Yorkshire Water Drought Permit Application

North Area Supporting Information

Document Version Control

Version	Issue Date	Document	Authorised by
1.0	23/06/2025	Pre-application document for EA review	Jason Ball
2.0	11/09/2025	Final for Formal Submission	Jason Ball

Contents

1. Executive summary for drought permit application

An application is being made for a series of drought permits in YW's North area to reduce compensation flows because of a very dry spring and a forecasted dry summer in 2025. The sites are included as drought options in the Yorkshire Water Drought Plan 2022 available to view on the Yorkshire Water website. (https://www.yorkshirewater.com/about-us/our-vision-and-plans/resources/drought-plan/).

The North area includes three reservoir groups within the Harrogate and Washburn Valley area. These reservoirs supply four water treatment works, which in turn supplies potable water to Leeds, Harrogate and parts of the Yorkshire Dales. Yorkshire Water are applying for drought permits for five reservoirs within the North Area.

As a result of the low rainfall our reservoirs are below average for the time of year and there is a risk to security of supply if we do not take action to conserve reservoir stocks as much as possible. We are applying for drought permits to conserve supplies in reservoirs in case the dry weather continues. These drought permits, if granted, will reduce the amount of water we release from reservoirs to rivers allowing us to maintain these compensation flows for longer, and aiding the recovery of these reservoirs.

2. Proposal Description

The North Area of our grid network is used to supply Leeds, Harrogate and the surrounding areas, including parts of the Yorkshire Dales. It includes three reservoir groups, which are described below. Not all the reservoirs provide water for public water supply. The North Area can also receive supply form river sources in our region as it is connected to our grid system.

We are applying for drought permits to temporarily reduce compensation flows in the North Area from:

- Leighton Reservoir
- Lindley Wood Reservoir
- Beaver Dyke Reservoir (Haverah Park)
- Lumley Moor Reservoir
- Thruscross Reservoir

Compensation releases are a requirement under licence agreements we hold with the Environment Agency. The flow releases support the environment by compensating the watercourses downstream from the reservoirs.

2.1 Location Map

Figure 1 and Figure 2 show the reservoirs and receiving watercourses that would be impacted if the North Area permits were granted. The permits will allow compensation releases to be temporarily reduced for the duration the permits are in place.

The reservoirs impacted by the proposed drought permits are listed in Table 1

Reservoir Name	Grid reference	Location description	Reservoir / Reservoir Group
Leighton Reservoir	SE 16 78	East of Masham	Harrogate
Lumley Moor Reservoir	SE 22 70	South of Leighton Reservoir	Harrogate
Lindley Wood Reservoir	SE 21 49	Washburn Valley north of Otley	Washburn
Thruscross Reservoir	SE 15 57	Washburn Valley north of Otley	Washburn
Beaver Dyke Reservoir	SE 22 54	North of Linley Wood	Haverah Park Group

Table 1: Reservoirs impacted by drought permit proposals

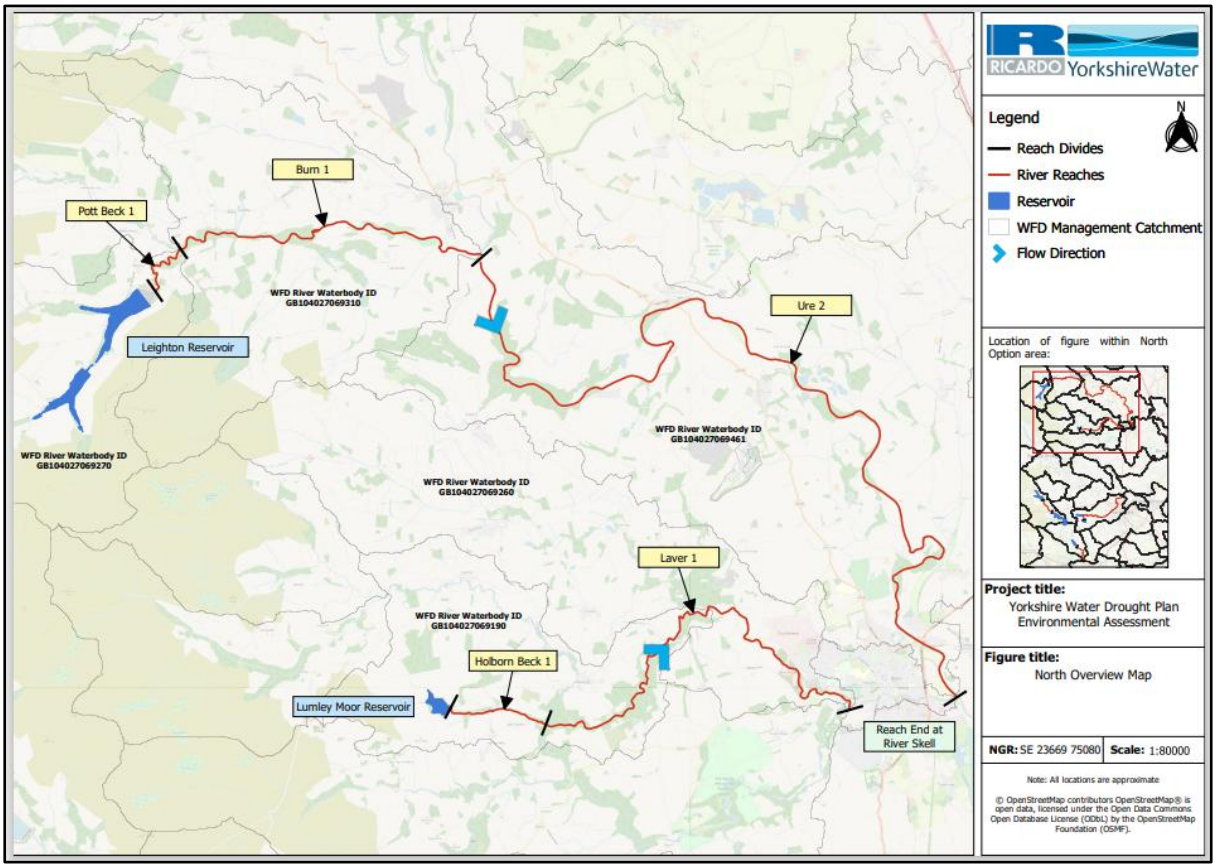


Figure 1: Map of the North Area drought permit sites

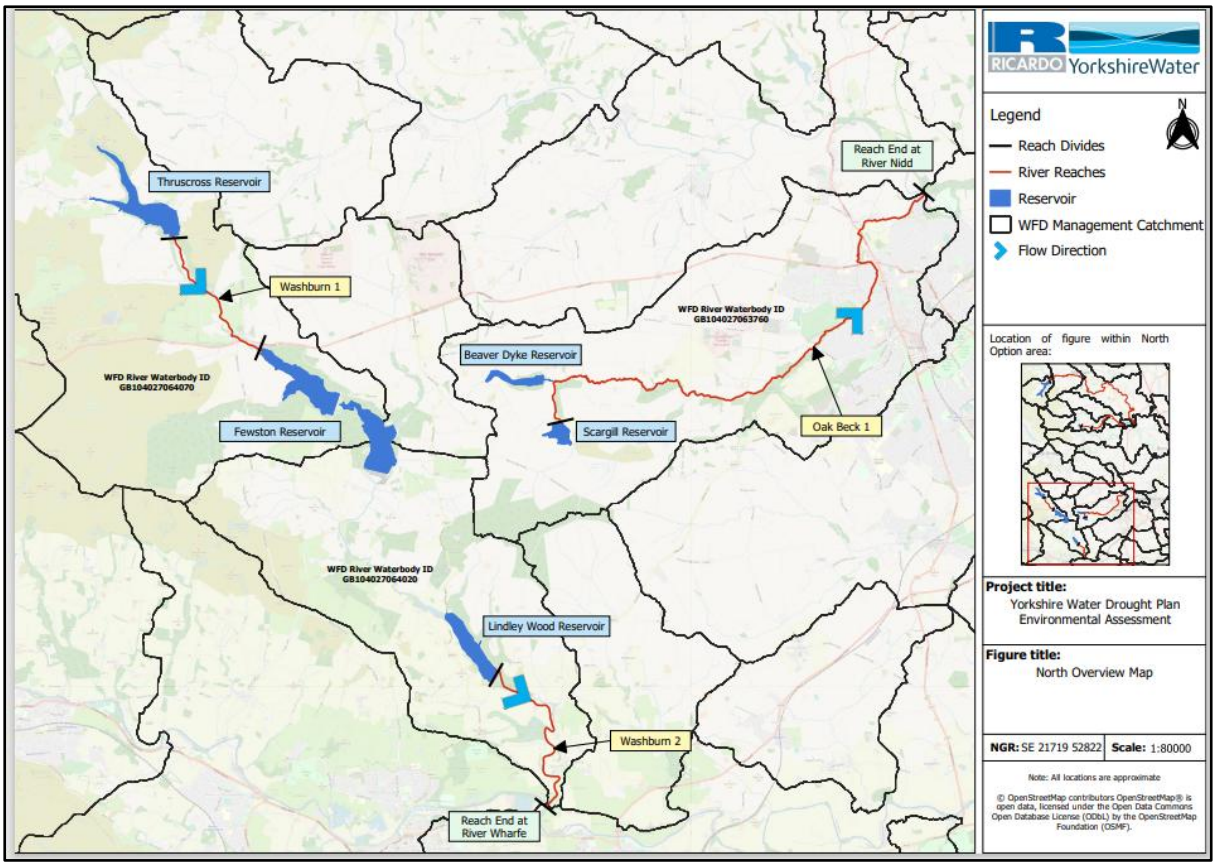


Figure 2: Map of the North Area drought permit sites

A brief description of the three reservoir groups in the North Area is provided below. The group names have been defined for Yorkshire Water to use operationally and have been determined by the connectivity between the reservoirs that make up the groups.

Harrogate Group

The Harrogate Group supplies Harlow Hill water treatment works (WTW) in Harrogate and Thornton Steward WTW near Ripon. The group comprises Roundhill, Leighton, Lumley Moor and Thornton Steward supply reservoirs. Compensation water is from Cod Beck and Leighton reservoirs.

Washburn Group

The Washburn Group supplies Headingley and Eccup WTWs in Leeds. The group comprises the Washburn Valley reservoir group, which includes Fewston, Thruscross and Swinsty supply reservoirs. The supply reservoirs all flow to Lindley Wood Reservoir, which provides compensation to the River Washburn but cannot be used in supply. We also include Eccup Reservoir in this group, which is classed as an en-route storage reservoir (ERS) as water from supply reservoirs and river abstractions is piped here and stored until it is needed for supply.

Haverah Park Group

This group includes Scargill, John O'Gaunts, Beaver Dyke and Ten Acre reservoirs. Scargill Reservoir is the only supply reservoir in the group and is an additional source of supply to Harlow Hill WTW, which also receives water from the Harrogate Group. John O'Gaunts Reservoir supports Beaver Dyke Reservoir, which provides compensation flow to Oak Beck. Ten Acre Reservoir cannot be used in supply and has no compensation requirements.

2.2 Current Abstraction Licence Conditions

The drought permit applications for the North Area propose temporary reductions in compensation releases from five of the reservoirs in the three sub groups. These are Leighton Reservoir and Lumley Moor Reservoir in the Harrogate Group, Lindley Wood Reservoir and Thuscross Reservoir in the Washburn Valley Group, and Beaver Dyke in the Haverah Park Group.

- Leighton Reservoir under the terms of the abstraction licence number 2/27/22/210. The licence conditions permit Yorkshire Water to abstract water from Leighton Reservoir for public water supply and require compensation flow to be discharged to Pott Beck immediately downstream.

- Lumley Moor Reservoir under the terms of the Ripon Corporation Act 1886. The Act conditions permit Yorkshire Water to impound water in Lumley Moor Reservoir for public water supply and require compensation flow to be discharged to the Holborn Beck immediately downstream.

- Washburn Valley Reservoir upstream of Lindley Wood Reservoir under the terms of the Leeds Corporation (Consolidation) Act 1905. The Act conditions permit Yorkshire Water to abstract water from the Washburn Valley and we are required to compensate the downstream receiving watercourses, the River Washburn immediately downstream of Lindley Wood Reservoir, which joins the River Wharfe downstream of Otley.

- Beaver Dyke Reservoir under the terms of the impoundment licence number NE/027/0021/022. The licence conditions permit Yorkshire Water to impound water in Beaver Dyke Reservoir for public water supply and we are required to discharge a compensation flow to Oak Beck, immediately downstream of Beaver Dyke Reservoir. However, we no longer use Beaver Dyke for public water supply.

- Thuscross Reservoir under the terms of the impoundment licence number [NE/027/002/0031]. The licence conditions permit Yorkshire Water to impound water for public supply and we are required to discharge a compensate flow to the River Washburn, immediately downstream of Thuscross Reservoir.

Details on the drought permit proposals for the North Area reservoirs are provided below. Table 2 gives the statutory compensation volumes and the reduced volumes for the duration of the drought permits.

The reductions proposed relate to the water level (or stocks) in the combined stocks of all the supply reservoirs we operate, referred to as "regional reservoir stocks". If granted the permits will be in place from the date of approval for 6 months. If we receive sufficient refill for our regional reservoirs stocks to recover to a level we refer to as 'the normal control line' and no individual reservoir group is below a level we refer to as our 'early warning trigger line', we will increase the compensation flow to the volumes defined in the licence agreements. Plots of the reservoir stocks and further explanations about the triggers to be used for compensation flow reductions can be found in Section 4.3.

Leighton Reservoir in the Harrogate group (also includes Roundhill, Lumley Moor and Thornton Steward supply reservoirs and Cod Beck compensation reservoir)
Under the terms of the Leighton licence, Yorkshire Water has a legal obligation to discharge compensation water into Pott Beck immediately downstream of Leighton Reservoir in a regular, uniform and continuous flow of not less than 12.10 megalitres per day.

The drought permit application for Leighton Reservoir is to reduce the compensation release by 50% to 6.05 megalitres per day from the date the permit is granted and to reduce further to 3.99 megalitres per day if Leighton Reservoir stocks are below the regional Drought Control Line, as defined in the Yorkshire Water Drought Plan, for more than four consecutive weeks.

Lumley Moor Reservoir in the Harrogate Group (also includes Roundhill, Leighton, and Thornton Steward supply reservoirs and Cod Beck compensation reservoir)
Under the terms of the Ripon Corporation Act 1886, Yorkshire Water must continuously discharge not less than one hundred thousand gallons per day. We currently operate the compensation flow under the terms of an LEP held with the Environment Agency, whereby we continuously discharge not less than 0.455 megalitres per day from Lumley Moor Reservoir to Holburn Beck, a tributary of the River Laver.

The drought permit application for Lumley Moor is to reduce the compensation release by 50% to 0.23 megalitres per day from the date the permit is granted and to reduce further to 0.15 megalitres per day if regional reservoir stocks are below the regional Drought Control Line, as defined in the Yorkshire Water Drought Plan, for more than four consecutive weeks.

Lindley Wood Reservoir in the Washburn Valley group (also includes Fewston, Thruscross and Swinsty supply reservoirs and Eccup en-route storage reservoir)
Under the terms of the Leeds Corporation Act 1905, Yorkshire Water must continuously discharge two thousand seven hundred and seventy-eight gallons per minute. We currently operate the compensation flow under the terms of an LEP held with the Environment Agency, whereby we continuously discharge not less than not less than 18.185 megalitres per day from Lindley Wood Reservoir.

The drought permit application is to reduce the compensation release by 50% to 9.09 megalitres per day from the date the permit is granted and to reduce further to 6.00 megalitres per day if regional reservoir stocks are below the regional Drought Control Line, as defined in the Yorkshire Water Drought Plan, for more than four consecutive weeks.

Thruscross Reservoir in the Washburn Group (also includes Fewston, and Swinsty supply reservoirs, Lindley Wood compensation reservoir, and Eccup en-route storage reservoir)
Under the terms of the Thuscross licence, Yorkshire Water must continuously discharge a compensation flow into the River Washburn. The required volume of flow is dependent on seasonal variations, with 16.9 megalitres per day being released between 16 November and 15 April (winter), 8.2 megalitres per day being released between the 16 April and 15 May and 16 October and 15 November (spring and autumn), and 3.9 megalitres per day between 16 May and 15 October (summer).

The drought permit application for Thruscross Reservoir is to reduce the compensation release by 50% to 8.45 megalitres per day in winter, 4.1 megalitres per day in spring and autumn, and 1.95 megalitres per day in summer from the date the permit is granted. A further reduction to 5.58 megalitres per day in winter, 2.71 megalitres per day in spring and autumn, and 1.29 megalitres per day in summer if regional reservoir stocks are below the Regional Drought Control Line, as defined in the Yorkshire Water Drought Plan, for more than four consecutive weeks.

Beaver Dyke Reservoir in the Haverah Group (also includes Scargill supply reservoir, and John O'Gaunts and Ten Acre reservoirs)
Under the terms of the Beaver Dyke Impoundment Licence, Yorkshire Water must continuously discharge not less than 0.909 megalitres per day to Oak Beck, downstream of the reservoir.

YWSL also hold an LEP for a flow trial that states there must be a continuous discharge via a group compensation release of not less than 0.75Ml/d. Minimum releases from Beaver Dyke Reservoir and Scargill Reservoir to Oak Beck are 0.2Ml/d and 0.35Ml/d respectively.

The drought permit application for Beaver Dyke is to reduce the group compensation release by 59% to 0.38Ml/d from the date the permit is granted (of which a minimum of 0.18Ml/d would be released from Scargill Reservoir and a minimum of 0.1Ml/d from Beaver Dyke Reservoir, with the remaining 0.1 Ml/D being made up from the reservoirs within the Haverah Park Group) and to reduce group compensation further to 0.25Ml/d (of which 0.12 Ml/d would be released from Scargill and 0.07 Ml/D would be released from Beaver Dyke, with the remaining 0.06 Ml/D being made up from the reservoirs in the Haverah Park Group), if regional reservoir stocks are below the regional Drought Control Line, as defined in the YWSL Drought Plan, for more than four consecutive weeks

Compensation Water Source	Receiving Watercourses	Relevant Authorising Act or Licence	Current Legal Requirement (Ml/d)	Drought Permit Quantities applied for	
				Flow reduced by half (Ml/d)	Flow reduced by two thirds (Ml/d)
Leighton	Pott Beck, River Bun,River Ure	Leighton Reservoir abstraction licence (number 2/27/22/210)	12.1	6.05	3.99
Lindley Wood	River Washburn, River Wharfe	Leeds Corporation (Consolidation) Act 1905 LEP	18.185	9.09	6.00
Lumley Moor	Holborn Beck River Ure	Ripon Corporation Act 1886 LEP	0.455	0.23	0.15
Beaver Dyke	Oak Beck River Nidd	Impoundment Licence NE 027 0021 022	0.909 LEP states 0.75Ml/d of which at least 0.35Ml/d released from Scargill Reservoir and at least 0.20Ml/d from Beaver Dyke Reservoir	0.38 of which at least 0.18Ml/d released from Scargill Reservoir and 0.10 Ml/d from Beaver Dyke Reservoir	0.25 Of which at least 0.12Ml/d will be released from Scargill and 0.07Ml/d from Beaver Dyke
Thruscross	River Washburn	Impoundment Licence NE/027/002/0031	Winter – 16.9 Spring and Autumn – 8.2 Summer – 3.9	Winter – 8.45 Spring and Autumn – 4.1 Summer – 1.95	Winter – 5.58 Spring and Autumn – 2.71 Summer – 1.29

Table 2: Summary of drought permit proposals and relevant licences

2.3 Proposed Start & Expiry Date for Permit

YW propose the drought permits are implemented as soon as determined and be in place for a period of 6 months.

3. Draft Permit

See appended draft Drought Permits for each drought option.

4. Drought Permit Justification

4.1 Why the permit is necessary

The drought permit applications are necessary due to an exceptional shortage of rain threatening a serious deficiency of supplies of water in the area supplied by Yorkshire Water. Evidence to demonstrate the exceptional shortage of rain is shown in section 5 "Case for an Exceptional Shortage of Rainfall"

We are applying for drought permits in the North Area to reduce the rate of decline in reservoir stocks, and to aid the recovery of reservoir stocks during the winter. Furthermore, by maximising our prospects for winter recovery, we will decrease the likelihood of requiring drought permits in 2026.

4.2 Supply Areas & Respective populations impacted

This drought permit application will alter how we operate our reservoirs in our North Area operating zone. The North Area is connected to our conjunctive use grid system, and we may also look to apply for drought permits in other parts of our region.

The following supply areas are impacted in Yorkshire Water's N area:

- Leeds
- Harrogate
- Knaresborough
- Ripon
- Pateley Bridge
- Northallerton & Thirsk
- Wensleydale
- Swaledale

The population estimated to be affected can be estimated from WTW production sites as follows:
Ainderby WTW – Average 4Ml/d – Population = 16,589
Aysgarth WTW – Average 0.4Ml/d – Population = 1,659
Catterick WTW – Average 6.6Ml/d – Population = 27,373
Dalton WTW – Average 1.8Ml/d – Population = 7,465
Eccup No.1 WTW – Average 54Ml/d – Population = 223,957
Eccup No.2 WTW – Average 38Ml/d – Population = 157,599
Harlow Hill WTW – Average 25Ml/d – Population = 103,684

Headingley WTW – Average 69Ml/d – Population = 286,167
High Shaw WTW – Average 0.3Ml/d – Population = 1,244
Thornton Steward WTW – Average 22Ml/d – Population = 91,242
Total = 916,979 people

4.3 Daily Water Demand and how it is met from the available source

Our reservoir control lines represent the value of reservoir storage that is required to guarantee a continuous rate of supply (equivalent to yield) such that the reservoir storage never falls below a critical storage line given the minimum historical inflows.

We calculate two sets of control lines:

- Drought Control Line (DCL) - the DCL is designed such that stocks will never fall below marginal storage when the reservoirs supply 85% of their calculated yield.
- Normal Control Line (NCL) - the NCL is designed such that stocks will never fall below the DCL when the reservoirs supply their calculated yield.

Once we have calculated the NCL and DCL, we linearly interpolate between the 100% full level and the NCL, the NCL and DCL, and the DCL and emergency storage level, to obtain the ten control lines (CLs) used in our modelling and reservoir stocks monitoring. The NCL is control line (CL) 3, the DCL is CL7, and we use CL4 as the Environment Agency trigger line. This is the trigger for Yorkshire Water and the Environment Agency to initiate communications around a potential emerging dry weather situation.

The control lines are updated on a regular basis and were last updated in 2022 based on minimum inflows to the reservoirs from 1900 to 2020. We have remodelled our historic inflows using GR6J rainfall runoff models and extended our historic record back to 1900.

Control lines have been revised since our most recent drought plan, but the triggers in our drought plan related to control lines are still applicable to the updated control lines. We will carry out a further review of our control lines after the current drought period has ended, and when reservoir inflows are updated to include this current period.

When our reservoir levels drop below NCL, our operating strategy is to reduce reservoir abstraction to yield and increase river abstraction while still meeting daily demand. The increased river abstraction is a combination of abstraction for treatment and distribution and pumping river water to reservoir storage. In line with this strategy, we increased use of river abstraction when we dropped below NCL in March. Average reservoir abstraction in Q1 (Jan-Mar) was 685Ml/d, this reduced to an average of 584Ml/d in Q2 (Apr-Jun). River abstraction has increased from a Q1 average of 437Ml/d to an average of 523Ml/d in Q2. When river levels have increased in Q2 we have been able to maximise abstraction, reducing reservoir use as close to minimum as possible. For example, higher river levels in June & July allowed us to increase river abstraction at an average of 565Ml/d (June) and 597Ml/d (July) reducing reservoir abstraction to an average of 539Ml/d and 498Ml/d respectively. We will continue to maximise river abstraction within licence constraints

4.4 Forecasted effects of continued dry weather on customer supplies

Our current modelling is based on a 1995/1996 inflow scenario which is our worst case historical 12-month historical period with approximately 60% long-term average (LTA) rainfall over a 12-month period. Our latest WRPR forecast (at the time of preparing this application) indicates that, with TUBs imposed on 11-Jul, the forecast date for crossing the Drought Control Line (DCL) across the Yorkshire Water region will be 29/10/25 if we follow the 1995-96 flow scenario. However, this date will be 09/11/25 for the North area. Under the 1995-96 condition, neither the Yorkshire Water region nor the North area will drop below the 20% stocks threshold (for imposing level 4 restrictions).

We have been evaluating more extreme scenarios as well to make us prepared for conditions worse than 1995-96. Our latest WRPR analysis also included a run with an extreme rainfall-based scenario where the region receives only 40% of the LTA over September and October then 60% of the LTA thereafter. The predicted date for crossing the DCL under this scenario is 03/10/25 and 04/10/25 for the Yorkshire Water region and the North area respectively. This extreme scenario results in stocks across the Yorkshire Water region and the North area go below 20% 14/08/26 and 01/11/2025 respectively, requiring level 4 restrictions.

5. Case for an exceptional shortage of rain (ESOR)

Full details of events and climatic conditions that have led to the need for the drought permit is described in this section.

5.1 Introduction

In this document, we demonstrate an exceptional shortage of rainfall by analysis of monthly rainfall following the EA guidance document ('Hydrological guidance for the assessment of an Exceptional Shortage of Rain (ESoR)', 2025). We demonstrate that ESoR has primarily led to a serious risk of deficiency of supplies in our North region. The geographical extent and the time period of analysis have been agreed with the local EA hydrology (Yorkshire) team.

The following rainfall analysis has been conducted to support our assessment:

- Plots of 2025 rainfall in relation to long term average (LTA) and previous droughts
- Standardised Precipitation Index (SPI)
- Rainfall ranking compared to records starting in 1871
- Calculation of Cunnane plotting position

We also present additional evidence for the following non-rainfall variables:

- Reservoir storage
- MORECS Soil Moisture Deficit

In each subsection, we start by showing the requirements as set out by the EA (Appendix A – ESoR checklist for water companies March 2025 v2.1) in grey boxes. Following such text boxes, we present our approach and analysis in response to those.

5.2 Rainfall Data

- You must use areal rainfall data for the catchment area of interest.
- In most circumstances, you should use the Environment Agency's HadUK/DRT dataset Data for hydrological areas is provided to water companies monthly. If the Hydrological Areas are not appropriate, then rainfall data can be extracted for a bespoke catchment area

from the HadUK/DRT dataset by Environment Agency hydrologists. You must fully explain which dataset has been used and why. Recent data from third party websites may underestimate complete monthly rainfall totals.

The rainfall data used in this assessment was provided by the EA Hydrology Yorkshire team. The data included is the HadUK v1.2.0.0 monthly totals covering January 1871 to December 2023 (inclusive) and the EA Daily Rainfall Tool (DRT) monthly totals covering January 2024 to August 2025 (inclusive). The use of the HadUK/EA DRT rainfall data allows analysis of long time series dating back to 1871. The rainfall data covers the catchments of our reservoirs in our North region that are relevant to this permit application. The geographical extent will be provided and described in greater detail in section 5.4.

• If you have calculated areal rainfall yourself (you are strongly advised to avoid this): • You will need to demonstrate that your data is of better quality and/or more hydrologically relevant than the HadUK/DRT dataset. • Set out the limitations of the dataset. • Your areal rainfall should be calculated in accordance with British Standard BS7843-4:201296. The rain gauges used must be quality controlled, have minimal missing data and be operated in accordance with British Standard.

We can confirm that we have not calculated the areal rainfall data ourselves and have used the data provided by the EA as explained above.

5.3 Period Of Analysis

• Determine the start and end point of the period of analysis before starting the assessment. This is the period of the rainfall deficit which is used to support the ESoR case. You should agree the period of analysis with the relevant Environment Agency hydrologist, the Area Drought Coordinator and water company lead. • The application should be submitted as soon as possible once the need for a Drought Permit has been identified a or as soon as possible. [as written] • Start of the period of analysis: • Provide clear evidence (e.g. charts/graphs) of the point at which rainfall is lower than normal. • Justify how the variables used here are reflective of the water supply situation in the catchment area of interest. • End of the period of analysis • Provide clear evidence (e.g. charts/graphs/reference to Drought Plan) that the rainfall deficit has triggered the need for a drought permit. • Use the latest rainfall data at the point of the application.

The period over which the analysis has been conducted was agreed with the EA hydrology Yorkshire team. This drought can be characterised as relatively short but of high intensity compared to previous recorded droughts. As a result, the onset of the exceptional shortage of rainfall was agreed to be February 2025. Although January 2025 has also seen lower than average rainfall in our North region (see figure 4), to be consistent with the assessment in our other regions, February 2025 will be the start of the period of analysis for all of our regions. The latest rainfall data up until the point of application has been used in this assessment representing a 7-month period from February to August 2025.

5.4 Geographical Extent of Analysis

- Provide justification for the catchment area used in the analysis, this may be one or several of the Environment Agency's hydrological areas, a bespoke catchment or water resources zone.
- Provide evidence of how the rainfall deficit is relevant to the catchment area of the public supply source or the wider integrated water resource zone/subunit of this zone.
- It is recommended that catchments should contain one or more Met Office registered rain gauge located within them.

The geographic extent of the analysis was agreed with the EA Hydrology Yorkshire team. We have used a bespoke area that covers all reservoir catchments that are included in the North group of permits. The catchments have been grouped into a single geographic extent shown in Figure 3. This group of reservoirs are the primary source of supply to our customers in the North region. The rainfall has been consistently low across this whole region and therefore there was no need to investigate individual areas separately. Yorkshire Water uses a grid system to balance supplies across the network, therefore the shortage of rainfall in this area is relatively uniformly felt across the Yorkshire Water supply zone.

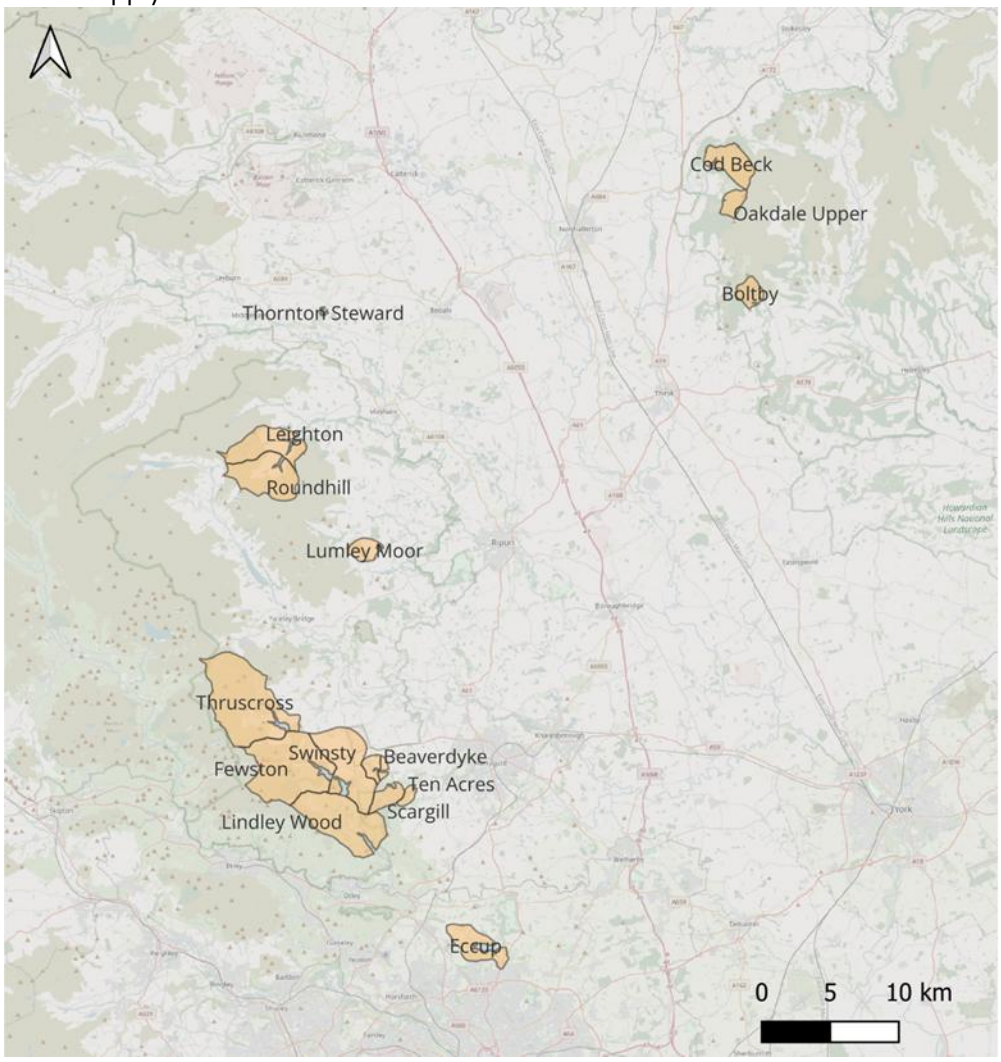


Figure 3: Geographic extent of the exceptional shortage of rain analysis

5.5 Technical Rainfall Analysis

- Refer to the Environment Agency's supplementary guidance on drought permits and drought orders, available on request from Water-company-plan@environment-agency.gov.uk
- Use the same rainfall dataset (usually HadUK/DRT) for each analysis method (asset out in the sections above) and the same historic period of record (from 1871)
- 1961 to 1990 should currently be used as the period of record for Long Term Averages (LTA) assessment (this is planned to be updated to 1991 to 2020, and this document will be updated to reflect that)
- Use your assessment period of analysis for each method as your main evidence. If you use any shorter periods as supporting evidence (for example, the winter refill period), you must justify how these are relevant to the water resource situation
- Detail any limitations and uncertainties associated with the methodology, and the possible impacts on the results

Rainfall comparison with the LTA and historical droughts

Figure 4 shows the rainfall during December 2024 to August 2025 in comparison to the monthly long-term averages (LTA). The LTA was calculated using the new 1991-2020 standard period which was confirmed by the Environment Agency Hydrology Yorkshire team to be taken for the calculation of LTA. The rainfall is significantly below average for this time of year, with particularly low rainfall between February to April, and August. Although it can be seen that January 2025 has also seen below average rainfall, it is not part of the period of analysis adopted by Yorkshire Water for two reasons: (1) Yorkshire Water uses a grid system to balance supplies across the network, therefore the shortage of rainfall in the entire area is relatively uniformly felt across the Yorkshire Water supply zone; and (2) In order to be consistent in the assessment of ESoR with other regions (where January 2025 did not have below average rainfall), February 2025 will be the start of the period of analysis.

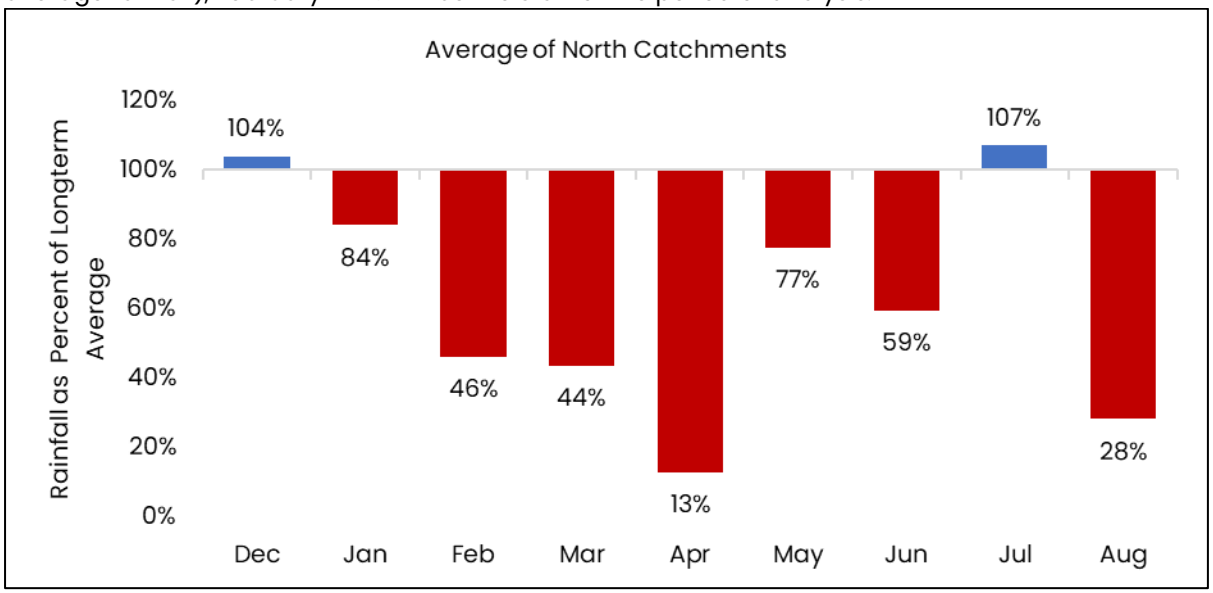


Figure 4: Rainfall compared to long-term average

Figure 5 Shows the cumulative rainfall starting from the end of January for the analysis period in comparison with the LTA and the two most significant recent droughts (2022 and 1995). Rainfall from 2020 is also included as the year was characterised by very low rainfall in the springtime. The rainfall for this period is notably lower than all the historic droughts and LTA.

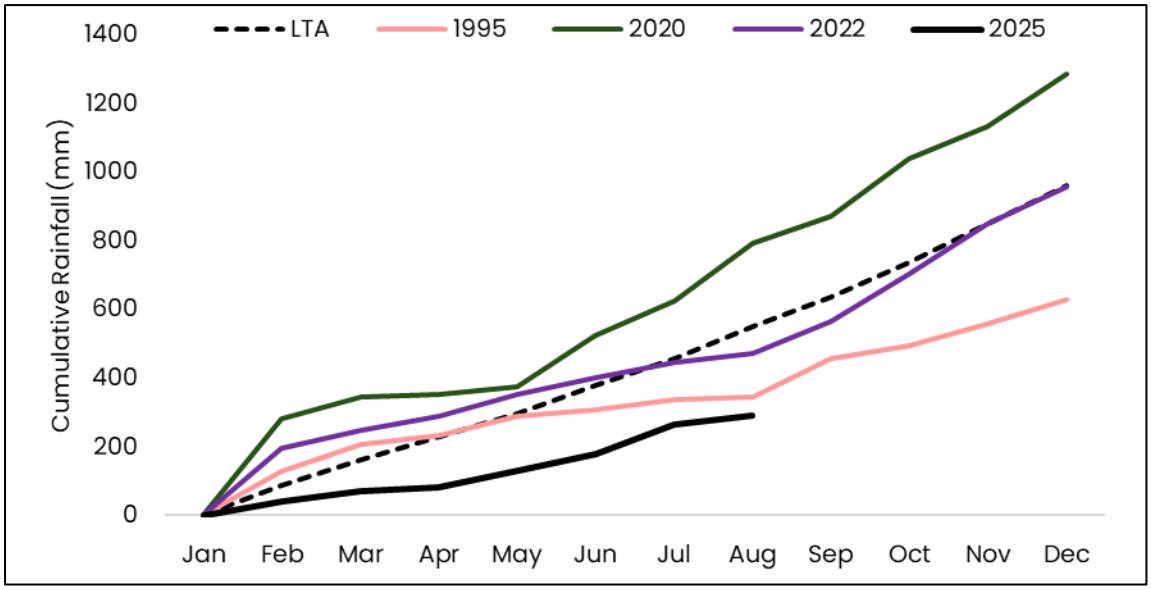


Figure 5: Cumulative rainfall plotted against previous droughts and long-term average

Standardised Precipitation Index (SPI)

The Standardised Precipitation Index (SPI) values can be interpreted as the number of standard deviations by which the observed anomaly deviates from the long-term mean. The SPI can be calculated for differing periods using monthly input data. We have calculated the SPI for all the monthly rainfall data listed in Figure 6 for a 1-month, 3-month and 7-month duration (i.e., 1-, 3-, and 7-months window respectively leading to the month shown in the first column). According to the index categorisation, the 7-months from February to August are extremely dry, along with the 7-months leading up to July. The lowest index is associated with a three-month period leading up to April 2025.

SPI of 2025 rainfall for the North Catchment			
2025	**SPI - 1month**	**SPI - 3month**	**SPI - 7month**
February	-0.849	-0.311	-0.623
March	-1.285	-1.474	-0.537
April	-2.441	-2.828	-1.744
May	-0.343	-2.374	-1.833
June	-0.312	-1.847	-1.610
July	0.280	-0.443	-2.027
August	-1.937	-1.087	-2.684

SPI Category:						
Extremely Wet **(≥ 2.0)**	Severely Wet **(1.5 → 2.0)**	Moderately Wet **(1.0 → 1.5)**	Near Normal **(1.0 → -1.0)**	Moderately Dry **(-1.0 → -1.5)**	Severely Dry **(-1.5 → -2.0)**	Extremely Dry **(≤ -2.0)**

Figure 6: SPI values across the period of analysis

Rainfall Ranking

The ranking of the rainfall periods compared to the historic dataset is shown in Figure 7. Different periods preceding the period of analysis are presented up to twelve-month durations. For example, the accumulated rainfall for the 11 months leading up to February 2025 was the 71st driest on record. The Cunnane probability ranking has been calculated for each duration and the rankings are shaded accordingly. The 7-month period between February to August 2025 is the 2nd driest on record and classified as exceptionally low rainfall according to the Cunnane probability ranking. The 5- to 11-month periods preceding August 2025 are all in the top five driest periods on record.

Rank of 2025 rainfall in period since 1871

North 2025		Duration (months)											
		1	2	3	4	5	6	7	8	9	10	11	12
End Month	Feb	28	34	57	33	30	69	41	40	36	54	71	85
	Mar	17	9	10	38	19	17	52	23	27	27	40	60
	April	1	3	2	2	10	6	5	27	16	13	13	31
	May	57	7	1	2	2	6	6	5	22	15	12	10
	June	57	37	7	4	4	3	7	6	4	17	15	11
	July	90	70	51	12	6	4	4	15	8	7	21	15
	August	7	27	19	17	4	3	2	3	4	3	3	14

Cunnane Probability Ranking:

Exceptionally high (> 0.95)	Notably high (0.87 → 0.95)	Above normal (0.721 → 0.869)	Normal (0.28 → 0.72)	Below normal (0.131 → 0.279)	Notably low (0.05 → 0.13)	Exceptionally low (< 0.05)

Figure 7: Ranking of the rainfall against historic droughts

5.6 Supporting Information

The following section summarises non-rainfall analysis as supporting evidence.

Soil Moisture Deficit (MORECS)

We have used the Met Office Rainfall and Evaporation Calculation System (MORECS) to estimate Soil Moisture Deficit (SMD). Data from the MORECS database is much less granular than rainfall data being aggregated to 40 x 40km grids. This limits our ability to present data specifically for the geographic extent of the North region. As advised by the Environment Agency Hydrology Yorkshire team, we present data for grid square 92 and 93 which covers the largest extent of the North region. Figure 8 highlights the current trend in 2025 versus historical years dating back to 1993 as well as key droughts in this time. The SMD is currently significantly above the 90th percentile and 2022 drought year, whilst trending just below the 1995 drought year.

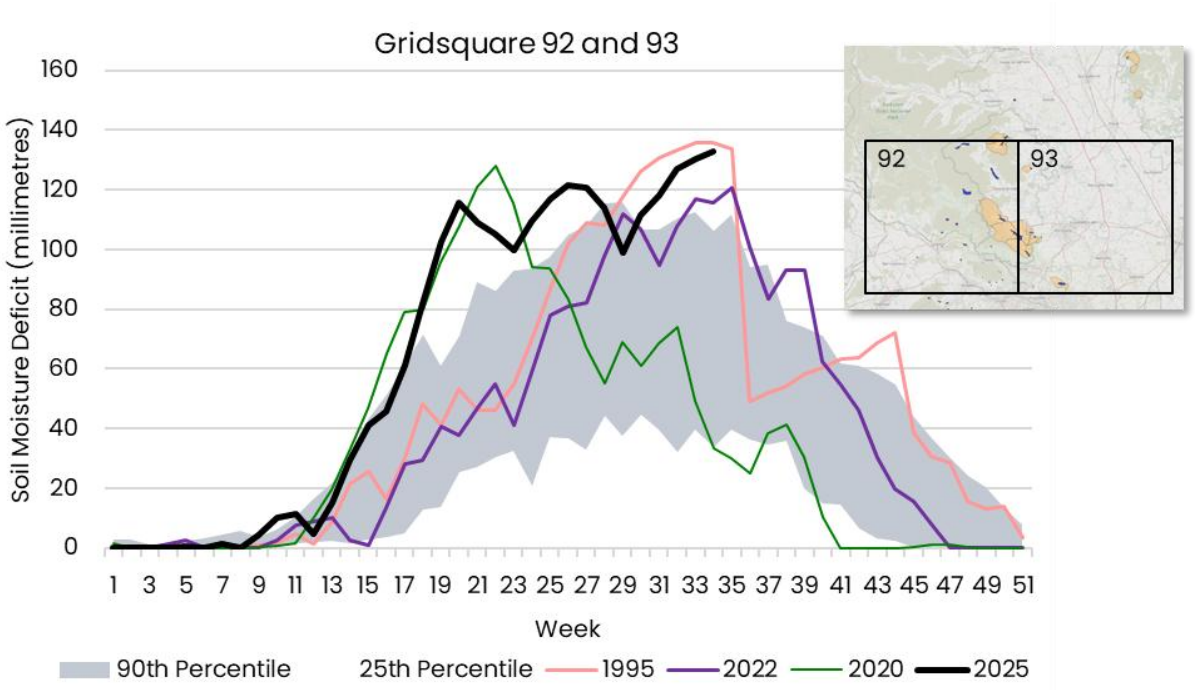


Figure 8: Grid square 92 and 93 soil moisture deficit compared to historic droughts and long-term average

Reservoir Levels

Figure 9 shows the reservoir levels in our North group; the levels are lower than any other year at this point in the year despite some recent rainfall. Reservoir levels were above 90% at the start of the year following a relatively wet autumn and winter of 2024. However, between March to June, the stocks declined steeply at a consistent rate of approximately 3% each week. The reservoir levels flatlined for a couple weeks at the end of May/early June following some rainfall and efforts to balance stocks across the Yorkshire Water region. However, they continued to decrease albeit at a reduced rate of just under 2% each week. Since the end of July, the stocks dropped sharply as the dry weather returned. The reservoir levels show that the dry weather has impacted on the water stocks in the North region and it will require significant rainfall to increase supplies.

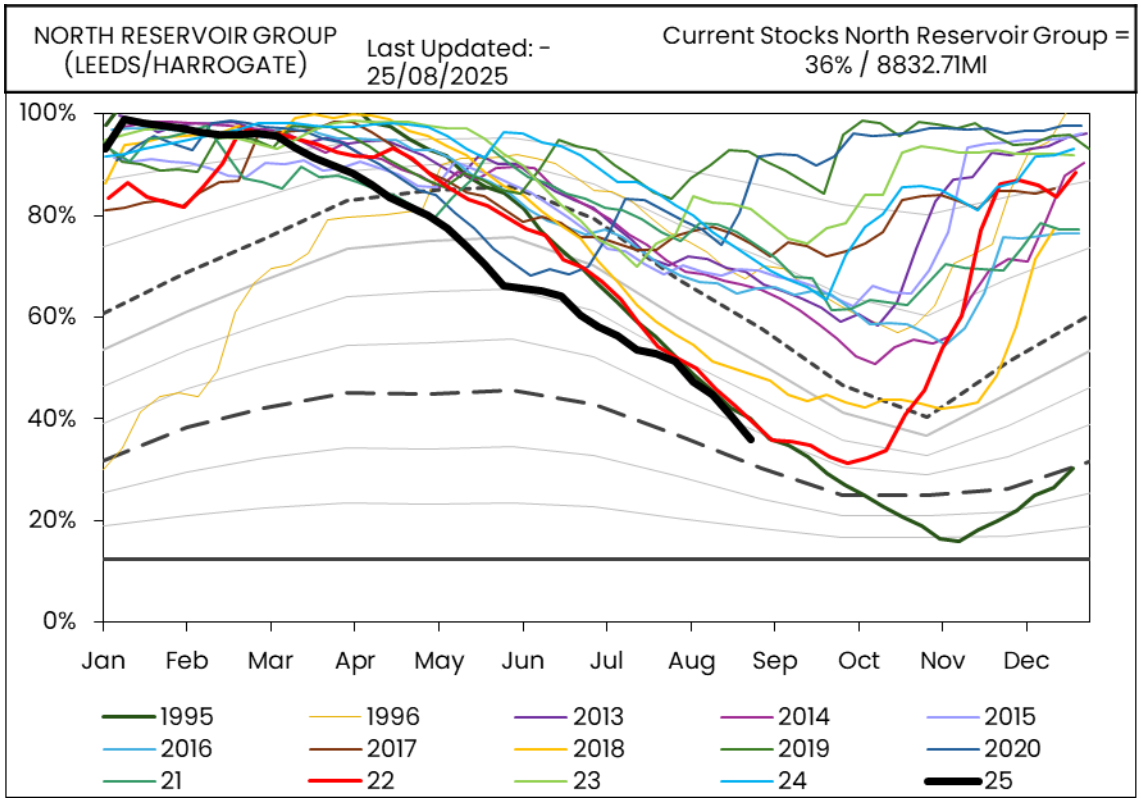


Figure 9: Reservoir levels of the North group

5.7 Summary and Conclusions

The spring and summer of 2025 has been exceptionally dry. Across our North region, the 7-month period to August was the 2nd driest since records began in 1871, and the 3-month period up to May was the driest. The SPI and ranking analyses indicate conditions were extremely or exceptionally dry across several durations within the analysis period.

The low rainfall so far in 2025 has been accompanied by periods of hot weather, and this combination of hot dry weather has resulted in high SMD values throughout the region. As a result, when there has been intermittent rainfall, it has not resulted in significant increases to the reservoir stocks which are currently at record low levels for this time of year.

The dry weather means we must be ready to take action to preserve reservoir stocks and maintain compensation flows for longer should there continue to be lower than average rainfall later in the year. If the exceptionally low rainfall continues (or even if there is below LTA rainfall during the autumn), our forecasting models predict extremely low reservoir levels and the need for further drought measures according to our drought plan.

6. Evidence Supporting Drought Plan has been followed

Our Drought Plan details a number of actions that we would follow when triggers are met. These can be found in Table 2.3 "Drought plan triggers and associated actions" of our Plan (https://www.yorkshirewater.com/media/ny5nq2vk/yorkshire-water_drought-plan-2022_final_public-april-2022.pdf). The triggers and actions are detailed in the subsections below.

6.1 Triggers

6.1a Trigger: Reservoirs crossed our normal control line

We meet customer demand through use of our licensed water resources, which include reservoir, river, and groundwater supplies. On average regional reservoir stocks fall below normal control line (NCL) for 12 weeks a year, this normally occurs between mid-April and June. When we are below NCL we balance raw water resources by reducing reservoir abstraction and increasing river abstraction, which helps to conserve reservoir stocks.

In 2025 regional reservoir stocks crossed the normal control line on 25th March 2025. As part of our proactive approach to dealing with dry weather we instigated our Bronze Company response early (on the 3rd April) to the developing dry weather situation.

In reaction to this our Water Resources Plan (WRAP) produced on 1st April increased grid production (river supplied water treatment works) to support our reservoir supplied water treatment works (WTWs) with treated water. We actively assess each area weekly and decide which area requires what volume of grid support to balance supply/resources. Each reservoir group and area grouping have different control lines, we use these control lines to effectively balance the drop in each area through use of our strategic raw and treated water links, with the aim to bring each group as close to yield as possible whilst managing the supply to customers.

We also maximised our river abstractions (where the river level allowed) on the Wharfe, Ouse and Ure to support the reservoir groups with raw water, this then allows us to balance the decline in groups through our strategic raw water network.

This strategy has significantly changed our water resources proportions. Average reservoir abstraction in Q1 (Jan-Mar) was 685Ml/d, this reduced to an average of 584Ml/d in Q2 (Apr-Jun). River abstraction has increased from a Q1 average of 437Ml/d to an average of 523Ml/d in Q2. When river levels have increased in Q2 we have been able to maximise abstraction, reducing reservoir use as close to minimum as possible. For example, higher river levels in the first 2 weeks of June allowed us to increase river abstraction to an average of 587Ml/d reducing reservoir abstraction to an average of 487Ml/d. We will continue to maximise river abstraction within licence constraints.

We have also increased leakage focus with the North by escalating a leakage hub, to enable us to minimise leakage and as a result reduce demand in the North area, with the team focusing on ensuring we prioritise any work to repair leaks within DMA and on trunk mains within the area as quickly as possible.

We have an 'always on' approach to water saving messaging, meaning we proactively push out messaging whatever the weather. Over winter, we've created 14.8m opportunities to see and hear our water saving messaging. All year, free water saving packs are available for customers to order through the Yorkshire Water website. In line with our Drought Plan, when we crossed our normal control line, we activated our dry weather communications plan to ensure we were communicating to customers the importance of saving water during dry weather.

6.1b Trigger: Reservoirs crossed Environment Agency Early Warning trigger line

Regional reservoir stocks reached the Environment Agency early warning trigger on 22nd April 2025 and we initiated weekly discussions with the EA at this time as per our Drought Plan. Taking a continued proactive approach to the situation we also instigated our Silver (escalating from Bronze) incident meetings in line with our Company Incident Management Plan on 22nd April. At this stage,

our region was not considered to be in drought but this trigger ensures we start implementing actions early to lessen the impacts if the situation worsens.

Following our regional reservoir stocks crossing the Environment Agency control line our operating strategy continued to be maximising river abstraction and minimising reservoir abstraction as outlined in Section 6.1a.

The prolonged dry weather coupled with multiple heatwaves has resulted in demand spikes with two peaks in April, one peak in May, two peaks in June, and another at the start of July. These demand peaks combined with persistent dry weather has resulted in higher average demand in April, May and June.

As outlined in sub-section 6.1a, river abstractions on the River Derwent, River Hull, River Wharfe, River Ouse and River Ure have been maximised, within licence constraints. River levels in April, May and June have been lower than average limiting abstraction on River Wharfe at Arthington, River Ouse at Moor Monkton and River Ure at Kilgram Bridge.

The abstractions from the River Ouse at Moor Monkton, the River Wharfe at Arthington and the River Ure at Kilgram Bridge have been used to pump water to storage in reservoirs in the North; specifically, Eccup Reservoir, Leighton Reservoir and Thornton Steward Reservoir. The abstraction from the River Wharfe at Arthington has also been used to pump water to support the compensation flow from Lindley Wood Reservoir.

We have continued the leakage focus on the North including proactive targeted leakage detection on upstream trunk mains to ensure we are on top of any leakage on our trunk main system. DMA focus groups in place identify any areas above our minimum leakage levels, which then allows a targeted approach to locating leaks in specific areas within the North, again with the aim to minimise leakage, demand and therefore abstraction from the North reservoir group.

Following our Drought Plan, we also enhanced our water conservation activities. We pushed our water saving messages via a range of media and started communications with key stakeholders such as political stakeholders, inset appointees, retailers and new appointments and variations (NAVs).

As this stage we liaised with the EA over the onset of drought walkovers and preliminary permit/order preparation (including in-river works permits where required). It was agreed that a series of walkovers would be carried out to validate and cross reference data collected in 2022.

As part of our Drought Plan, we also sent out letters and emails to our key downstream abstractors and stakeholders to notify them of our dry weather escalation plans and invited them to contact us should they have any concerns or wished to report any signs of environmental stress.

6.1c Trigger: Reservoir stock predicted to cross the drought control line

The next trigger is when regional stocks are predicted to cross the drought control line. During dry periods we model reservoir stocks against forecasts of a repeat of previous droughts in our region. Modelling was carried out at the start of April; this predicted a risk of reservoir stocks crossing drought control line on 1st September if we had a repeat of the 1995/96 rainfall. Rainfall in April and May has been less than in the same period in 1995. The most recent modelling carried out predicted a risk of reservoir stocks crossing the drought control line on 9th November under the 1995/96 scenario in the North area. Due to the earlier modelling forecasts we escalated to Gold on 12th May.

Throughout all this time, we have continued liaising with the Environment Agency on a weekly basis to discuss triggers reached and actions that we have been carrying out. Alongside this, we continued the preparation of environmental assessment reports and permit/order applications and also approached Natural England to ensure they were aware of the situation although there are no

designated sites under the Conservation of Habitats and Species regulations 2017 as amended or Wildlife and Countryside Act which could be impacted by our North drought permits.

Operationally we took the decision to start implementing the actions triggered by stocks crossing the drought control line earlier than the trigger date. These actions have been outlined in previous sections but are also summarised below:

- Increasing abstraction from the River Ouse at Moor Monkton to transfer water to Eccup Reservoir. This abstraction has increased from the normal flow of 64Ml/d in Q1 (Jan-Mar) to an average flow of 95Ml/d in Q2 (Apr-Jun) with daily peaks of 127Ml/d during higher river flows.
- Increased abstraction from the River Wharfe at Arthington pumping water to Eccup Reservoir and to Lindley Wood Reservoir. This abstraction was not used in in Q1 (Jan-Mar) the average was 8Ml/d in Q2 (Apr-Jun) with daily peaks of 51Ml/d during higher river flows.
- Increased abstraction from the River Ure at Kilgram Bridge to transfer water to both Leighton and Thornton Steward Reservoirs. This abstraction has increased from an average flow of 7Ml/d in Q1 (Jan-Mar) to an average flow of 15Ml/d in Q2 (Apr-Jun) with daily peaks of 42Ml/d during higher river flows.

In addition to operational changes made we also preparing for TUBs with the following actions:

- This included recreating communication assets such as adverts and notices as well as identifying where they would be best placed to notify customers so they were ready in advance of the announcement that we would be implementing TUBs.
- Reviewing all our in house standard operating procedures for contacts relating to TUBs as well as refreshing all upskill material
- Producing FAQs to support with the management of customer interactions, with clear information given around the environmental impacts and the need for this action.
- Forecast modelling to understand potential increase in customer contacts, so that we're able to effectively resource to support any surge in demand across all our contact centre.
- Setting up of a dedicated TUBs line to direct customers to the right support. As well as increasing our social media opening hours, after reviewing historic data, to better support customers.
- Call to All across the business to pledge support for customer support activity; taking contacts, supporting at water saving events or during operational incidents across the summer, with appropriate upskills in place to support colleagues.
- As part of our Drought Plan, we also enacted a plan for enhanced leakage detection through multiple methods in risk areas, that is, increase find and fix, lift and shift logger deployment for generating points of interest. We also directed focus on 'unaccounted for water' in areas with maintained high demand, but in which reported leakage had reduced beyond the levels of which demand had reduced. We switched to targeted detection of unmetered areas, that is, upstream mains with limited metering, and in areas where meters had failed.

We uplifted our water saving campaign and increased our spend on advertising. Our messages changed from green to amber week commencing 5th May and we introduced our TV advert on 17th May which features red messaging. We held weekly broadcast media interviews to keep customers up to date on our water resources position and explained how they could help play their part in reducing water usage. We ramped up the social media posts across our channels (Instagram, Facebook, X and LinkedIn) to increase the reach of our campaign. We supplemented bills and letters with water saving leaflets, sent text messages to hotspot areas of customers, and sent an email to our customers who have an online account with us. Alongside all this, we provided weekly updates to stakeholders including MPs, local authorities, eNGOs, retailers and NAVs.

Yorkshire Water moved to impose a Temporary Use Ban on all customers on 11th July. This was widely publicised through the advertising, mainstream media, social media and explained on the Yorkshire Water website. We also provided a dedicated phoneline for customers to get in touch with us if they had any queries.

As part of our ongoing planning, we have carried out an appraisal for a demand side drought order to restrict non-essential use (NEUB). We have considered the UKWIR 2023 Drought Code of Practice on Water Use restrictions and the UKWIR 2025 project on 'Assessing the Costs and Benefits of Non Essential Use Bans – A Feasibility Study', alongside identifying exceptions and FAQs. We have also been working with other water companies to understand best practice. We have developed our communications approach and undertaken a cost-benefit assessment. We are continually reviewing the status of our resources and future rainfall scenarios to determine if a NEUB is beneficial.

Yorkshire Water commenced pre-application discussions with the EA, and proactively submitted documentation early for EA review to ensure delays would be mitigated should permit applications need to be formally submitted.

6.2 Operational Practice Changes

Normal operating practice in the North area is to keep river abstractions at a low level and maximise reservoir supplies. From April we have sought to reduce all reservoir abstractions as close to yield as possible by increasing river abstractions when river levels allow. The North is a key in our raw water Network between the rivers in the North and East and our reservoirs in the North West. This increased river abstraction is used to pump to storage in the North and to allow increased raw water transfer to the North West as required to balance reservoir stocks across the region.

The River abstractions on the River Ouse, River Wharfe and River Ure have increased from an average of 71Ml/d in Q1 (Jan-Mar) to and average of 106Ml/d in April, 91Ml/d in May, 155Ml/d in June with daily peaks of 220Ml/d when all rivers are at higher levels. This increased river abstraction has meant we have been able to reduce reservoir abstraction and also transfer raw water to the North West to balance stocks.
Our Drought Plan includes long term options that we will consider if the drought continues into 2026. These options will provide additional resources for public supply and will only be implemented if there is a risk that our current available resources will not be able to meet demand if the drought continues.

The decision to implement long term options will be dependent on the severity of the situation and scenario modelling to assess the potential risk. The trigger in our Drought Plan is to review the need for long term options if we are six weeks away from our regional drought control line in the second year of a drought. We are currently reviewing the scope of the long-term options and the timescales for delivery. If we were approaching the trigger for implementing long term options, this information will help determine which long-term options we should implement if required.

In line with our drought planning process, once the situation recovers, we will carry out a full review of our drought triggers and actions and their impacts. We will produce a "lessons learnt report" within six months of the situation returning to normal. This will include a review of operations and any opportunities to operate differently to improve our resilience to future droughts.

6.3 Conserving Supplies

Since crossing the NCL in March 2025 we have Increased our leakage activity within in DMAs and on trunk mains in the North. As per section 9.1, average weekly leakage has reduced by 3.5Ml/d since March 2025. We will continue with the increased leakage focus in this area with the aim to drive leakage as low as possible, reducing demand and as a result abstraction from the reservoirs in the North.

Actions carried out in section 6.2 will reduce abstraction from the North reservoir group conserving customer supplies where possible.

7. Customer Engagement

Our Communications Team activated our dry weather communications plan in early April to explain to our customers about why it is important to save water during dry weather. As part of our dry weather plan, we have a RAG approach to messaging which allows us to be flexible with our campaign and target the messaging so it lands with our customers. We started our 'green' adverts in early April across radio, paid social media, digital and out of home. Alongside the advertising campaign, we communicated with our stakeholders, colleagues, retailers and NAVs to encourage them to share our water saving messaging as well as raising awareness of the developing drought situation, provided an update on water resources and promoted customer side leak reduction advice. This was in addition to media and organic social media activity to support our key messages.

As the dry weather escalated, our messaging switched to 'amber' on 5th May. This was enhanced with a significant uplift in advertising spend. We have fortnightly updates for stakeholders, retailers, NAVs, Local Resilience Forums (LRFs) and river health partners. We also have undertaken a number of broadcast interviews with media, as well as utilising as many touchpoints as possible to remind customers about the importance of saving water, including our website homepage, the hold message on our customer helpline, customer letters and text messages to customers in hotspot areas. We have customer events taking place between May and August to talk to customers face to face about the importance of saving water. Our 'red' messaging was live from 17th May with our TV advert being shown. We are sharing our reservoir levels with customers on a weekly basis on social media so they can see the impact the continued dry weather is having. We will continue to raise awareness of our key messages to help customers understand why they need to use water carefully at this time of the year and provide them with behavioural nudges to make changes.

The weather (temperature and rainfall) has a particularly strong relationship with customer demand making it hard to prove any changes in demand is directly linked to communication campaigns.

Based on a few sources of information, there are some estimates available for assumed demand reduction from communications activity including London Economics' White Paper 2018 and UKWIR's 'Review of 2022 Drought Demand Management Measures – Main Report'. The London Economic White Paper states a range of measured effects of 'messaging' between 1 and 4.8% in the short term. The UKWIR review of the demand drought measures in 2022 concluded that quantitative effect of communication campaigns is difficult to determine analytically because the nature of campaigns is more subtle than TUBs (which have a clear on – off nature) and the campaigns are delivered in a continuous manner from 'background activity' to more 'explicit calls for restraint via a diverse range of media'. The UKWIR study concluded that extensive modelling undertaken did show a reduction in consumption of an average of 0.58%. However, it was noted that 'however the standard deviation of these savings is 1.14%, indicating that this result is small and highly uncertain'.

When we announced TUBs, we utilised all our communication channels to let customers know about the upcoming restrictions. These included all our advertising channels, substantive information on our website detailing the restrictions, legal notices, social media, traditional media including over 10 broadcast interviews taking place, an email to customers, updating our marketing channels, stakeholder updates and briefings, as well a detailed webinar with NAVs.

8. Implementation of TUBS

In our drought plan TUBs need to be in place before a drought permit or order application is made between the 1 April and 1 October. TUBs also need to be in place long enough to show if they have had a measurable impact on our demand. Throughout spring, we have continually modelled and monitored our water resources situation, including estimates of the projected dates that temporary use bans (TUBs) and drought permit triggers could be crossed.

The potential threat to water supplies is a direct result of the weather conditions throughout February to May 2025. The threat will occur if the conditions continue to be dry, or if we experience a prolonged period of high demand. We have acted in line with our drought plan triggers, preparing for TUBs in the spring when models suggested they would be required, and implemented TUBs, in line with our drought plan and model forecasts on 11-Jul.

We are using several ways of tracking the impact of the TUB on demand reduction, we have an unmeasured household sample known as the Domestic Consumption Monitor (DCM) and measured household consumption from our newly deployed Advanced Metering Infrastructure (AMI) smart meters that provide more real-time data that can be used to track the impact.

Both data sets can be used to determine the saving from implementing a TUB for both unmeasured and measured households and will enable us to identify if the impact varies dependent on how the customer is billed.

The customers on the DCM sample, circa 1000 unmeasured customers, still pay a ratable value bill but have had a meter installed so we can obtain consumption data which is then scaled to represent total unmeasured household consumption in Yorkshire used in our per capita consumption (PCC) calculations.

Figure 10 below shows the comparison of the total daily average consumption, the predicted consumption based on the temperature and rainfall and the normalised consumption that is actual consumption adjusted to remove the weather effect and weekends. These trends have been calculated from the metered customers on the DCM sample who still pay on a ratable value. There are also details of the pre and post average consumption for this sample which can be used to understand the impact of the TUB on demand reduction.

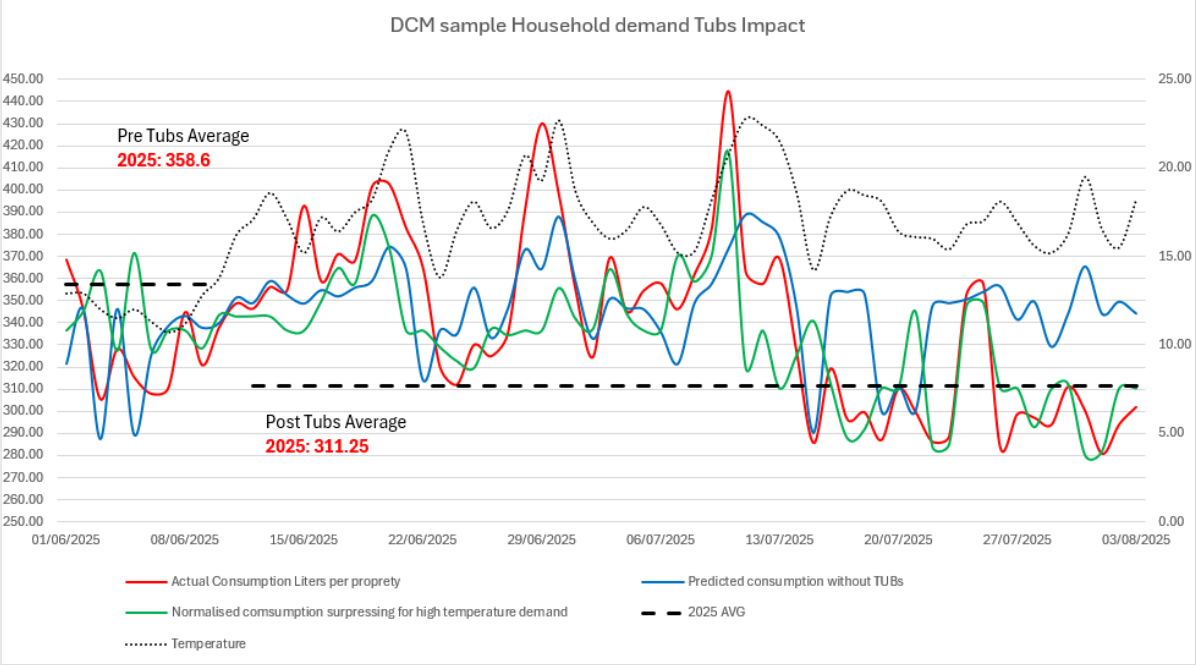


Figure 1: Profile of unmeasured per household consumption (PHC) from the domestic consumption monitor pre and post implementation of the TUBs restriction

You can see from Figure 10 that unmeasured household daily consumption from the DCM sample shows that the pre-TUBs average PHC consumption was 358.6 l/day per property and since implementation of the TUB, average PHC consumption has dropped by 47.35 l/day per property to 311.25 l/day per property.

In addition to the DCM sample, we commence our AMI installation on Yorkshire Water customers in 2024 and all new developments and DMO customers received an AMI meter. The AMI sample includes circa 120,000 customers where we have deployed smart meters across Yorkshire to date which transmit daily data and enables us to notify customers of continuous flows to help reduce leakage and provides granular consumption data that can be used to understand when and how much water our customers use each day.

Figure 11 below shows the comparison of the total daily average consumption, the predicted consumption based on the temperature and rainfall and the normalised consumption that is actual consumption adjusted to remove the weather effect and weekends. These trends have been calculated from the AMI metered customers. There are also details of the pre and post average consumption for this sample which can be used to understand the impact of the TUB on demand reduction.

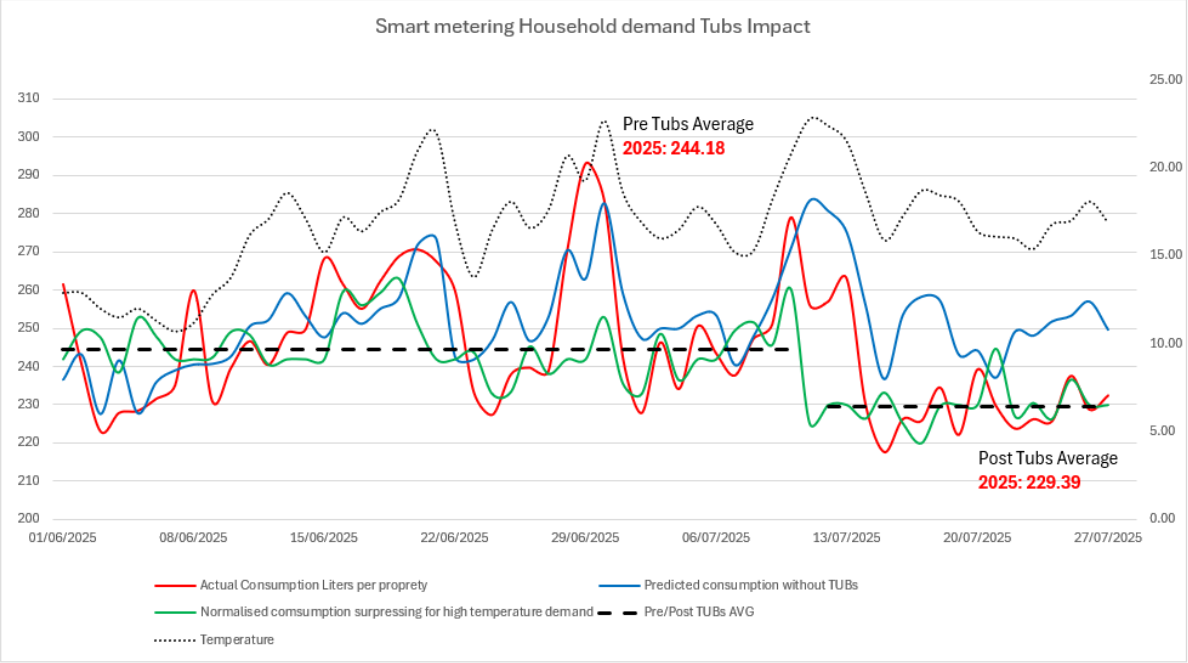


Figure 2: Profile of measured household consumption from all AMIs in June and July 2025 to see the impact of the temporary use restriction

The metered household consumption from the AMI data in Figure 11 shows that the pre-TUBs average PHC consumption was 244.18 l/d per property and since implementation of the TUB average PHC consumption has dropped by 14.79 l/d per property to 229.39 l/d per property.

In addition to these two methods, we have also reviewed regional daily demand both as a daily average and across the diurnal demand profile. Both these methods to can be used to determine the saving from implementing a TUB, helping us assess the impact at a regional level.

Figure 11 shows the diurnal demand profile for a sample of 25% of Yorkshire Water's supply aggregated to create a regional demand total on 11th July (1st day TUB was in force) compared to 20th June. The weather conditions on both days were very similar with very high temperatures, no rainfall and both were Fridays when the demand profile is slightly different to other weekdays.

Figure 11 clearly shows the reduction in use during the day with a significant reduction in evening demand. This reduction equates to 78Ml/d or a 5.5% reduction in total demand. The reduction when leakage and commercial demand is removed from total demand shows an approximately 10% reduction in domestic demand.

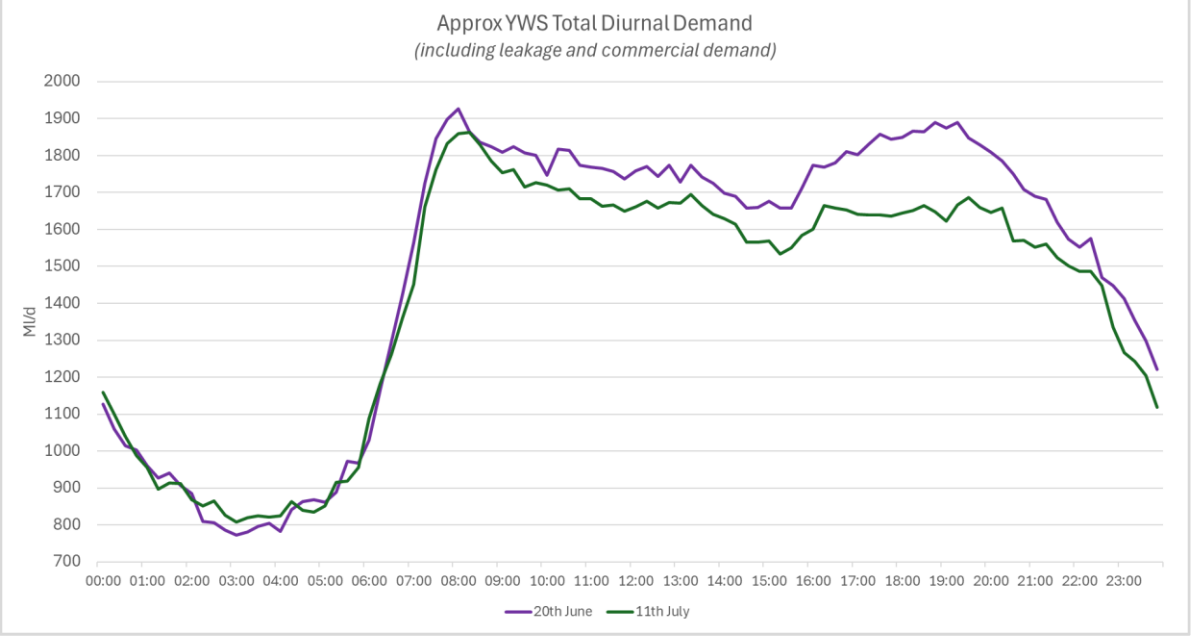


Figure 3: Profile of YWS approximate total diurnal demand pre and post implementation of the temporary use restriction

Figure 12 below shows the daily demand before and after the implementation of the TUB. It compares the actual daily demand with the predicted demand based on weather conditions using June 2025 demands as the benchmark. Figure 12 shows a 5% reduction in demand in dry weather when temperatures were 25C or above. This reduction when leakage and commercial demand is accounted for is approximately 9%. The impact of the TUB reduced when the temperatures were lower was reduced to approximately 3% of total demand or 5% when leakage and commercial use

was accounted for. Interestingly a reduction was still seen on Tuesday 15th July when there was between 10-25mm of rainfall across the region.

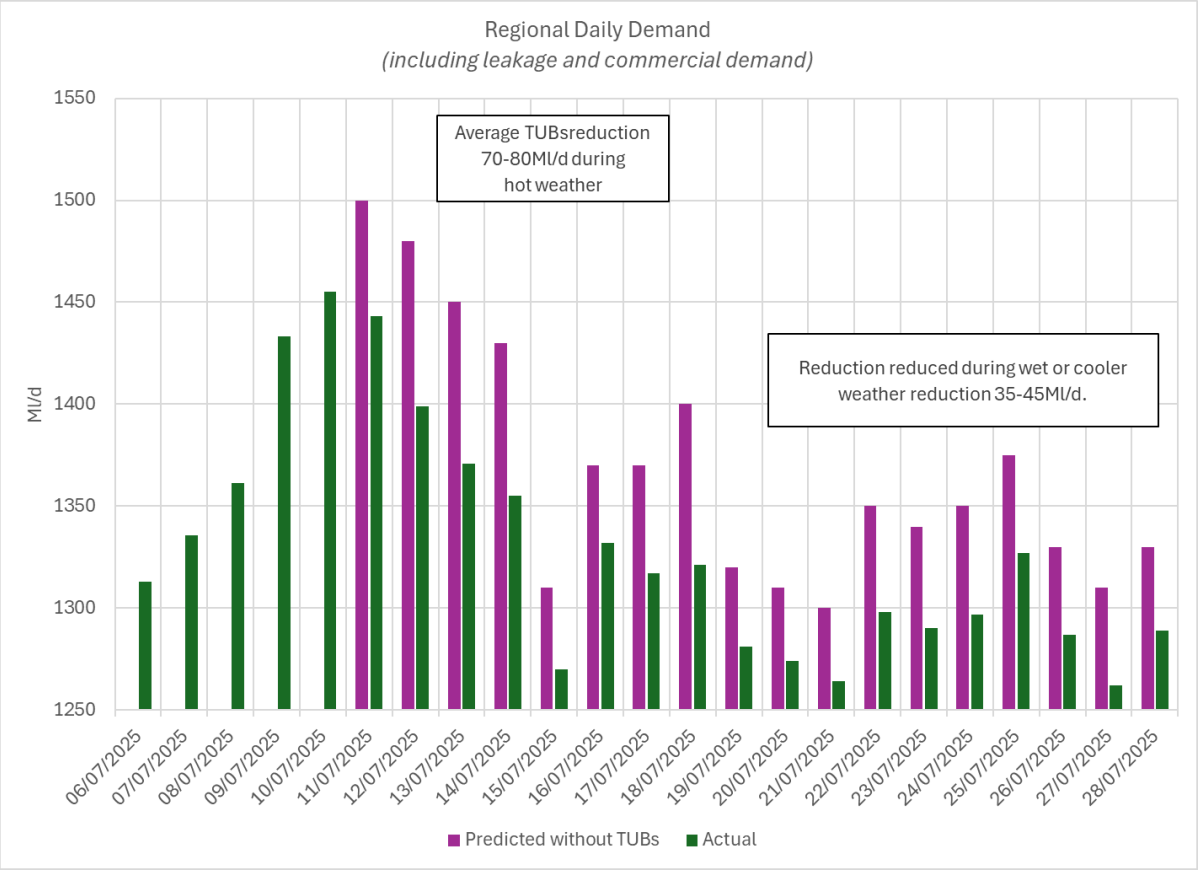


Figure 4: Regional daily demand including leakage and commercial demand actual verses predicted without a TUB

We can see from the evidence above that the introduction of the TUB, decreased temperatures and rainfall has resulted in a regional demand reduction in Yorkshire. There was an immediate and sustained reduction in demand following the intervention. Both the bottom-up (using available data for DCM and AMI samples) and top-down (regional DI) calculations align, showing a total impact of 62.43 Ml/d and 78 Ml/d respectively, which equates to approximately a 9% reduction in household demand. This suggests that the observed impact is largely driven by changes in household customer behaviour and the impact of the TUB on water consumption is more significant for unmetered customers compared to metered ones.

9. Enhanced Leakage Control

9.1 Leakage Reduction Figures

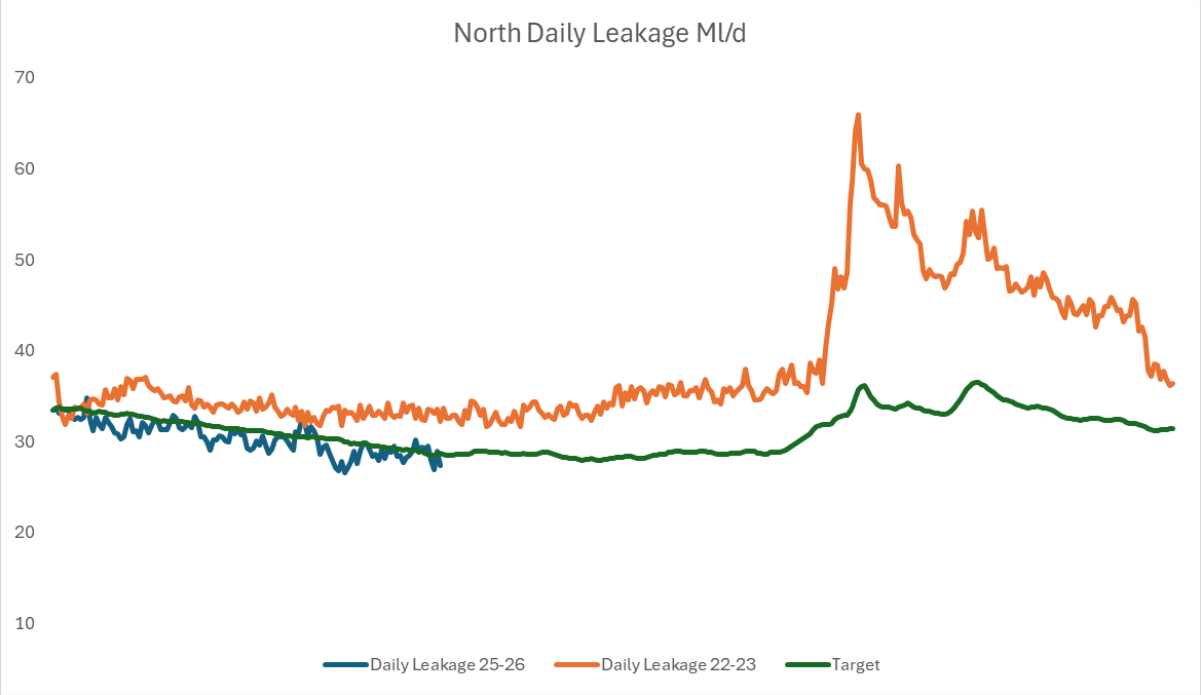
Leakage levels in the North Areas are low and stable. Leakage wasn't adversely impacted by the freeze thaw in January 2025 as significantly as the rest of the region, and where they were, these areas recovered quickly. Normalised leakage levels are significantly below average for this region.

The table below shows the reported leakage levels in the 3 areas that make up the North. Average weekly leakage has reduced by 3.5Ml/d from March 2025 to July 2025 and is at least 5Ml/d lower than

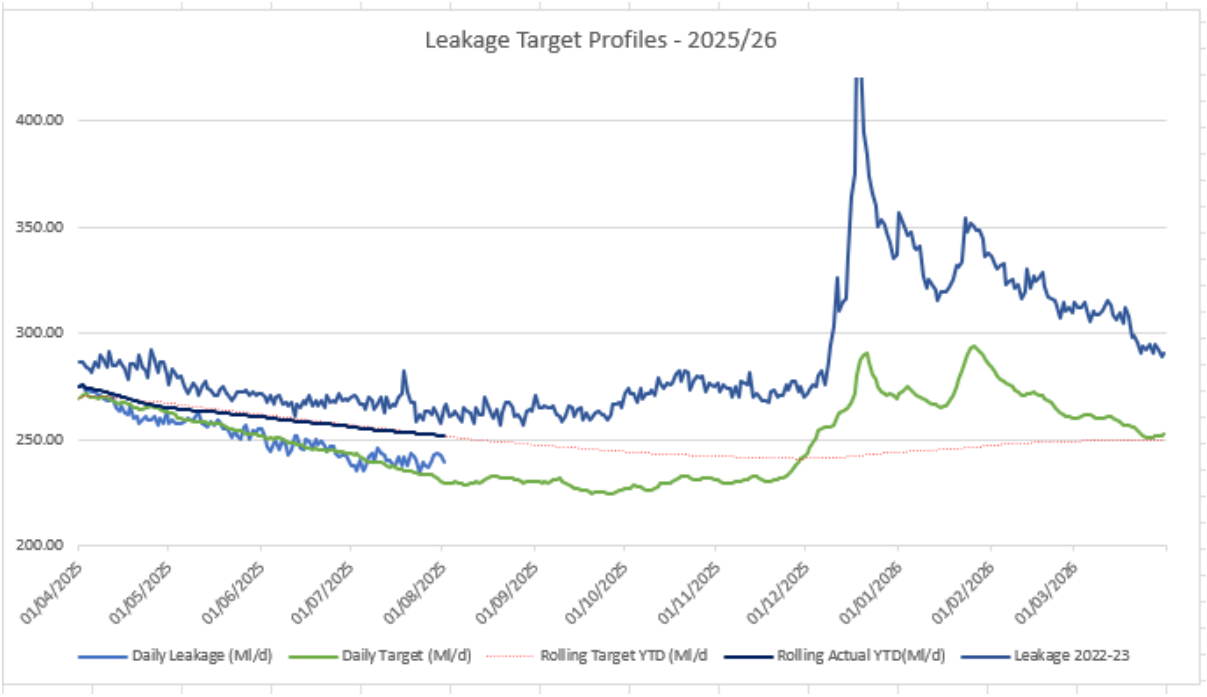
the same period of 2022-23. This was the last year dry weather year and is therefore being used as the reference point for leakage comparison.

Area	March 25 (Ml/d)	July 25 (Ml/d)	Reduction (Ml/d)	April – July 22
Leeds	20.64	18.48	2.16	22.26
Harrogate	5.25	4.72	0.53	4.78
Dales	6.96	6.09	0.87	7.19
Total	32.85	29.29	3.56	34.23

This graph below shows daily leakage performance in 2022-23, the current for 2025-26 and the target for this year. Leakage performance is strong in this area of Yorkshire, much lower than the levels of 2022-23 and is tracking just under its target reduction for this year.



Regionally, as shown in the graph below, leakage is over 20Ml/d lower than in 2022-23 and has reduced in line with target reduction for 2025-26. The annual reduction target for 25-26 is 9.5Ml/d. Regional weekly leakage has reduced by 32Ml/d from the first week of April to present position. 2022-23 was the last dry year and is therefore being used as the reference point for leakage comparison.



9.2 Resource Increases

Overall leakage resources across Yorkshire have increased by 100 full time equivalent (FTE) staff since April this year. The majority of these resources are part of teams which are regionally based, these include customer side leakage, nightwork teams, upstream teams and a team which lift and shift acoustic loggers. Since crossing the NCL we have been able to shift these resources from being spread evenly across the region based on levels of leakage to being focused on the areas where water resources are more stretched. We have started evening and weekend working to increase the volume of leak detection in the area. Additional activities over and above 'business as usual' (BAU) as summarised below.

Team	**Total house Overtime (up to 15th July)**
Upstream & Raw Water	245
DMA Leakage and CSL (North Teams and Leeds)	444
Logging	88.8
Total	**777.8**

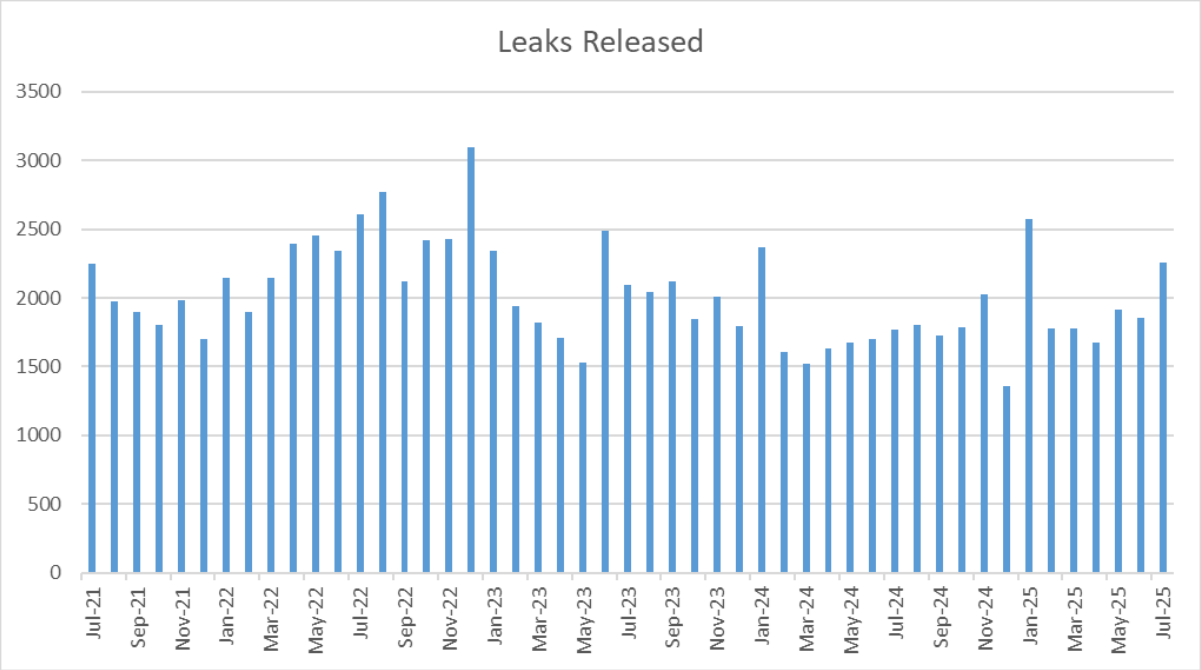
Upstream and Unaccounted for Water Investigations

- Targeted Upstream (trunk main) proactive leakage detection surveys in all impacted trunk mains systems. These areas have been prioritised whereas during previous years they would have only been surveyed as part of an annual cyclical survey.
- Proactive and targeted leakage detection surveys carried out by the Upstream Leakage Team in the small number of unmetered or non-reporting district metered areas (DMAs) within the North Water Supply systems.
- Service reservoirs, pumping stations and water treatment work sites have been proactively inspected for leakage. This includes overflows and assets within the site grounds such as valves, meters and hydrants.

Raw water investigations are being carried out in the region. This survey work involves physically walking the length of the raw water mains to check for visible losses as well as physical asset checks on all available fittings. Similarly to upstream (trunk main) leakage, this is an area that would have been surveyed as part of an annual cyclical survey, but given the current position, it has now been prioritised.

9.3 Find & Fix Rate

Promotion of leaks through to our R&M Service Partner M Group for repair is high for April – July; peaking in July with the highest promotion rate since our winter break out in January 2025. Promotion is c1500 jobs more between Feb to July 25, than between Feb to July 24. The graph below shows regional monthly promotion (not specific to North).



9.4 Underground Supply Pipe Leakages (USPL) & Fix Rates

- More than 3000 additional customer meters are being read weekly in the North areas to proactively generate more proven continuous flow (leaks) which are then prioritised for a fix via our Service Partner.
- Specialist customer side leakage technicians are also working additional hours on a weekend to attend high priority / high volume leaks on customer owned pipes. So far, since April we have worked an additional 82 hours in the North locating leaks in customers private pipes.
- We have identified or visited 640 commercial users in the North and Leeds with significant water consumption, for example, farms, industrial, schools, HMPs, hospitals with 'unusual' consumption profiles to confirm leaks and manage expectations to fix at the earliest opportunity. We are also visiting all our concessionary supplied properties.
- A recent recruitment drive has increased our team of specialist customer side leakage technicians by an additional 13 FTE this includes 3 FTE dedicated to the North and Leeds.

9.5 Public Awareness Campaigns on Leakage Reporting

We know customers rightly challenge our leakage performance particularly during dry weather so we made sure talking about Yorkshire Water's action was a clear part of our communications plan. We issued press releases and social media posts explaining the £16m investment Yorkshire Water is making into reducing leakage over the next year, including recruitment of additional leakage inspectors, alongside a call to action for customers to report any leaks they find to us as quickly as possible.

9.6 Leakage Performance Improvement Plans

We are continuing with the enhanced leakage reduction in the North, whilst not impacting on the region wide leakage reduction plan for Yorkshire. The additional focus areas have already been detailed in the various sections above, and include but not limited to:

- Operational leakage detection overtime – evenings and weekends
- Increase intensity of find and fix activity – promote and repair more
- 'Lift and Shift' logger deployment to generate point of Interest for leakage investigation
- Additional meter reads to identify leaks on customer props ahead of current meter read cycle
- Focus on abnormal demand at large non-household (NHH) customers
- Escalating optimisation schemes at DMA level, that is, meter replacement, DMA sizing etc
- Leak detection on raw water mains and investigation into any leaks at YW assets
- Pressure management solutions to reduce background leakage
- Resolving 'demand' - both consumption and leakage on concessionary supplies
- Continue with the strong performance on reducing leakage ahead of target in this area

10. Outage Management

10.1 Outage Data

As described in Section 6 we meet customer demand through use of our licensed water resources, which include reservoir, river, and groundwater supplies. In the N group when the level drops below Normal Control Line (NCL) in individual reservoirs or reservoir groups we reduce abstraction mainly by increasing river abstractions.

There have been no significant outages on the river abstractions on the River Wharfe at Arthington, River Ouse at Moor Monkton and the River Ure at Kilgram. However, the 2 heatwaves in June and the heatwave in July did cause some short-term issues at Moor Monkton pumping station due to exceptionally high temperatures in the building with all pumps running. On several occasions one pump would trip because of the high temperature and need to be reset with a visit to site. This reduced the abstraction for a few hours each time. The total volume of water 'missed' because of this flow reduction is approximately 90Ml. This is equivalent to approx. 0.25% of North reservoir stocks.

10.2 Sources Impacted by Outage

No significant outage impact.

10.3 Outage Impact

As stated in section 10.1 & 10.2, there has been no significant asset outage that has impacted reservoir stocks in the North area.

11. Copy of the notices and advertisements required under paragraph 1 of Schedule 8 to the WRA 1991

As required under paragraph 1 of Schedule 8 to the WRA 1991, written notice of the North Area Drought Permit applications will be sent to third parties with an interest in the sites. These include;

- Local authorities responsible for areas affected by the permit;
- Leighton Reservoir, Lindley Wood Reservoir, Thruscross Reservoir, Lumley Moor Reservoir and the Haverah Park Reservoirs are in the North Yorkshire Unitary Authority.
- Other abstractors operating in the areas affected by the permit.
- The North Yorkshire National Park.

Other stakeholders will also be informed:

- Local rivers trusts and wildlife groups.
- Local angling clubs in the areas affected by the permits if granted.
- Local wildlife sites.
- Fish farms in the area affected by the permits if granted.

The notice provides information on where the full application can be inspected free of charge for a period of eight days from the date the notice is served. A copy of the notice is provided in Appendix 2.

The notice will be advertised on 18 September 2025 in the Harrogate Advertiser, which is circulated in the areas potentially affected if the permits are granted. Notices will also be placed in the London Gazette, in accordance with Environment Agency guidance. If the applications are successful we will provide notice the permits have been granted in the same newspapers.

A Yorkshire Water webpage (www.yorkshirewater.com/drought-permits) has been created to provide information on drought permit applications, including copies of all supporting documents. Further permit application notices will be added on the dates we apply. The webpage includes information to explain why we are making the applications and a list of frequently asked questions.

12. Public Inspection Arrangements

Documents relating to the North Area drought permit applications have been made available, free of charge, for inspection by any interested parties from the date the notices are advertised in the Harrogate Advertiser and the London Gazette. The documents include a copy of the drought permit application and supporting information including environmental reports and were made available at the following locations for eight days staring on 18 September 2025

- Yorkshire Water, Western House, Halifax Road, Bradford, BD6 2SZ.
- Environment Agency, Lateral, 8 City Walk, Leeds, LS11 9AT.
- West Tanfield Post Office, The Village Shop, West Tanfield, Ripon, HG4 5JU (Leighton Reservoir).

- Otley Post Office, Nelson Street, Otley, LS21 1ST (Lindley Wood Reservoir).
- Darley Post Office, Playing Fields Pavillion, Station Road, Darley, Harrogate, HG3 2PZ (Beaver Dyke. Thuscross).
- Lark Lane Post Office, 32 Clotherholme Road, Ripon, North Yorkshire, HG4 2DQ (Lumley Moor Reservoir)

The post offices selected are within a reasonable distance of the reservoirs impacted by the drought permit applications, named in brackets. The supporting documents are available at the Yorkshire Water Head Office in Bradford. The Environment Agency guidelines state drought permits must be advertised at the water company's head office and the office most local to the relevant area. We have water treatment works nearby the permit application sites however, they are not suitable for public access and we are therefore only able to provide the information at our head office in Bradford, which can be accessed by the public.

13. Environmental Report

During the preparation of our Drought Plan 2022, a 'shelf copy' Environmental Assessment Report (EAR) was produced for each supply side drought option or group of options. The EAR provides an independent and robust assessment of the potential environmental effects of the implementation of our drought options.

The environmental assessment was conducted in accordance with Government regulations and using the Environment Agency's 2020 Drought Plan Guideline (DPG) and the Environment Agency's July 2020 'Environmental Assessment for Water Company Drought Plans- supplementary guidance', and comprised the following components:

- an assessment of the likely changes in hydrology (flow/level regime) due to implementing the proposed drought options;
- identification of the key environmental features that are sensitive to these changes and an assessment of the likely impacts on these features;
- identification of mitigation that may be required to prevent or reduce impacts on sensitive features; and recommendations for baseline, in-drought and post-drought order monitoring requirements.

The environmental assessment focuses on the potential changes to water availability (levels and flows) and any consequent implications for geomorphology, water quality, ecology, and other relevant environmental receptors, for example, landscape, navigation, recreation, and heritage. Cumulative impacts with other drought options are also considered.

The assessments undertaken confirm the features requiring consideration of monitoring and mitigation; which are provided in full in the Environmental Monitoring Plan (EMP).

Throughout the environmental assessment process, we have proactively engaged key stakeholders, including the Environment Agency and Natural England.

During the prolonged dry weather, dialogue was initiated with the Environment Agency and consultants were instructed to prepare 'application-ready' EARs and undertake the onset of drought walkovers. The application ready EAR, and EMP, are provided alongside this drought permit application, and have been updated in line with new DPG2025.

14. Other Options Considered

Alongside the leakage and demand management activities we have mentioned in sections 8 and 9 above, we are accelerating capital schemes and maintenance activity to minimise outage across the grid zone to maximise water availability, thus protect reservoir stocks.

If these permits are granted, we will be able to manage our system in a more resilient way. If these permits are not granted (or the decision to grant them occurs too late for us to manage supplies as if it were granted), we will have to operate according to the current licence conditions, and this may result in the overdrawing of reservoirs. We would also face the risk of entering winter with the reservoir stocks below the drought control line throughout the north area.

The Washburn Valley Group and the Leighton Group are of particular concern, with a significant risk that public water supply could be impacted due to current rate of decline and the requirement to support full compensation flows. Our modelling shows that in the 'updated extreme scenario' of 40% LTA rainfall in Sep and Oct then 60% LTA thereafter, the minimum level in both these groups falls below the groups' drought control lines. It is therefore critical that alongside the mitigation measures already undertaken these permits are granted to alleviate the risk to public water supply.

15. Consultees

15.1 Environment Agency

We initiated the formal dry-weather governance meetings with our local Environment Agency in April following reservoirs stocks crossing the Environment Agency early warning trigger line. We have continued to consult and engage weekly with the Environment Agency on the drought situation as it has escalated. We will continue to meet regularly until the situation recovers.

15.2 Natural England

Natural England were consulted throughout the process of writing our Drought Plan 2022. If there is potential for a proposed drought permit to impact on a designated area, we are required to consult Natural England prior to submitting the application. The environmental assessment of these drought options confirmed there would be no impacts on any designated sites by any of the drought options in the North area. However, NE were approached in May to ensure they were aware of the developing dry weather situation and have been provided with copies of the environmental assessment reports throughout the drought period. The results of the assessment can be found in the accompanying EAR.

15.3 Local Rivers Trust & Wildlife Trusts

The environmental assessment of these drought options confirmed there would be no impacts on any Local Wildlife Sites by any of the drought options in the North area. The results of the assessment can be found in the accompanying EAR.

15.4 Navigation Authority Consent

We do not require navigation authority's consent for the North Area drought permit applications.

15.5 Internal Drainage Board

We have notified the relevant Internal Drainage Boards of our intention to submit drought permit applications. We have been giving fortnightly updates to the IDB contacts since W/C 28th April about our water resources position.

15.6 Retailers

We have notified all active in-area NAVs on 24th April, and thereafter fortnightly, raising awareness of current water resource status developing drought and providing advice on water efficiency and customer side leak reduction. A meeting was held on 19th May with all NAVs and three other water companies (United Utilities, Southern Water and Severn Trent) to raise awareness of the drought situation and to drive closer co-ordination and collaboration of drought communications across water company areas.

A webinar was hosted on Friday 4th July providing advance notice of Yorkshire Water's intention to impose a TUB. Those who had returned a completed assurance statement had received a slide pack with all information relating to the TUB and timeframes along with detailed FAQs. Those who didn't attend the webinar have been contacted separately by phone or email with the same information.

15.7 NAVs

We have notified all active in-area new appointments and variations (NAVs) on 24th April, and thereafter fortnightly, raising awareness of current water resource status developing drought and providing advice on water efficiency and customer side leak reduction. A meeting was held on 19th May with all NAVs and three other water companies (United Utilities, Southern Water and Severn Trent) to raise awareness of the drought situation and to drive closer co-ordination and collaboration of drought communications across water company areas. A further preparation webinar was held with NAVS on 30th May, co-hosted by Yorkshire Water and United Utilities. Ongoing engagement with NAVs is now taking the form of a weekly update email to all NAV contract managers.

A webinar was hosted on 3rd July providing full updates to NAVs including our intention to impose a TUB. All NAVs have returned a completed assurance statement post webinar have received the slide pack, household FAQ document, a TUB information leaflet which can be dual branded, a copy of the legal notice we published along with the list of publications and a formal legal notice send to the Company Secretary for each respective NAV.

All active in-area NAVs have been included in the list of specified bodies who will receive a statutory notification letter.

15.8 Objections

No objections have been raised to date.

16 Appendices

Appendix 1: Copies of existing abstraction licences, statutory instrument or Local Acts governing the abstraction, or discharge of compensation water relating to the permit

Appendix 2: Copies of the notices and advertisements required under paragraph 1 of Schedule 8 to the WRA 1991.

Copies of both served and published notices should be sent as quickly as possible to the Environment Agency

Appendix 3: Draft Permits