impacts and resulting impacts implementation on all sensitive features would be negligible including on designated sites including the River Eden SAC. • Habitats Regulations Assessment Screening for this drought plan concluded no likely significant effects of implementation of this drought permit on European designated sites and that Appropriate Assessment would not be required.
Information used to understand conditions before drought or any drought actions are implemented		The environmental study used historical data on river flow, lake level, ecological monitoring and water quality. Water resources modelling was also undertaken and information used from walkover surveys in 2010 and 2018.
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Walkover surveys — identify and map vulnerable areas. Undertaken in 2013 and 2018.
	Pre- and during drought permit monitoring	Walkover surveys — during drought permit implementation fortnightly (initially) walkover surveys to monitor any unforeseen effects.
	Post- drought permit monitoring	None
Summary of mitigation measures		The environmental study concluded that the impacts of drought permit implementation would be negligible. Consequently, no mitigation measures are considered necessary
Permits/approvals needs for mitigation measures		None
Impact on other activities fisheries, industry etc.		None identified

Option Name: Lake Windermere drought permit: reduce hands-off flow and relax 12-month rolling abstraction licence limit	
Trigger/previous action	If appropriate, implementation from drought level 2 (Strategic Resource Zone). Preceding actions could include rezoning of water supplies; bringing water sources online; customer communication actions and demand restrictions
Deployable output of action Ml/day. Include how this is calculated	Drought powers at Windermere could cover either or both of the following aspects to allow us to continue abstracting: • Reduce hands-off flow conditions in the River Leven at Newby Bridge to a minimum of 95 Ml/d (the statutory prescribed flow varies throughout the year: 273 Ml/d in May to September and 136 Ml/d in October to April) • Relax 12-month rolling abstraction licence limit (36,504 Ml/yr) The scope of required powers would be discussed fully with the Environment Agency and will depend upon the need for additional water, time of year and current environmental circumstances. The benefit to deployable output depends on the extent of the drought powers applied for and the pattern of weather conditions. Based on the 1995 to 1996 two-season drought event the deployable output benefit is 53.5 Ml/d however the overall benefit to the wider Strategic Resource Zone is highly dependent on the characteristics of the drought event. Winter refill is particularly critical to protect against a subsequent risk of a dry summer the following year. For example, it was estimated that the 2003 drought permit would give an abstraction benefit of up to 50 Ml/d in dry conditions over the period December to March inclusive.
Location Area affected or whole supply zone	Strategic Resource Zone
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessment: Lake Windermere drought permit: reduce hands-off flow and relax 12-month rolling abstraction licence limit	
Overall environmental impact (minor, moderate, major or uncertain)	Minor/moderate Environmental study completed in 2021. The assessment is currently being updated and will be finalised in spring 2026. There are not anticipated to be significant changes to receptors or impact magnitudes between the 2021 published report and 2026 update.
Level of confidence (H, M, L)	High – environmental assessment report completed in 2021 which identifies the level of confidence for each receptor

Summary of likely environmental impacts		• Lake Windermere is located within the Lake District National Park and is designated as a County Wildlife Site. No designated sites are impacted by implementation of a drought permit. The River Leven, which flows out of Windermere, is one of five major fresh water sources to Morecambe Bay (SAC/SPA/Ramsar/SSSI) which also include the rivers Lune, Kent, Keer, and Wyre. Discussions with the Environment Agency and Natural England, as part of the environmental study, ascertained that the impact on Morecambe Bay is likely to be insignificant given the relative volumes of water involved and the large attenuation volumes available in Morecambe Bay. A small proportion of Windermere is within the Low Wray Bay SSSI designated for its preserved sediments. The environmental assessment concluded a drought permit would have negligible impact on this SSSI. • The environmental study assessed the impacts of reducing the hands-off flow to 95 Ml/d and relaxing the annual licence limit. The study identified moderate impacts on some fish and lamprey lifestages depending on the time of year of implementation. Impacts on all other receptors are predicted to be minor or negligible. • Habitats Regulations Assessment Screening for this drought plan concluded no likely significant effects of implementation of this drought permit on European designated sites.
Information used to understand conditions before drought or any drought actions are implemented		The environmental study used historical data on river flow, lake level, ecological monitoring and water quality. In addition river cross-section measurements were taken throughout the study area to enable hydraulic modelling to translate flow changes in to habitat parameter changes (e.g. depth, velocity). Information from a recent review and assessment of the Windermere abstraction licence was also incorporated.
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Hydrodynamics — flow gauging at four sites on the River Leven.
	Pre- and during drought permit monitoring	Hydrodynamics — repeat flow gauging at four sites on the River Leven, once prior to permit implementation and again during implementation, to identify flows at or below baseline hands-off flows, and at or below 95 Ml/d. Walkover surveys — during drought permit implementation fortnightly walkover surveys, looking for signs of fish in distress and any other unforeseen effects. Water quality — spot measurements using hand-held probe during walkover surveys. Fish — redd mapping, once pre-implementation if implemented in October to December only.
	Post- drought permit monitoring	None identified
Summary of mitigation measures		The environmental study considered mitigation measures. If monitoring during a drought permit indicates that significant impacts are occurring then various measures could be considered for implementation including: release of additional; flow via the Newby Bridge fisheries sluice, installation of fish refugia within the watercourse and/or provision of appropriate assistance, and/or funding of appropriate reasonable measures (e.g. habitat restoration). The Windermere water bank agreement (agreed in September 2016) states that at any time when Windermere is 2.5 cm below weir crest and/or Haweswater storage has crossed Trigger 3, a meeting of the Windermere stakeholder group will be convened to include representatives from the

	following organisations: United Utilities, the Environment Agency, Holker Estates, Windermere Lake User Forum, Windermere Lake Cruises Ltd, and Windermere Marina Village Ltd. Through this process the most effective use of the Windermere water bank will be discussed.
Permits/approvals needs for mitigation measures	Dependent on measures identified by monitoring undertaken at time of implementation.
Impact on other activities e.g. fisheries, industry etc.	The environmental study identified no adverse impacts of implementation of a drought permit on other activities. The Windermere stakeholder group would be consulted if drought powers at Windermere are being considered.

9.2 Carlisle Resource Zone supply-side option

Option Name: Castle Carrock: utilisation of reservoir dead water storage	
Trigger/previous action	Drought level 2 (Castle Carrock Reservoir). On reaching this trigger we would review the circumstances associated with making this source available for supply and whether it would aid the drought situation. If so, then on crossing this trigger, we would commence actions to enable us to abstract dead water within the reservoir, in line with the implementation timescale outlined below.
Deployable output of action Ml/day. Include how this is calculated	The benefit of this option is specific to a given drought event, but is estimated to provide a benefit of approximately 2 Ml/d.
Location Area affected or whole supply zone	Carlisle Resource Zone
Implementation timetable	• Approximately 1 month to implement (this timescale may be extended if a temporary filter plant is required) • Available throughout year subject to reservoir storage levels
Permissions required and constraints	This option would seek to utilise dead water at the base of the storage reservoir by installation of temporary pumping equipment and associated pipework. Treatment would be through the existing water treatment works.
Risks associated with option	Water quality problems at the water treatment works including elevated turbidity and colour. Previous water quality sampling of deadwater did not identify any treatability issues. As this sampling was not carried out under drought conditions there is a risk that additional treatment may be required at the water treatment works (e.g. modifications to add a temporary filter plant at the front of the works, housed within the existing water treatment works site). If this is required the timescale for implementation is likely to be extended to up to 3 months.
Summary of environmental assessments: Castle Carrock: utilisation of reservoir dead water storage	

Overall environmental impact (minor, moderate, major or uncertain)	Low
Level of confidence (H, M, L)	Medium
Summary of likely environmental impacts	• The drought option involves abstraction of dead water from Castle Carrock storage reservoir (water not normally available for abstraction). The reservoir has no compensation flow requirements, and no statutory releases would be affected. The option does not require abstraction licence changes and no reduction to the hands-off flow at the associated River Gelt sources is proposed. • The construction footprint does not overlap any designated habitat sites, so no direct habitat loss would occur. The site is located some distance from the North Pennine Moors Special Area of Conservation, North Pennine Moors Special Protection Area, and River Eden Special Area of Conservation. Potential indirect impacts during construction (e.g. noise, dust, or accidental chemical release) are considered negligible if best-practice construction measures are applied. • The Environment Agency Review of Consents concluded that the relevant abstraction licence does not adversely affect the integrity of the North Pennine Moors SAC or SPA, either alone or in combination. • A separate Review of Consents for the River Eden SAC previously identified adverse impacts from River Gelt abstractions, and abstraction licence changes were implemented in 2015 to address this. However, this drought option involves abstraction only from Castle Carrock reservoir, which is outside the designated site and is not dependent on river abstraction and therefore no impacts on River Eden SAC designated features are expected. • Habitats Regulations Assessment screening for the drought plan concluded no likely significant effects on European designated sites from implementation of this option. • Under the Water Framework Directive, the Castle Carrock Reservoir waterbody is classified as artificial and currently at ‘Good’ status (Cycle 3, 2022). Based on Environment Agency data (June 2025), no risk of deterioration has been identified for associated surface or groundwater bodies.
Information used to understand conditions before drought or any drought actions are implemented	Water quality sampling of the dead water in Castle Carrock Reservoir was carried out in 2016 and did not identify any concerns for abstraction under normal full-reservoir conditions. However, during a drought, lowered water levels and reduced inflows could lead to different water quality conditions than those previously observed. Habitats Regulations Assessment screening for this drought plan concluded no likely significant effects on European designated sites.
Summary of additional monitoring required	None required
Summary of mitigation measures	None required
Permits/approvals needs for mitigation measures	None required

Impact on other activities e.g. fisheries, industry etc.	The SEA Environmental Report predicts minor adverse impacts on biodiversity (flora and fauna), water, soil, geology, and land use. Fish populations in the reservoir may be affected by drawdown, but mitigation measures such as fish rescues are assumed, so impacts on biodiversity remain minor adverse. Abstraction of dead water increases reservoir drawdown, resulting in minor, temporary, and reversible impacts on water and geomorphology. Landscape and visual amenity impacts are considered moderate adverse but temporary, due to shoreline exposure during low water levels, particularly in the North Pennines AONB, and any new buildings are small and within the existing site. Key inter-relationships—including effects of reservoir drawdown on biodiversity, soil, and landscape—are summarised as minor adverse overall.

9.3 North Eden Resource Zone drought permits

Option Name: Bowscar boreholes drought permit: increase annual licence limit to enable continuation of abstraction at the maximum daily abstraction rate	
Trigger/previous action	If appropriate, implementation from drought level 2 (North Eden boreholes). Preceding actions could include rezoning of water supplies; customer communication actions and demand restrictions.
Deployable output of action Ml/day. Include how this is calculated	The drought option would vary the annual licence limit (618 Ml/yr equivalent to an average abstraction rate of 1.69 Ml/d) for the Bowscar boreholes to enable the continuation of abstraction at the maximum licenced daily abstraction rate (3.36 Ml/d). The drought option would give a benefit of 1.67 Ml/d which would help keep abstractions from other sources at sustainable levels, or in isolated supply areas, ensure that essential demands for water would continue to be met. The exact conditions of the application would be discussed fully with the Environment Agency and would depend upon the need for additional water, time of year, the overall condition of the local aquifer, and current environmental circumstances.
Location Area affected or whole supply zone	[✂]
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessments: Bowscar boreholes drought permit: increase annual licence limit to enable continuation of abstraction at the maximum daily abstraction rate	
Overall environmental impact (minor, moderate, major or uncertain)	Minor Environmental study completed in 2025
Level of confidence (H, M, L)	Medium — environmental assessment report completed in 2025 which identifies the level of confidence for each receptor
Summary of likely environmental impacts	• The environmental study identified minor or negligible impacts on all receptors.

		• The study predicted a negligible impact on river flows in the River Eden and concluded that the drought permit would result in negligible impacts (categorised as minor significance) on all designated sites, including the River Eden and Tributaries SAC/SSSI, and the North Pennine Moors SAC/SPA. • This Environmental Assessment Report informs the Habitats Regulations Assessment (HRA) for the drought plan, which concluded that the implementation of this drought permit would result in no likely significant effects on European designated sites
Information used to understand conditions before drought or any drought actions are implemented		The environmental study used historical data on river flow and groundwater levels from multiple observation boreholes. Hydrogeological and hydrological modelling was employed to estimate additional groundwater drawdown and calculate potential flow depletion in the River Eden. The study utilised WFD classification status and Common Standards Monitoring Guidance (CSMG) targets to establish the baseline ecological and water quality condition of the River Eden SAC. Because predicted changes in river flows from Bowscar were negligible, detailed hydraulic modelling using river cross-sections to translate flow changes into habitat changes was not required for this permit
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Groundwater levels — baseline monitoring of groundwater levels
	Pre- and during drought permit monitoring	Hydrodynamics — as the drought permit is predicted to result in negligible changes to river flows and habitat in the River Eden and River Eamont, site-specific hydrodynamic monitoring (such as spot gaugings or repeatable habitat transects) is not required for this permit Groundwater levels — continue to monitor groundwater levels
	Post- drought permit monitoring	Groundwater levels — continue to monitor groundwater levels
Summary of mitigation measures		The environmental study considered mitigation measures. If monitoring during a drought permit indicates that significant impacts are occurring then various measures could be considered for implementation including: reduce or cease groundwater abstraction, if third party abstractors report impacts, then potential mitigation measures include lowering the pump (if possible), providing an alternative supply (e.g. a temporary bowser), or providing financial compensation, provision of appropriate assistance, and/or funding of appropriate reasonable measures (e.g. habitat restoration).
Permits/approvals needs for mitigation measures		Dependent on measures identified by monitoring undertaken at time of implementation. May include an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

Option Name: Gamblesby boreholes drought permit: increase annual licence limit to enable continuation of abstraction at the maximum daily abstraction rate	
Trigger/previous action	If appropriate, implementation from drought level 2 (North Eden boreholes). Preceding actions could include rezoning of water supplies; customer communication actions and demand restrictions.

Deployable output of action Ml/day. Include how this is calculated	The drought option would vary the annual licence limit (500 Ml/yr equivalent to an average abstraction rate of 1.37 Ml/d) for the Gamblesby boreholes to enable the continuation of abstraction at the maximum licenced daily abstraction rate (1.6 Ml/d). The drought option would give a benefit of 0.23 Ml/d which would help keep abstractions from other sources at sustainable levels, or in isolated supply areas, ensure that essential demands for water would continue to be met. The exact conditions of the application would be discussed fully with the Environment Agency and would depend upon the need for additional water, time of year, the overall condition of the local aquifer and current environmental circumstances
Location Area affected or whole supply zone	[✂]
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessments: Gamblesby boreholes drought permit: increase annual licence limit to enable continuation of abstraction at the maximum daily abstraction rate	
Overall environmental impact (minor, moderate, major or uncertain)	Minor Environmental study completed in 2025
Level of confidence (H, M, L)	Medium – environmental assessment report completed in 2025 which identifies the level of confidence for each receptor
Summary of likely environmental impacts	• The environmental study identified minor or negligible impacts on all receptors. • The study predicted a negligible impact on river flows in the River Eden and concluded that the drought permit would result in negligible impacts (categorised as minor significance) on all designated sites, including the River Eden and Tributaries SAC/SSSI, and the North Pennine Moors SAC/SPA. • This Environmental Assessment Report informs the Habitats Regulations Assessment (HRA) for the drought plan, which concluded that the implementation of this drought permit would result in no likely significant effects on European designated sites

Information used to understand conditions before drought or any drought actions are implemented		The environmental study utilised historical data on river flow (including spot flow gaugings), groundwater levels from observation boreholes, and extensive ecological monitoring. To assess physical impacts, hydrogeological and hydrological modelling was employed to estimate additional groundwater drawdown and calculate river flow depletion. Furthermore, river cross-section measurements were taken at identified low-flow sensitive locations in 2009, with a repeat baseline survey of habitat transects conducted in 2023 for Raven Beck and Hazelrigg Beck. These measurements informed hydraulic modelling, which was used to translate predicted flow changes into variations in habitat parameters, such as water depth, average velocity, and wetted width.
Environmental Monitoring Plan for sensitive features	Baseline monitoring	Groundwater levels — baseline monitoring of groundwater levels
	Pre- and during drought permit monitoring	Hydrodynamics — undertake spot gauging and geo-referenced, repeatable assessment of channel wetted width, depth and velocity including field notes, and fixed point photographs at two locations specified in the environmental assessment. Relate to groundwater level and abstraction volume if possible. One occasion pre-implementation, fortnightly for the first month of implementation then review. Take in situ probe readings for temperature, pH, and dissolved oxygen at Raven Beck during the spot gauging surveys. Groundwater levels — continue to monitor groundwater levels
	Post- drought permit monitoring	Groundwater levels — continue to monitor groundwater levels
Summary of mitigation measures		The environmental study considered mitigation measures. If monitoring during a drought permit indicates that significant impacts are occurring then various measures could be considered for implementation including: reduce or cease groundwater abstraction, if third party abstractors report impacts, then potential mitigation measures include lowering the pump (if possible), providing an alternative supply (e.g. a temporary bowser), or providing financial compensation, provision of appropriate assistance, and/or funding of appropriate reasonable measures (e.g. habitat restoration).
Permits/approvals needs for mitigation measures		Dependent on measures identified by monitoring undertaken at time of implementation. May include an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

Option Name: Tarn Wood boreholes drought permit: increase annual licence limit to enable continuation of abstraction at the maximum daily abstraction rate	
Trigger/previous action	If appropriate, implementation from drought level 2 (North Eden boreholes). Preceding actions could include rezoning of water supplies; customer communication actions and demand restrictions.
Deployable output of action Ml/day. Include how this is calculated	The drought option would vary the annual licence limit (592 Ml/yr equivalent to an average abstraction rate of 1.62 Ml/d) for the Tarn Wood boreholes to enable the continuation of abstraction at the maximum licenced daily abstraction rate (2.37 Ml/d). The drought option would give a benefit of 0.75 Ml/d which would help keep abstractions from other sources at sustainable levels, or in isolated supply areas, ensure that essential

	demands for water would continue to be met. The exact conditions of the application would be discussed fully with the Environment Agency and would depend upon the need for additional water, time of year, the overall condition of the local aquifer and current environmental circumstances
Location Area affected or whole supply zone	[✂]
Implementation timetable	• Commencement of drought permit preparation from drought level 1 • Application of drought permit from drought level 2 • Implementation of drought permit from drought level 2 • Drought permit could be effective at all times of the year • Drought permits are valid for up to six months and can be extended for a further six months
Permissions required and constraints	Approval of the application
Risks associated with option	That the application, as applied for, is not approved
Summary of environmental assessments: Tarn Wood boreholes drought permit: increase annual licence limit to enable continuation of abstraction at the maximum daily abstraction rate	
Overall environmental impact (minor, moderate, major or uncertain)	Minor Environmental study completed in 2025
Level of confidence (H, M, L)	Medium — environmental assessment report completed in 2025 which identifies the level of confidence for each receptor
Summary of likely environmental impacts	• The environmental study identified minor or negligible impacts on all receptors. • The study predicted a negligible impact on river flows in the River Eden and concluded that the drought permit would result in negligible impacts (categorised as minor significance) on all designated sites, including the River Eden and Tributaries SAC/SSSI, and the North Pennine Moors SAC/SPA. • This Environmental Assessment Report informs the Habitats Regulations Assessment (HRA) for the drought plan, which concluded that the implementation of this drought permit would result in no likely significant effects on European designated sites
Information used to understand conditions before drought or any drought actions are implemented	The environmental study used historical data on river flow and groundwater levels from multiple observation boreholes. Hydrogeological and hydrological modelling was employed to estimate additional groundwater drawdown and calculate potential flow depletion in the River Eden. The study utilised WFD classification status and Common Standards Monitoring Guidance (CSMG) targets to establish the baseline ecological and water quality condition of the River Eden SAC. Because predicted changes in river flows from Tarn Wood were negligible, detailed hydraulic modelling using river cross-sections to translate flow changes into habitat changes was not required for this permit.

Environmental Monitoring Plan for sensitive features	Baseline monitoring	Groundwater levels — baseline monitoring of groundwater levels
	Pre- and during drought permit monitoring	Hydrodynamics — as the drought permit is predicted to result in negligible changes to river flows and habitat in the River Eden and River Eamont, site-specific hydrodynamic monitoring (such as spot gaugings or repeatable habitat transects) is not required for this permit Groundwater levels - continue to monitor groundwater levels
	Post- drought permit monitoring	Groundwater levels — continue to monitor groundwater levels
Summary of mitigation measures		The environmental study considered mitigation measures. If monitoring during a drought permit indicates that significant impacts are occurring then various measures could be considered for implementation including: reduce or cease groundwater abstraction, if third party abstractors report impacts, then potential mitigation measures include lowering the pump (if possible), providing an alternative supply (e.g. a temporary bowser), or providing financial compensation, provision of appropriate assistance, and/or funding of appropriate reasonable measures (e.g. habitat restoration).
Permits/approvals needs for mitigation measures		Dependent on measures identified by monitoring undertaken at time of implementation. May include an environmental permit and landowner consent for instream works (if required).
Impact on other activities e.g. fisheries, industry etc.		No significant impacts on other activities identified.

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