Yorkshire Water Drought Permit Application

South 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
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Contents

1. Executive summary for drought permit application

An application is being made for a series of drought permits in YW's South Area to reduce compensation flows because of a very dry spring. 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 South Area includes seven reservoir groups which are located around Holmfirth, Sheffield, Barnsley and border the Peak District. These reservoirs supply water treatment works within the South Yorkshire 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 South Area of our grid network supplies a considerable area of South Yorkshire including Barnsley, Sheffield and Rotherham. The area includes seven reservoir groups. Not all of the reservoirs provide water for public water supply. The South Area can also receive supply from river sources in our region as it is connected to our grid system.

We are applying for drought permits to temporarily reduce compensation flows from the following impounding reservoirs (IREs) and to reduce one maintained flow in the South Area:

- Scout Dike Reservoir
- Underbank Reservoir
- More Hall Reservoir
- Damflask Reservoir
- Lower Rivelin Reservoir /Rivelin Depositing Pond
- Dunford Bridge maintained flow (Winscar and Lower Windleden reservoirs)
- Langsett Reservoir

Compensation releases are a requirement under acts of parliament or licence agreements we hold with the Environment Agency. The flow releases contribute to the flow regime of downstream rivers. We are applying for drought permits to conserve supplies to ensure continuation of public water supply and to help our reservoir stocks recover.

Langsett Reservoir was linked to Underbank Reservoir in the Drought Plan 2022 documentation. Since this has been published, Langsett has had an updated abstraction licence which has changed the associated compensation flow values for this site.

2.1 Location map

Figure 1 shows the reservoirs in the South Area of our grid network that will be impacted if the South Area drought permits are granted. The permits will allow compensation releases and a maintained flow to be temporarily reduced for the duration the permits are in place. The reservoirs are in the South

of Yorkshire and are located with Holmfirth to the north, Sheffield to the south and Barnsley to the east. To the west of the reservoirs is the Peak District National Park and the South Area Reservoirs are on the boundary of the park. They release compensation flows to the River Don and tributaries of the River Don.

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

Table 1 Reservoirs impacted by drought permits.

Reservoir Name	**Grid reference**	**Location description**	**Reservoir / Reservoir Group**
Scout Dike Reservoir	SE 23 04	North of the town of Penistone	Don Valley group
Winscar and Lower Windleden Reservoirs	SE 16 02	The west of Scout Dike	Winscar group
Underbank Reservoir Midhope Reservoir	SK 25 99 SK 22 99	Near the town of Stocksbridge	Little Don Valley group
Langsett Reservoir	SE 21 00	Near the town of Stocksbridge	Little Don Valley group
Damflask Reservoir	SK 28 90	Near the village of Low Bradfield	Loxley Valley group
More Hall Reservoir	SK 28 95	Near High Bradfield;	Ewden Valley group
Lower Rivelin Reservoir releasing to Rivelin Depositing Pond	SK 28 86	West of Sheffield	Rivelin group

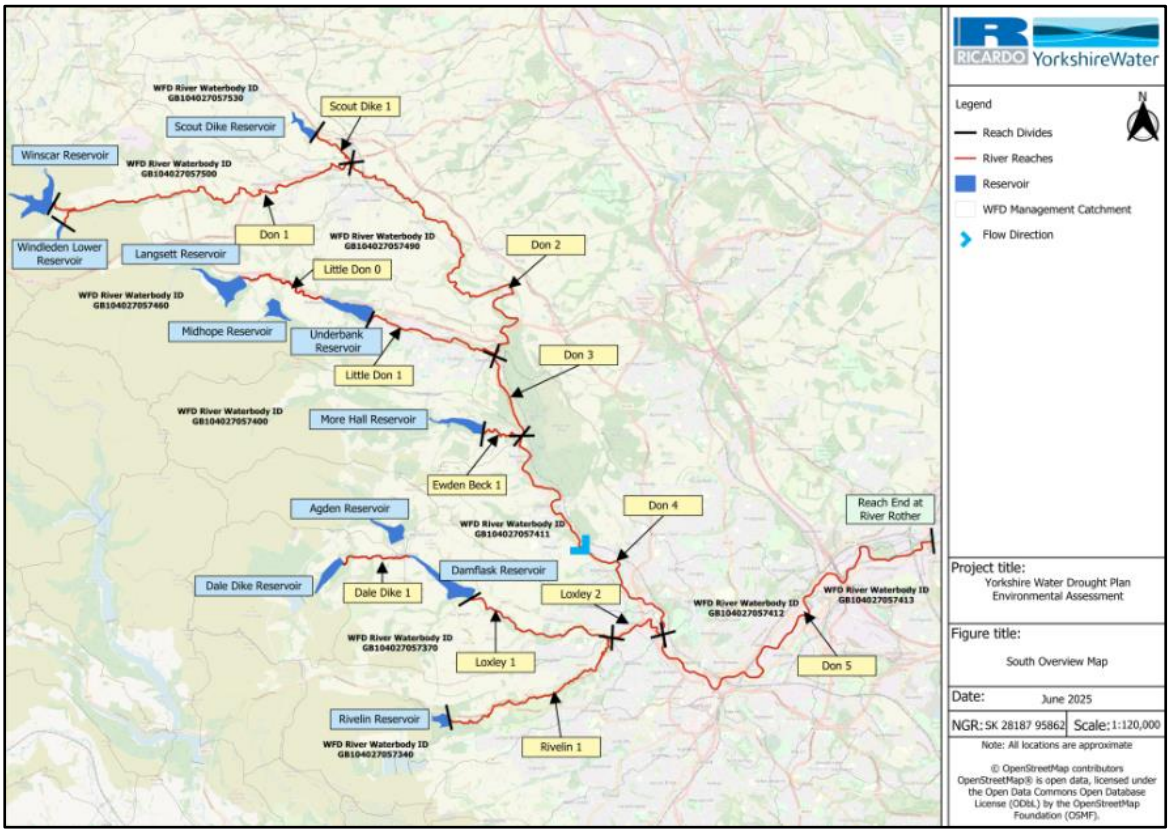


Figure 1: Map of the South Area drought permit sites

A brief description of each of the reservoirs and reservoir groups 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.

Winscar Group
The Winscar Group supplies Ingbirchworth and Langsett water treatment works (WTW) in Penistone and Stocksbridge. Winscar reservoir can also be used to supply Kirkhamgate water treatment works in the Wakefield area. The group comprises Winscar, Harden, Snailsden, Broadstones, Upper Windleden and Lower Windleden reservoirs.

Don Valley Group
The Don Valley Group supplies Ingbirchworth water treatment works in Penistone. The group comprises Royd Moor and Ingbirchworth supply reservoirs. Scout Dike reservoir provides compensation flow.

Little Don Valley Group
The Little Don Valley Group mainly supplies Langsett WTW in the Stocksbridge area. Raw water can be pumped to the Don Valley Group. The group comprises Langsett and Midhope reservoirs. Langsett and Underbank reservoir provide compensation flow.

Ewden Valley Group
The Ewden Valley Group supplies Ewden WTW in the Oughtibridge area. The group comprises Broomhead supply reservoir and More Hall reservoir provides compensation flow.

Loxley Group
The Loxley Group supplies Loxley WTW in the Loxley area. The group comprises Agden, Dale Dike and Strines supply reservoirs. Dale Dike and Damflask reservoirs provide a compensation flow.

Rivelin Group
The Rivelin Group supplies Rivelin WTW in the Stannington area. The group comprises Rivelin Upper and Lower reservoirs and Rivelin Depositing Pond. A compensation flow is measured at the Rivelin Depositing Pond.

Redmires Group
The Redmires Group supplies Rivelin WTW in the Stannington area. The group comprises Redmires Upper, Middle and Lower reservoirs.

2.2 Current abstraction licence conditions

The drought permit applications propose reductions in compensation releases from a series of reservoirs: Scout Dike; Underbank; Damflask, Langsett, More Hall, Rivelin Lower, Winscar and Lower Windleden impounding reservoirs.

The licences and downstream watercourses relating to the drought permit applications in the South Area are summarised below.

Scout Dike Reservoir under conditions defined by the Ingbirchworth Reservoir abstraction (licence number 2/27/05/012), releasing flow to compensation Scout Dike and the River Don.

Under Licence 2/27/5/152 compensation flows must be released from Winscar and Lower Windleden to meet a minimum flow over the gauging weir at Dunford Bridge. Since 2023, Yorkshire Water have

been trialling a new compensation flow regime (under a Local Enforcement Position (LEP) issued by the Environment Agency) with flows measured at Winscar Reservoir and Lower Windleden Reservoir.

Underbank Reservoir under coincident conditions defined by the abstraction licence for Langsett Reservoir (licence number 2/27/05/032) and the abstraction licence for Midhope Reservoir/Knoll Brook Intake (licence number 2/27/05/011), releasing flow to compensate the Little Don River and the River Don.

Langsett Reservoir under conditions defined in the Langsett abstraction licence (2/27/05/032) releasing flow to compensate the Porter River.

Damflask Reservoir under conditions defined by the Dale Dike Reservoir and Agden Reservoir abstraction licence (licence number 2/27/05/030), releasing flow to compensate the River Loxley and the River Don.

More Hall Reservoir under conditions defined by the Broomhead abstraction licence (licence number 2/27/05/031).

Rivelin Lower Reservoir via Rivelin Depositing Pond under the Rivelin Reservoirs and Redmires Reservoirs abstraction licence (licence number 2/27/05/029), releasing flow to compensate the River Rivelin and the River Don.

Yorkshire Water is currently operating within the terms and conditions of the licences listed above and meeting the legal requirements for compensating the downstream receiving watercourse for Winscar, Scout Dike, Underbank, Damflask, Langsett, More Hall and Rivelin impounding reservoirs. Copies of the licences referenced above are provided as part of our application. No additional water resource management arrangements are in place that would impact on the applications.

The bulk transfer we receive from Severn Trent Water is released into the Rivelin tunnel and transferred either directly to Rivelin WTW or to Lower Rivelin Reservoir then to Rivelin WTW. This transfer will not be impacted by the drought permit application to reduce compensation releases from Lower Rivelin Reservoir. Severn Trent Water is responsible for applying for drought permits relating to the Derwent Valley Reservoirs, if required. We are in frequent contact with Severn Trent Water, as both companies assess their risks and plan for continuation of dry weather.

The drought permit applications in the South Area propose to temporarily reduce the compensation releases from Scout Dike, Underbank, Langsett, Midhope, Damflask, More Hall, and Rivelin Lower, Winscar and Lower Windleden reservoirs. Table 2 gives the statutory volumes and the reduced volumes for the duration of the drought permits.

Further details on the drought permit applications are provided below. The reductions proposed relate to the water level (or stocks) in either individual reservoirs or the combined stocks of all the supply reservoirs we operate, referred to as “regional reservoir stocks”. If granted the permits will be in place for 6 months from the date of approval. 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 & Section 6.

Scout Dike Reservoir in our Don Valley Group (Royd Moor and Ingbirchworth supply reservoirs, grid reference SE 23 04)

The terms of the Ingbirchworth Reservoir abstraction licence state Yorkshire Water must release flow from Scout Dike Reservoir to compensate the downstream receiving watercourses, Scout Dike and the River Don. Under the licence conditions, we must continuously discharge not less than 4.00 megalitres per day (Ml/d) when the reservoir level is above the control line defined in the licence, or 2.70 Ml/d when the reservoir level is below the control line.

The drought permit application for Scout Dike Reservoir is to reduce the compensation release required when the reservoir is at or below 25% of its capacity to 2.70 Ml/d then after two weeks to reduce to 1.35 Ml/d. If regional reservoir stocks are below the Regional Drought Control Line for more than four consecutive weeks, the compensation flow would reduce further to 0.89 Ml/d, as defined in the Yorkshire Water Drought Plan.

We are applying to reduce the compensation flow from Scout Dike Reservoir at higher control lines than defined in the Ingbirchworth Licence. The current control lines are very low, and we have noticed issues at Scout Dike in the past with poor water quality when reservoir stocks become this low (the control lines defined in the licence to reduce the compensation flows are at 12% at some times of year). We have a scheme in our 'Asset Management Plan' for 2025 to 2030 to investigate and revise the control lines to a more appropriate value flow regime, but for this permit application we wish to use a threshold of 25% to avoid any water quality issues as much as possible.

Winscar Reservoir and Lower Windleden Reservoir supporting the maintained flow at Dunford Bridge (grid reference SE 16 02)

Under the terms of the Winscar Reservoir Impoundment Licence 2/27/05/152 Yorkshire Water had to meet a maintained flow at Dunford Bridge weir of 9.09 Ml/d (November to April) and 11.82 Ml/d (May to October). In AMP7 a WINEP scheme (7YW100091) under a WFD_IMP_WRHMWB driver was delivered to address the absence of MM5 (appropriate baseline flow regime) from the Winscar Reservoir Group. At the time of publishing our 2022 Drought Plan a new compensation flow regime had not been developed and agreed with the Environment Agency, therefore the 2022 Drought Plan document specified the extant licence conditions.

In October 2023 and under the terms of a Local Enforcement Position (LEP) Yorkshire Water initiated a flow trial. To ensure that adequate time was allocated to allow for a robust Environmental Assessment, Yorkshire Water and the Environment Agency agreed to extend the flow trial into AMP8 as part of the Reservoir Adaptive Management Scheme (08YW103004).

The terms of the Winscar Flow Trial Local Enforcement Position state that Yorkshire Water must continuously release flow from Winscar Reservoir and Lower Windleden Reservoir to compensate the downstream receiving watercourse, the River Don. Under the LEP conditions, Yorkshire Water must continuously discharge a combined compensation flow of not less than 7.00 Ml/d during summer (May – September inclusive), or a flow not less than 9.00 Ml/d during winter (November – April inclusive). In October the compensation flow will be 7.00 Ml/d if Winscar reservoir group stocks are below the control line, or will be 9.00 Ml/d if Winscar group stocks are above the control line. In addition to the combined flow, there is a minimum flow of 1.00 Ml/d from Windleden Lower and a minimum flow of 2.00 Ml/d from Winscar.

The drought permit application for the Winscar Group option is to reduce the flow trial group compensation release and minimum flow requirements by 50% to a combined compensation flow of 3.50 Ml/d during summer (May to October) or 4.50 Ml/d during winter (November to April) from the date the permit is granted. Under a 50% reduction the minimum flows from Winscar will reduce to 1.00

Ml/d and the minimum flow from Windleden Lower will reduce to 0.50 Ml/d from the date the permit is granted. A further reduction of the combined compensation flow will be to 2.33 Ml/d in summer (May to October) or 3.00 Ml/d in winter (November to April) and a reduction in the minimum flow from Winscar to 0.66 Ml/d and from Windleden Lower to 0.33 Ml/d if regional reservoir stocks are below the regional Drought Control Line, as defined in the Yorkshire Water Drought Plan.

Langsett Reservoir in our Little Don Valley Group (Grid Reference SE 21 00)
The terms of the abstraction licence for Langsett Reservoir (2/27/05/032) state Yorkshire Water must release flow from Langsett Reservoir to compensate the downstream receiving watercourse, the Little Don River (or The Porter). Under the licence conditions, there is a seasonally specified varied compensation flow regime that is based on reservoir stocks relative to two control line. When reservoir stocks are above the upper control line as specified in the Langsett abstraction licence, Yorkshire Water must continuously discharge not less than 7.00 Ml/d from November to March, 5.00 ml/d in April and October and 3.50 Ml/d from May to September. If the reservoir stocks fall below the lower control line, Yorkshire Water must continuously discharge not less than 4.00 Ml/d from November to March, 3.00 Ml/d in April and October and 2.00 Ml/d from May to September.

The drought permit application for Langsett Reservoir is to reduce the compensation release required when Langsett reservoir stocks are above the control line by 50% to 3.50 Ml/d from November to March, 2.5 Ml/d in April and October and 1.75 Ml/d from May to September. Additionally, the application seeks to reduce the compensation release required when the reservoir stocks are below the control line by 50% to 2.00 Ml/d from November to March, 1.50 Ml/d in April and October and 1.00 Ml/d from May to September. A further reduction to the compensation release to 2.33 Ml/d from November to March, 1.66 Ml/d in April and October and 1.17 Ml/d from May to September when stocks are above the control line, or 1.33 Ml/d from November to March, 1.00 Ml/d in April and October and 0.67 Ml/d from May to September when stocks are below the control line, if regional reservoir stocks fall below the regional Drought Control Line, as defined in the Yorkshire Water Drought Plan.

Underbank Reservoir in our Little Don Valley Group (Grid reference SK 25 99)
The terms of the abstraction licence for Langsett Reservoir (2/27/05/032) and the abstraction licence for Midhope Reservoir / Knoll Brook Intake (2/27/05/011) state Yorkshire Water must release flow from Underbank Reservoir to compensate the downstream receiving watercourses, the Little Don River and the River Don. Under the licence conditions, we must continuously discharge not less than 21.7 Ml/d from Underbank Reservoir when the reservoir level is above the control line as defined in the Langsett and Midhope licence, or 16 Ml/d when the reservoir level is below the control line.

The two drought permit applications are to reduce the compensation release required when Underbank Reservoir is below the compensation control line by 50% to 8.00 Ml/d from the date the permit is granted and to reduce further to 5.28 Ml/d if regional reservoir stocks are below the regional Drought Control Line for more than four consecutive weeks, as defined in the Yorkshire Water Drought Plan.

Damflask Reservoir in our Loxley group (Agden, Dale Dike and Strines supply reservoirs grid reference SK 28 90)
Under conditions defined by the Dale Dike and Agden Reservoir abstraction licence (2/27/05/030), Yorkshire Water must release flow from Damflask Reservoir to compensate the downstream receiving watercourses, the River Loxley and the River Don. Under the licence conditions, we must continuously discharge not less than 28 Ml/d when the reservoir level is above the control line defined in the licence, or 18 Ml/d when the reservoir level is below the control line.

The drought permit application for Damflask Reservoir is to reduce the compensation release required when the reservoir is below its compensation control line by 50% to 9 Ml/d from the date the permit is granted and to reduce further to 5.94 Ml/d if regional reservoir stocks are below the regional Drought Control Line for more than four consecutive weeks, as defined in the Yorkshire Water Drought Plan.

Rivelin Lower Reservoir (grid reference SK 28 86)
Under the terms of the Rivelin Reservoirs and Redmires Reservoirs abstraction licence, we must continuously discharge from Rivelin Depositing Pond to ensure not less than 10.3 Ml/d flows through Rivelin Gauge to the River Rivelin.

The drought permit application for Rivelin Depositing Pond is to reduce the compensation release by 50% to 5.15 Ml/d from the date the permit is granted and to reduce further to 3.43 Ml/d if regional reservoir stocks are below the regional Drought Control Line for more than four consecutive weeks, as defined in the Yorkshire Water Drought Plan.

More Hall Lower reservoir, in our Ewden group (Broomhead supply reservoir SK 28 95)
Under conditions defined by the Broomhead Reservoir abstraction licence Yorkshire Water must release flow from More Hall Reservoir to compensate the downstream receiving watercourses, Ewden Beck and the River Don. Under the licence conditions, we must continuously discharge from More Hall Reservoir to ensure not less than 12 Ml/d of flow is released through the More Hall Gauge to the River Ewden when the reservoir level is above the compensation control line defined in the licence and 9.1 Ml/d is released when the level is below the control line.

The drought permit application for More Hall Reservoir is to reduce the compensation release when the reservoir level is below the lower of its compensation control lines by 50% to 4.55 Ml/d from the date the permit is granted and to reduce further to 3.00 Ml/d if regional reservoir stocks are below the regional Drought Control Line for more than four consecutive weeks, as defined in the Yorkshire Water Drought Plan.

Compensation Water Source	Receiving Water-course	Relevant Authorising Act or Licence	Current flow Requirement (Ml/d) (as specified in either a licence or LEP)	Drought Permit Quantities applied for	
				Flow reduced by 50% (Ml/d)	Flow reduced by 67% (Ml/d)
Scout Dike Reservoir	Scout Dike, River Don	Ingbirchworth Reservoir Abstraction Licence 2/27/05/012	Compensation releases; 2.70 below control line (CL), 4.00 above CL	1.35	0.89
Winscar and Lower Windleden reservoirs (ACTIVE FLOW TRIAL)	River Don	Winscar Reservoir Impoundment Licence 2/27/05/152 . Active Flow trial under LEP, New compensation release regime specified in LEP (dated 13/12/2024 ref: Winscar Flow Trial)	Maintain a combined seasonal compensation flow from Winscar and Lower Windleden of; • 7.00 May to September and October if stocks below control line • 9.00 November to April and October if stocks above control line • Minimum flow of 2 Ml/d from Winscar at all times • Minimum flow of 1 Ml/d from Lower Windleden at all times	Combined Seasonal compensation flow of: 3.50 (May – Oct) 4.50 (Nov –Apr) Minimum flow of 1.0 - Winscar Minimum flow of 0.5 - Lower Windleden	Combined seasonal compensation flow of: 2.33 (May – Oct) 3.00 (Nov – Apr) Minimum flow of 0.66 – Winscar Minimum flow of 0.33 – Lower Windleden
Langsett reservoir	Little Don River	Langsett Reservoir Abstraction Licences 2/27/05/032	Compensation releases; Stocks above both control lines: 7.00 (November – March), 5.00 (April & October), 3.50 (May – September) Stocks below both control lines: 4.00 (November – March), 3.00 (April & October), 2.00 (May – September)	3.5 (Nov – Mar) 2.50 (Apr & Oct) 1.75 (May – Sept 2.00 (Nov – Mar) 1.50 (Apr & Oct) 1.00 (May – Sept)	2.33 Nov – Mar) 1.66 (Apr & Oct) 1.17 (May – Sept) 1.33 Nov – Mar) 1.00 (Apr & Oct) 0.67 (May – Sept)
Underbank reservoir	Little Don River (The Porter), River Don	Midhope Reservoir/Knoll Brook Intake Abstraction Licence 2/27/05/011 Langsett Reservoir Abstraction Licences 2/27/05/032	Compensation releases; 16.00 below both control lines 21.70 above both control lines	8.00	5.28

Compensation Water Source	Receiving Water-course	Relevant Authorising Act or Licence	Current flow Requirement (Ml/d) (as specified in either a licence or LEP)	Drought Permit Quantities applied for	
				Flow reduced by 50% (Ml/d)	Flow reduced by 67% (Ml/d)
Damflask reservoir	River Loxley, River Don	Dale Dike Reservoir and Agden Reservoir Abstraction Licence 2/27/05/030	Compensation releases; 18.00 below both control lines 28.00 above both control lines	9.00	5.94
Rivelin Depositing Pond	River Rivelin, River Don	Rivelin Reservoirs and Redmires Reservoirs Abstraction Licence 2/27/05/029	Compensation release; 10.3 Ml/d	5.15	3.43
More Hall reservoir	Ewden Beck River Don	Broomhead reservoir abstraction Licence 2/27/05/031	Compensation releases; 9.1 Ml/d below control line 12 Ml/d above control line	4.55	3.00

Table 2: Summary of drought permit proposals and relevant licences for the South Area

2.3 Proposed start and expiry date for permit

Yorkshire Water 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 South 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 further drought permits in 2026.

4.2 Supply areas and respective populations impacted

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

The South Area reservoir groups supply our Sheffield / Rotherham forecasting zone (FCZ), which includes Sheffield, Rotherham, Barnsley and surrounding areas, and has a population in the region of one million. When the reservoirs are low, we are able to support the FCZ with water from our grid system.

The population estimated to be affected can be estimated from WTW production sites as follows:

Ingbirchworth WTW – Average 20Ml/d - Population = 82,946
Langsett WTW – Average 50Ml/d - Population = 207,366
Ewden WTW – Average 32Ml/d - Population = 132,714
Loxley WTW – Average 35Ml/d - Population = 145,156
Rivelin WTW – Average 65Ml/d - Population = 269,576
Grid – Average 66Ml/d – Population = 273,723
Total = 1,111,481 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 2022. 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 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 1995/96 inflow scenario which is our worst case historical 12-month period with approximately 60% long-term average (LTA) rainfall over a 12-month period. The model outcome indicates that with current WTW availability and a similar reservoir inflow to 1995/96, we require further drought permits (on rivers and in other areas) in addition to the TUB that was enforced on 11th July. Our latest WRPR forecast (at the time of preparing this application) indicates that the forecast date for drought order / drought permit implementation across the Yorkshire Water region will be 03/11/25 if we follow the 1995/96 trend.

It should be noted that we have been using and modelling an extreme rainfall-based scenario alongside the 1995/96 scenario. This was done to align with the current dry weather scenario we are experiencing this year and to make our assessment more rigorous. This scenario consists of 40% LTA rainfall in August and 60% LTA thereafter. The trigger date for different levels of restrictions forecast under this scenario has a close approximation to those under the 1995/96 scenario.

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 Environment Agency 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 South region. The geographical extent and the time period of analysis have been agreed with the local Environment Agency Hydrology Yorkshire team.

The following rainfall analysis have 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 Environment Agency (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 Environment Agency Hydrology Yorkshire team. The data included is the HadUK v1.2.0.0 monthly totals covering January 1871 to December 2023 (inclusive) and the Environment Agency Daily Rainfall Tool (DRT) monthly totals covering January 2024 to July 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 associated with our South region of reservoirs, the geographical extent of which will be 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 Environment Agency 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 Environment Agency 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. This is further supported by the SPI analysis conducted in section 5.5. The latest rainfall data up until the point of application has been used in this assessment representing a 6-month period from February to July 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 Environment Agency Hydrology Yorkshire team as shown in figure 2. The rainfall has been consistently low across this whole catchment 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.

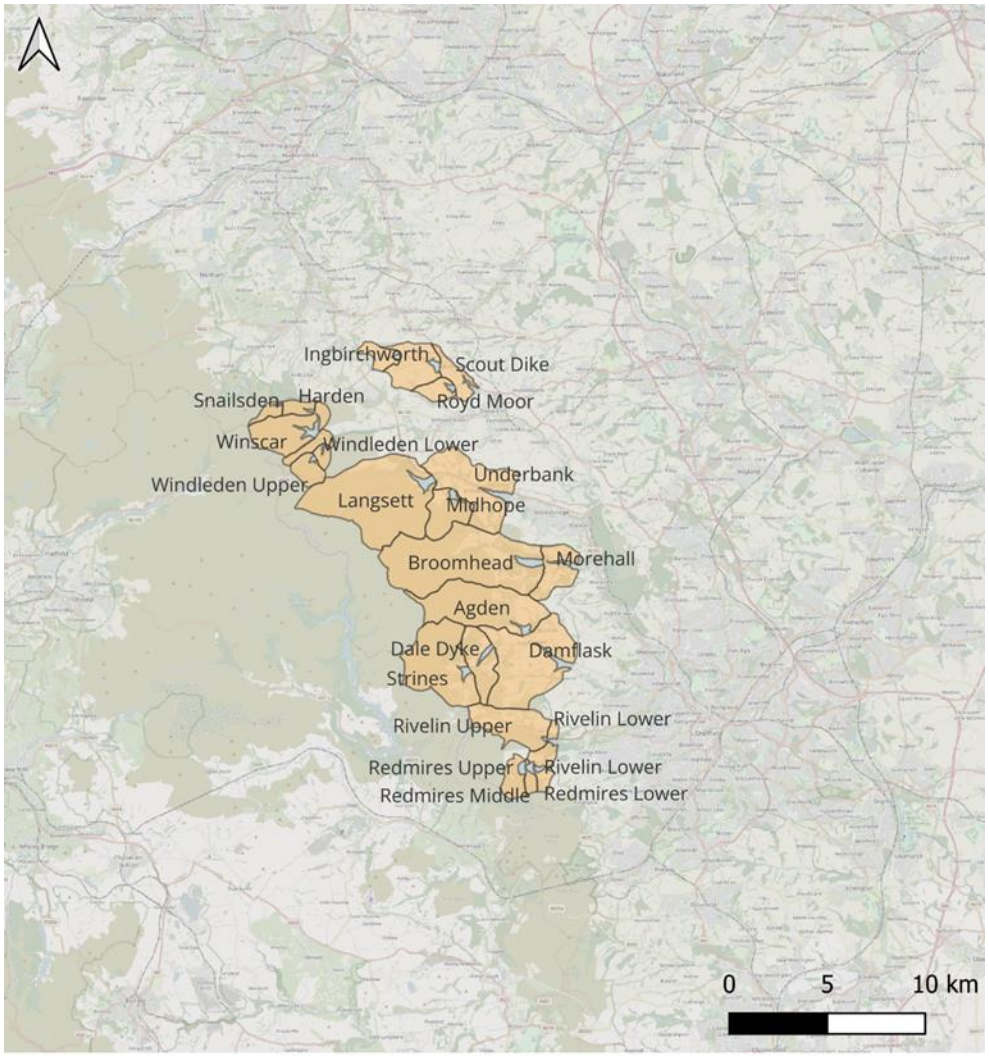


Figure 2: Geographic extent of the exceptional shortage of rainfall analysis

5.5 Technical rainfall analysis methods

- 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 3 shows the rainfall during January to July 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 across the analysis period. Unlike other areas in the Yorkshire Water region, the South area received significantly below average rainfall in June as well as the four preceding months.

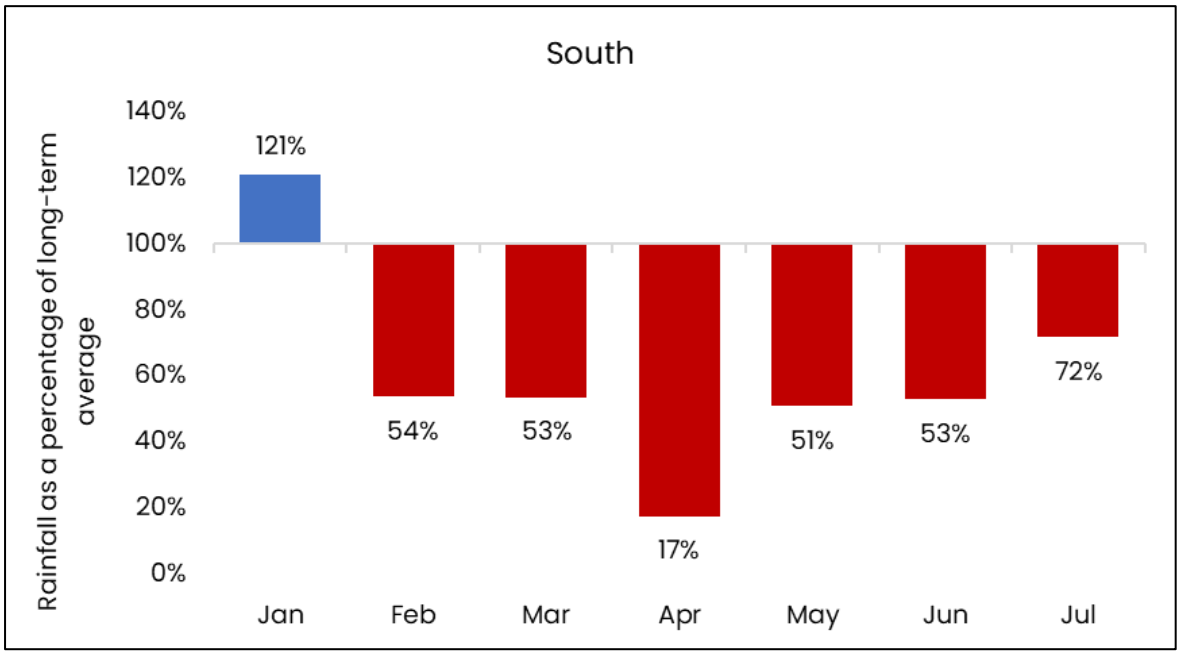


Figure 3: Rainfall compared to long-term average

Figure 4 shows the cumulative rainfall starting from the end of January, 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 the historic droughts and LTA, the cumulative rainfall is less than half of the average amount across the analysis period.

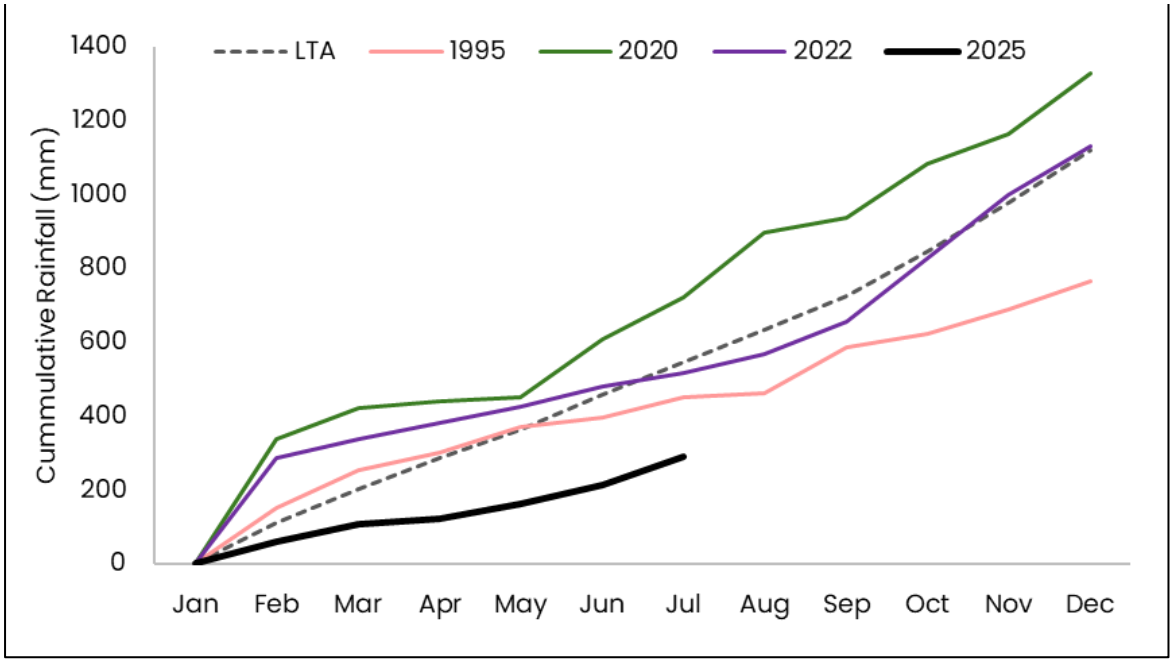


Figure 4: Cumulative rainfall compared to historic droughts and long-term average

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 5 for a 1-month, 3-month and 6-month duration (i.e., 1-, 3-, and 6-months window respectively leading to the month shown in the first column). The 6-month period between February to July is considered extremely dry for the South area according to the index categorisation. The 3-month periods preceding April to June are all also considered extremely dry.

SPI of 2025 rainfall for the South

2025	SPI - 1month	SPI - 3month	SPI - 6month
February	-0.503	0.465	0.571
March	-0.928	-0.516	-0.257
April	-2.141	-2.144	-0.658
May	-1.025	-2.501	-0.761
June	-0.446	-2.301	-1.731
July	-0.124	-1.087	-2.396

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 5: Standardised precipitation indices for the South catchment

Rainfall Ranking

The ranking of the rainfall periods compared to the historic dataset is shown in Figure 6. 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 101st driest on record. The Cunnane probability ranking has been calculated for each duration and the rankings are shaded accordingly. Rainfall durations of four to seven months leading up to July 2025 are all classified as exceptionally low rainfall according to the Cunnane probability ranking and in the top five driest periods on record. The 6-month period February to July 2025 is the fourth driest period on record, while the 4-month period leading up to June is the driest.

Rank of 2025 rainfall in period since 1871

South Catchments 2025		Duration (months)											
		1	2	3	4	5	6	7	8	9	10	11	12
End Month	Feb	44	79	105	87	80	109	85	89	83	86	101	111
	Mar	23	17	45	79	70	60	93	76	74	70	71	85
	April	8	5	5	15	56	41	38	71	47	55	49	52
	May	21	4	2	3	5	42	31	29	56	38	43	38
	June	52	15	3	1	4	3	28	23	24	50	35	35
	July	67	46	22	6	4	4	6	27	18	20	45	28

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 6: Rainfall ranking compared to historic dataset dating back to 1871

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 South catchment. As advised by the Environment Agency Hydrology Yorkshire team, we present data for grid square 107 which covers the largest extent of the South region. Figure 7 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 on the 90th percentile, generally tracking above the drought years of 1995 and 2022 since March.

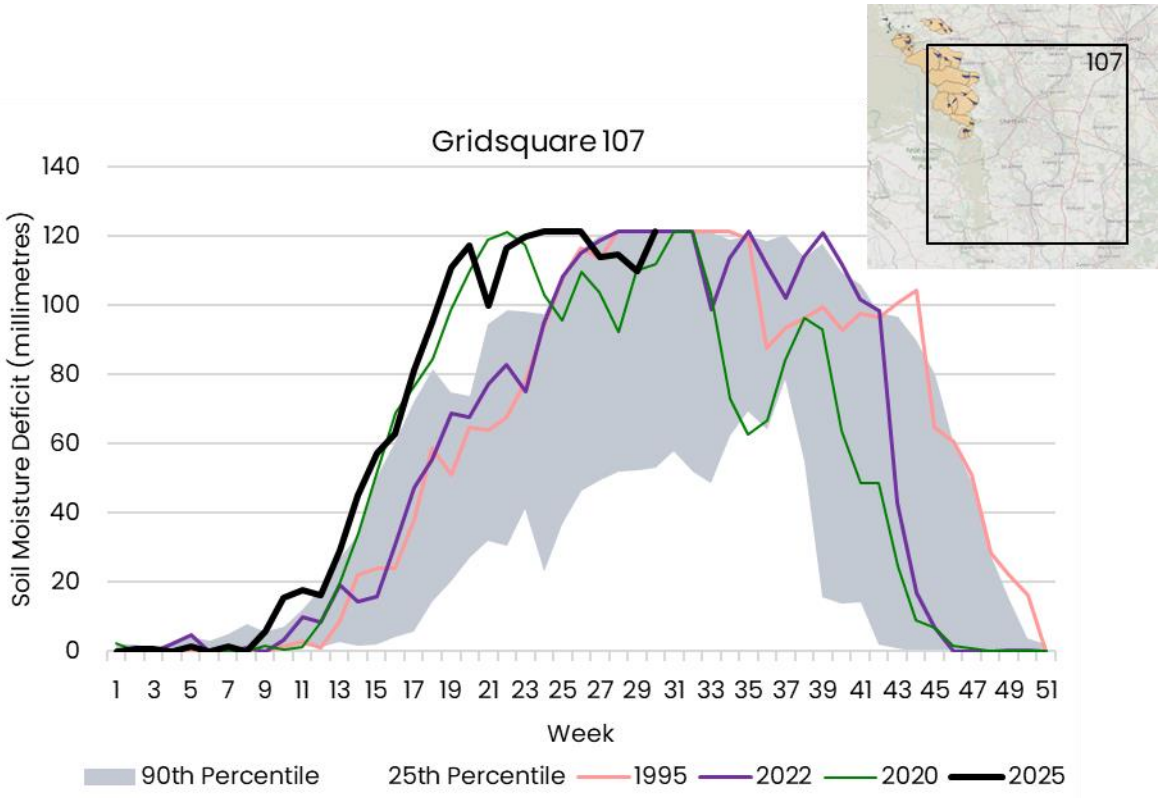


Figure 7: Soil moisture deficit in the Yorkshire Water region

Reservoir Levels

Figure 8 shows the reservoir levels in the South group; the levels are significantly lower than any other year at this point in the year. Reservoir levels were above 90% at the start of the year following a relatively wet autumn and winter of 2024. However, from February, the stocks have declined steeply at a consistent rate. The decline in reservoir levels was slightly reduced by the small amounts of rainfall at the end of May / early June, however this was not enough to reverse the downward trend. Recent rainfall at the end of July has also slowed the decline but stocks still remain exceptionally low.

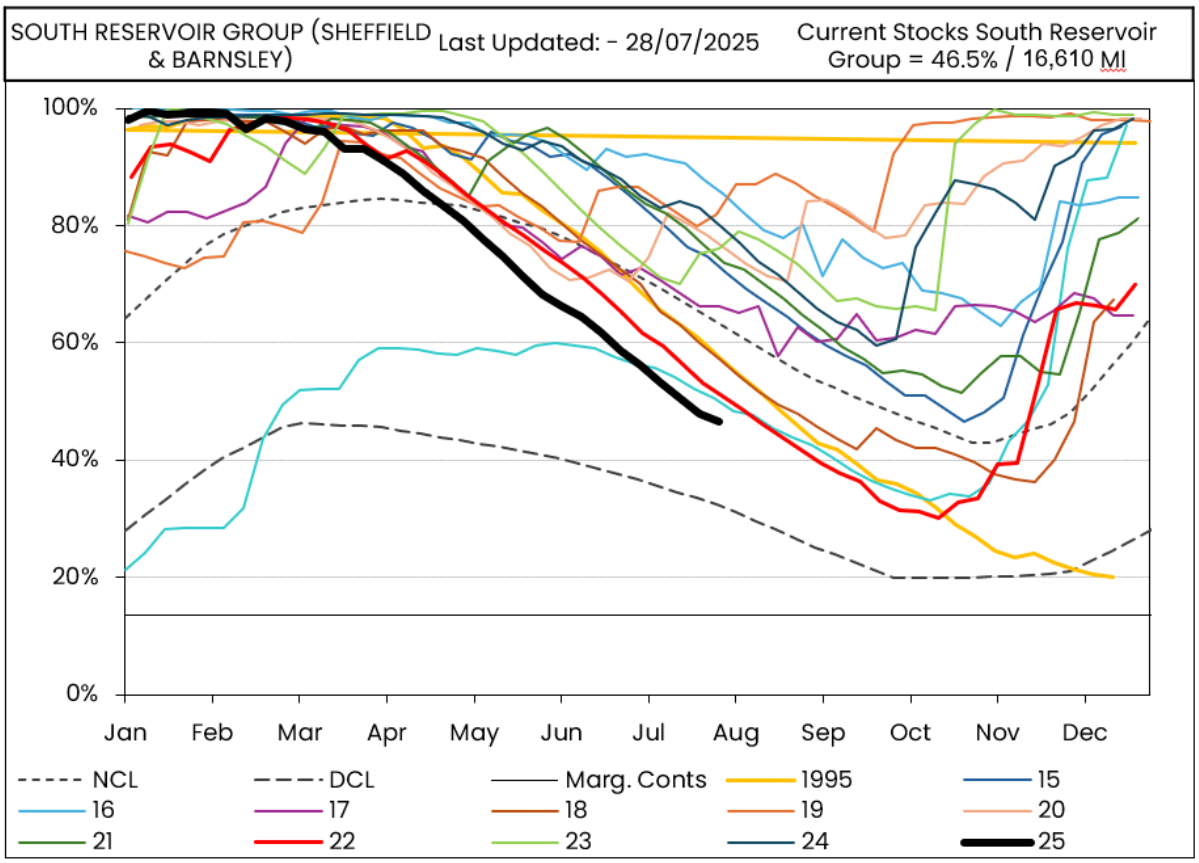


Figure 8: Reservoir Stocks for the South area in comparison to recent years and historic droughts

5.7 Summary and conclusions

The spring of 2025 has been exceptionally dry. Across the South catchment, the 6-month period to July was the fourth driest since records began in 1871. The SPI and ranking analyses indicate conditions were extremely dry and rainfall exceptionally low across the analysis period.

The low rainfall so far in 2025 has been accompanied by periods of hot weather, and this combination 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 in reservoir stocks leading to record low reservoir 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. If the exceptionally low rainfall continues (or if there is below LTA rainfall during the summer), 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 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.

We have also increased leakage focus within the South by escalating a leakage hub, to enable us to minimise leakage and as a result reduce demand in the south 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 Environment Agency 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 a further peak in early July. These demand peaks combined with persist dry weather has resulted in higher average demand in April, May and June.

As outlined in 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 lower river flows and the higher demand has required higher reservoir abstractions to meet supply.

We have continued the leakage focus on the South 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 South, again with the aim to minimise leakage, demand and therefore abstraction from the South 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 Environment Agency 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 3rd November under the 1995/96 scenario. 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 drought permit 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 South 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 grid water import to reduce abstraction from South reservoir group stocks when possible. As mentioned previously this action was limited because of persistent high demand.

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 centres.
- Setting up of a dedicated TUB 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 Linked In) 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

Our target is to reduce all reservoirs in the South as close to yield as possible by supporting via treated water (grid import).

Specific actions we have taken to support the South are as follows:

- Increased treated water support from the Grid into the South area, to minimise the 4 southern water treatment works as close to yield as possible. This is dependent of demand, reservoir levels across the region and grid production and pumping availability.
- The raw water transfer between Winscar IRE & Langsett IRE which is a local transfer and has been maximised within licence to balance raw water stocks within the area. (There are no alternative raw water transfers from other areas).

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 DMAs and on trunk mains in the South. 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 South.

Actions carried out in sections 6.1 to 6.3 will reduce abstraction from the South 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'.

8. Implementation of TUBS

In our drought plan a TUB need to be in place before a drought permit or order application is made between the 1 April and 1 October. A TUB 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 a TUB and drought permit / drought order triggers could be crossed.

The potential threat to water supplies is a direct result of the weather conditions throughout February to June 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 a TUB in the spring when our forecasting model suggested they would be required, and implementing a TUB, in line with our drought plan and model forecasts.

In order to better reflect the dry condition we are experiencing this year and to be prepared for more adverse conditions than 1995 and 2022, we have been exploring and evaluating additional 'extreme scenarios' in our weekly WRPR forecast. One such extreme scenario assumes 40% LTA in June then 60% LTA thereafter. Our recent assessments showed that under this extreme scenario as well as the 1995 scenario, Yorkshire Water would impose a TUB on all customers on 11th July 2025.

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 9 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.

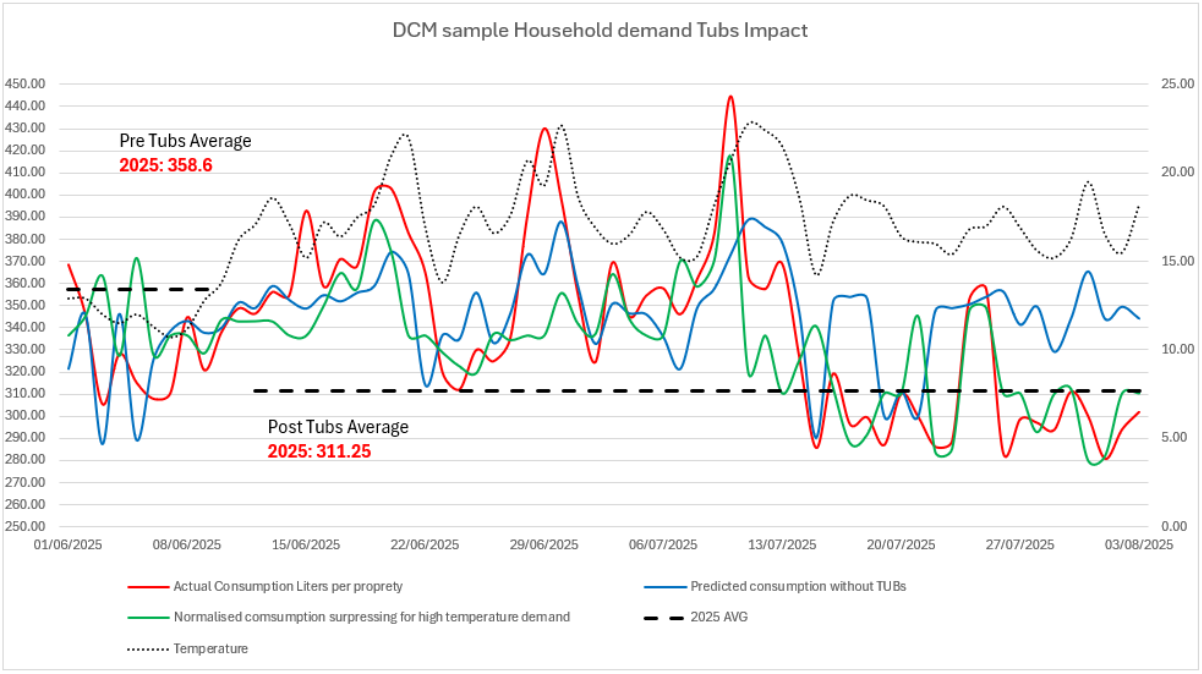


Figure 1: Profile of unmeasured per household consumption (PHC) from the domestic consumption monitor pre and post implementation of the TUBs restriction

You can see from Figure 9 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 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 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.

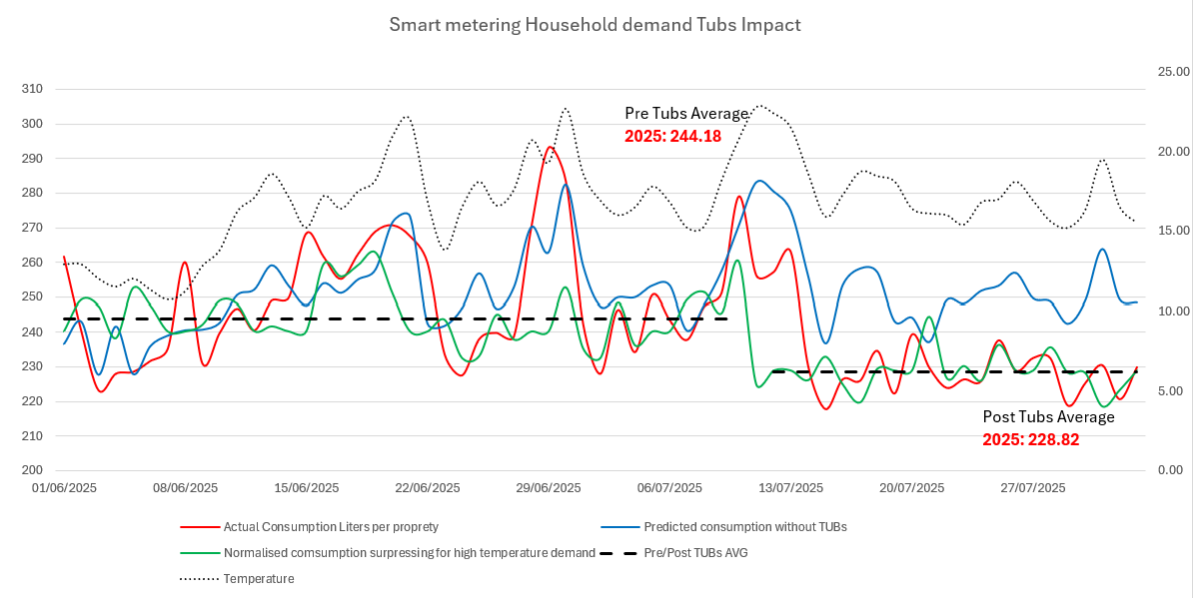


Figure 2: Profile of measured household consumption from all AMIs in June and July 2025 to see the impact of the temporary use restriction

The metered household consumption from the AMI data in Figure 10 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 15.36 l/d per property to 228.82 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.

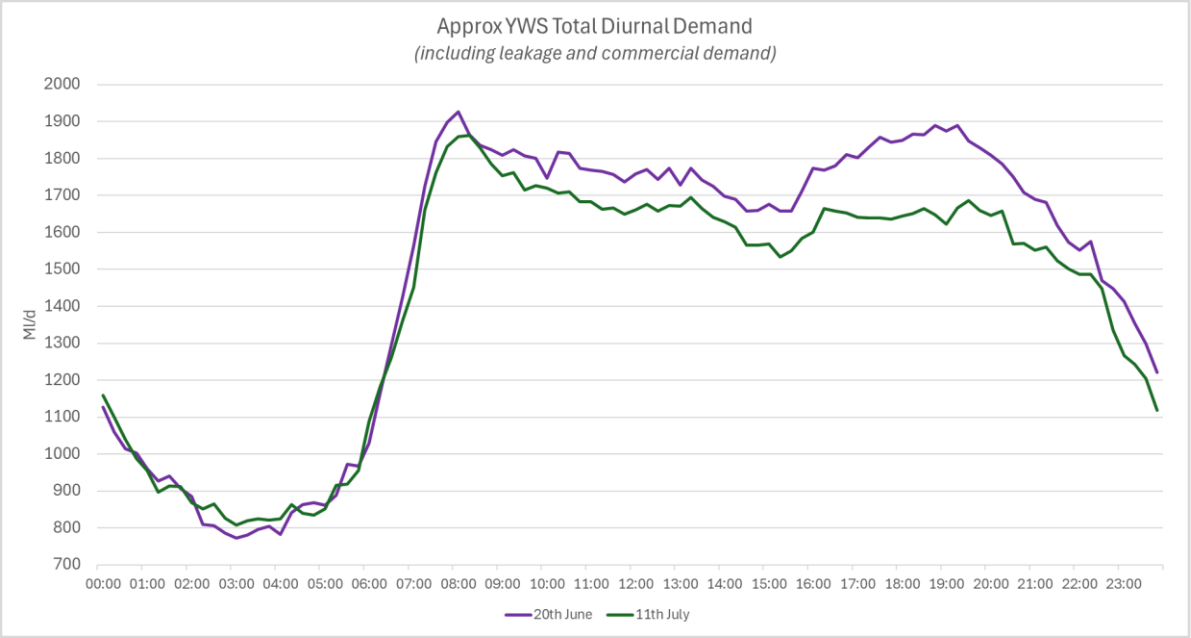


Figure 3: Profile of YWS approximate total diurnal demand pre and post implementation of the temporary use restriction

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.

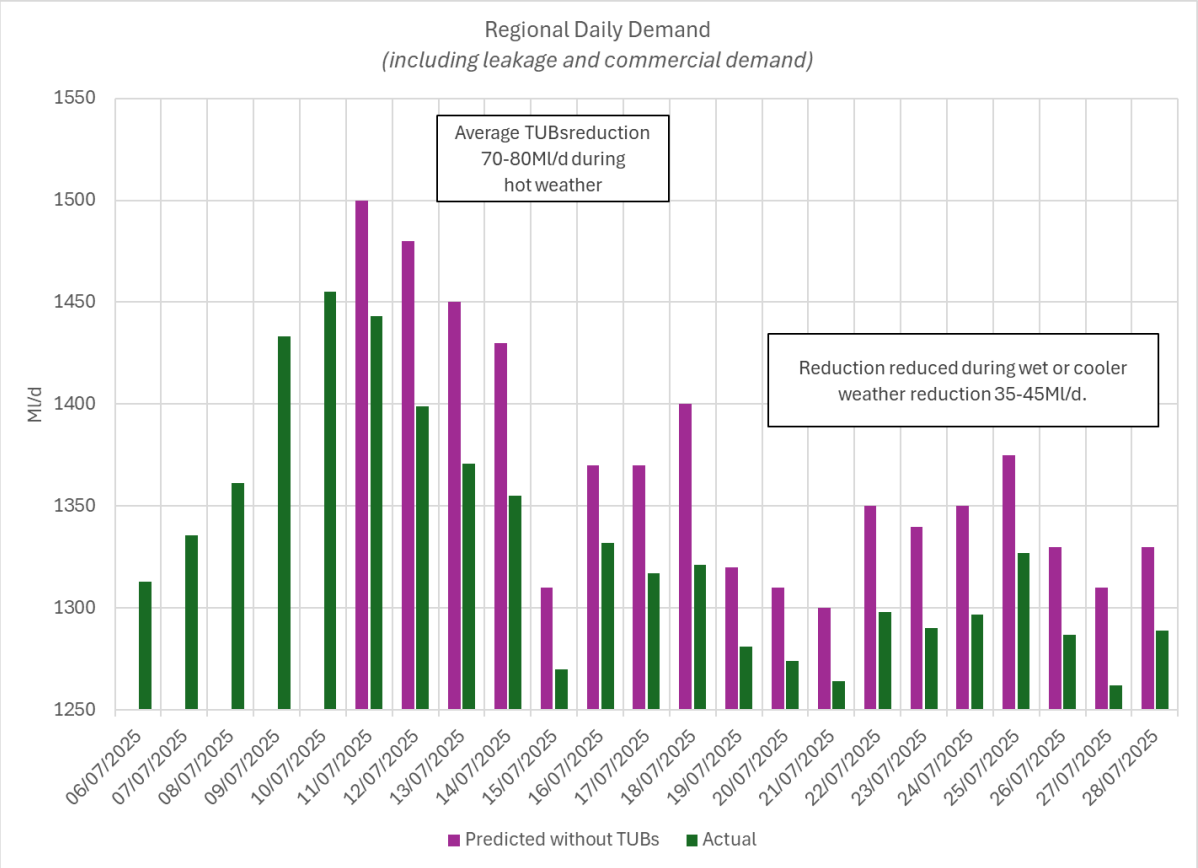


Figure 4: Regional daily demand including leakage and commercial demand actual verses predicted without a TUB

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 63.24 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

Since crossing the NCL regionally based leakage resources have been directed towards the South to reduce leakage over and above planned levels.

Regionally, 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 26Ml/d from the first week or April to present position. 2022-23 was the last dry year and is therefore being used as the reference point for leakage comparison.

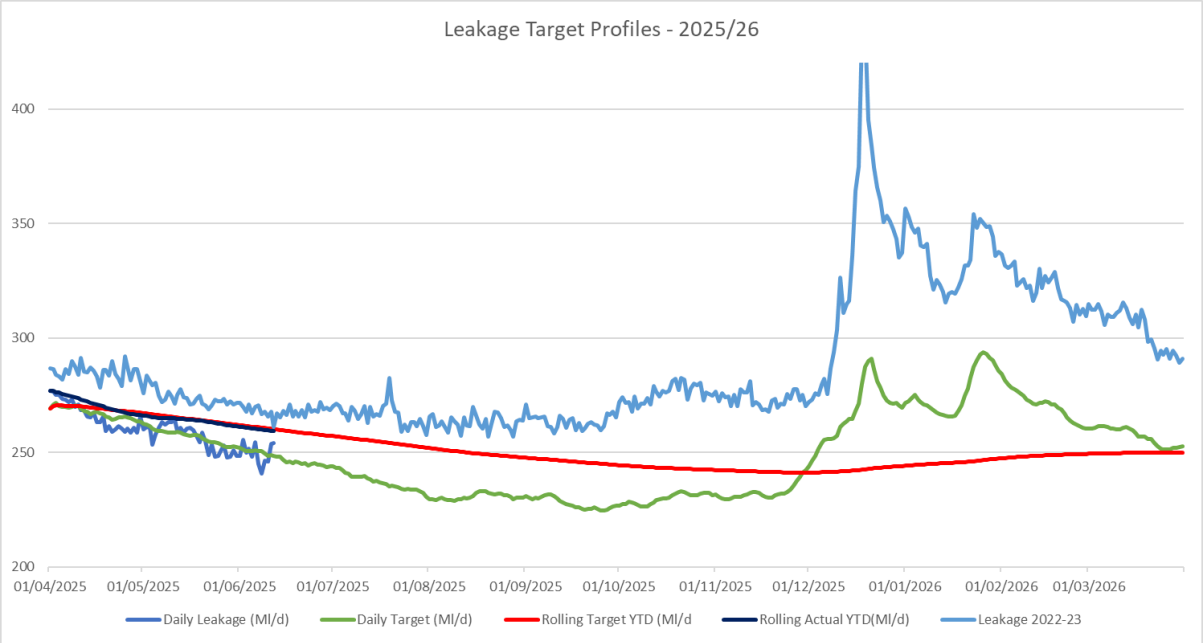


Figure 13: Regional leakage target profiles

South area specific leakage performance bucks the regional trend; the area has not seen a reduction from 2022-23 levels. This area is problematic from a leakage perspective; higher natural rate of rise, more break out leakage and bursts, topography, pressure variations, longer repair turnaround times all contribute to lesser performance than other areas. Leakage has increased since 2022-23 by around 3Ml/d in this area, but as shown in the graph below leakage is on a downward trend, and the increased effort as detailed in this document is materialising in a leakage reduction. The total volume of reported leakage in this area is 66.3Ml/d. Reducing leakage in the South is a huge priority for Yorkshire Water.

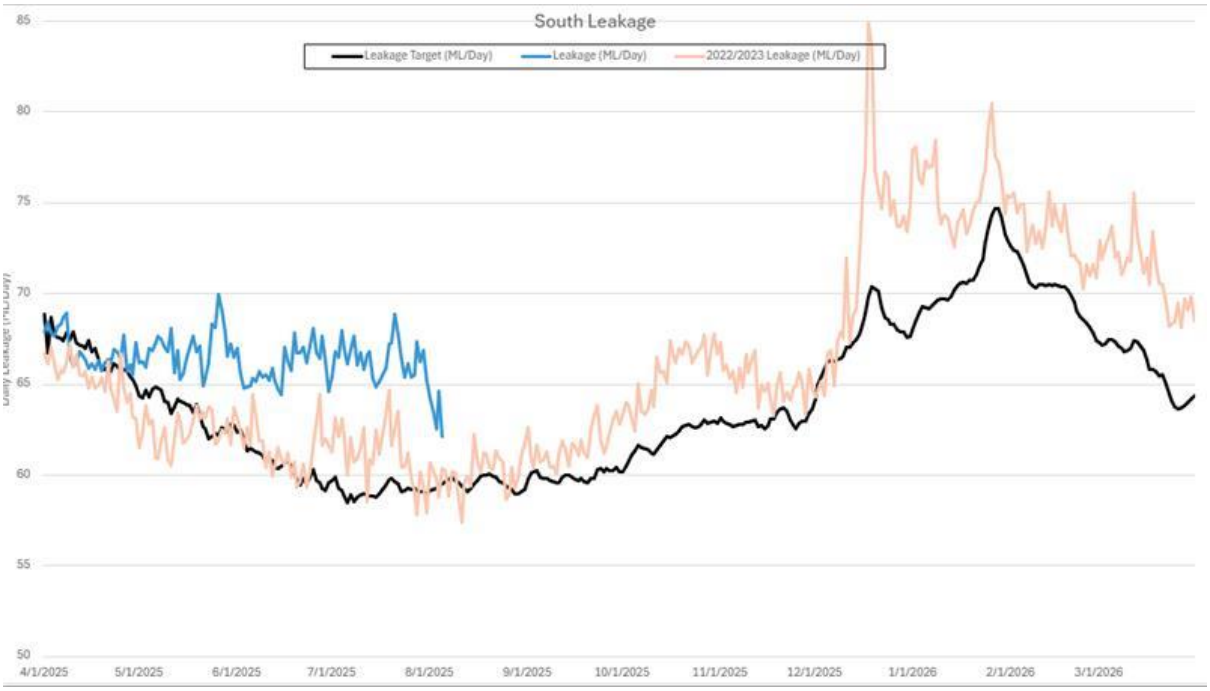


Figure 14: South leakage target profiles

Smart meter deployment started in earnest in South Yorkshire in January 2025, the data from the smart meters will be imperative to support the leakage reduction drive we have in plan for South Yorkshire. It will allow us to respond to leaks on supply pipes and notify customers of leaks at their properties sooner than we are currently able to do so and equally improve our understanding of what is consumption and what is leakage; allowing for more effective targeting of leakage.

We are also increasing our R&M resource to respond quicker to repairing leaks in South Yorkshire.

9.2 Increase in leakage resources

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.

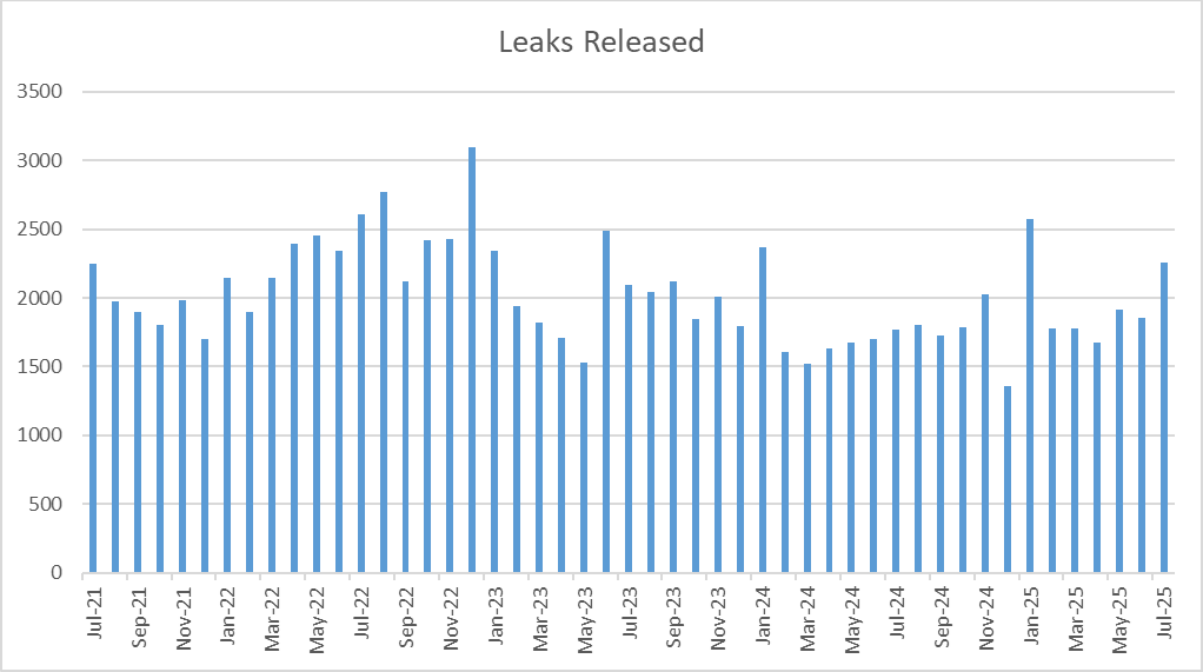
Since 1st April, we have completed 1913 overtime hours on leakage find activities across the region.

In addition to targeting reported leakage volumes, we have ramped up activities on the upstream network and into unaccounted for water:

- 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 South Water Supply systems.
- Service reservoirs, pumping stations, water and sewage treatment work sites have been proactively inspected for leakage. This includes overflows and assets within the site grounds such as valves, meters and hydrants.

9.3 Find and fix rate

Promotion of leaks through to our R&M Service Partner M Group for repair is higher than average of the previous years, with July being the largest month for promotion since January 25. The graph below shows regional monthly promotion (not specific to South). The total number of leaks released for repair regionally between January and July 25 is over 1,500 higher than in 2024.



9.4 Underground supply pipe leakage (USPL) and fix rates

- More than 5,000 additional customer meters are being read weekly in the South 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.
- We have identified and visited 30 commercial users in the South 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.
- A recent recruitment drive has increased our team of specialist customer side leakage technicians by an additional 13 FTE this includes 2 FTE dedicated to the South group.

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 South, 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 Yorkshire Water assets
- Pressure management solutions to reduce background leakage
- Resolving 'demand' - both consumption and leakage on concessionary supplies
- Drive leakage to new lows in the South and combat the natural rate of rise.
- Smart meter deployment begun in South Yorkshire in Jan 2025, this will enable improvements in capturing and recording accurate consumption to allow for improved leakage reporting and more effective targeting at DMA level.
- Smart meters will also allow us to respond to leaks on customer's properties sooner than we'd have previously been able to do so.

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 South group when the level drops below Normal Control Line (NCL) in individual reservoirs or reservoir groups we reduce abstraction by importing treated water to meet supply.

The treated water import is from our grid network which originates at Elvington WTW and Loftsome Bridge WTW, both of which abstract water from the River Derwent. The grid water is imported into the area the South reservoir group supplies through a series of trunk mains and pumping stations. An outage at any of these assets will have an impact on South reservoir stocks.

Since the start of the dry weather, there is an outage of 29.4Ml/d at Loftsome Bridge WTW. Proportionally this outage has reduced the grid import to the South supply area by an average of 9Ml/d total.

Outage data for Loftsome Bridge WTW is a mixture of both planned and unplanned outages and linked to the performance of rapid gravity filters and granular activated carbon units on site. Issues identified with the floor and coating of the filters has impacted performance and as a direct result, several units have been removed from service to facilitate required lengthy renewal works to be carried out on those units.

10.2 Sources impacted by outage

The sources impacted by the outage are the reservoirs that supply all the WTW in the South area which are as follows:

- Don Valley Group
- Ewden Valley Group
- Little Don Group
- Loxley Valley Group
- Redmires Group
- Rivelin Group
- Winscar Group

The 9Ml/d reduction in grid import because of Loftsome Bridge WTW outage, has resulted in South stocks being 2.4% lower at the end of June assuming the import would have been in place throughout April, May and June.

10.3 Outage impact

As stated in sections 10.1 and 10.2, the impact of this outage is that we have been unable to support the South with a further 9Ml/d of grid water, as a result the reservoir stocks would have been 2.4% higher at the end of June.

To resolve this outage, work on filter refurbishment on the Loftsome Bridge WTW site has been accelerated. We have increased the number of teams working on the issues and the working hours accordingly. We had reviewed alternative options to increase the flow from Loftsome Bridge WTW but unfortunately due to lead times and / or issues with compliance with Regulation 31, we were unable to source temporary units. The acceleration of the refurbishment works has meant we have been able to resolve the outage and increase Loftsome Bridge WTW output to pre-outage capacity since mid July.

10.4 Resource impact

As stated in previous sections, the reduced output from Loftsome Bridge WTW has prevented us from supporting the South as we would have liked. Since crossing the NCL we could have supported the South with on average an additional 9Ml/d of treated water. Without this increased support it means we have had to increase production from WTW in the South area and therefore abstraction from the reservoirs supplying these WTW as stated in section 10.2 these are:

The sources impacted by the outage are reservoir supplied Water Treatment Works in the following areas: which are as follows:

- Don Valley Group
- Ewden Valley Group
- Little Don Group
- Loxley Valley Group
- Redmires Group
- Rivelin Group
- Winscar Group

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 South 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;
- Scout Dike and Winscar Reservoirs are within Barnsley Local Authority;
- Damflask, Langsett, More Hall, Underbank and Rivelin Reservoirs are within Sheffield Local Authority.
- Other abstractors operating in the areas affected by the permit.
- The Peak District National Park.
- Natural England
- Local rivers trusts and wildlife groups.

- Local angling clubs in the areas affected by the permits
- Sailing clubs and watersports on the reservoirs affected
- Local wildlife sites – predominantly owned by Sheffield Local Authority and Barnsley Local Authority.
- Coal Authority.
- Canal and River Trust

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

The notice will be advertised on Friday 8th August in the Sheffield Star, which is circulated in the area potentially affected if the permit is granted, and in the London Gazette, in accordance with Environment Agency guidance. If the application is successful, we will provide notice the permit has 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.

Objections can be made by Friday 15th August 2025.

12. Public inspection arrangements

Documents relating to the South 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 Sheffield Star and 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 seven days staring Friday 8th August:

- Yorkshire Water, Western House, Halifax Road, Bradford, BD6 2SZ.
- Environment Agency, Lateral, 8 City Walk, Leeds, LS11 9AT.
- Penistone Post Office - 17 Market St, Penistone, Sheffield S36 6BZ (Scout Dike Reservoir, Langsett reservoir).
- Holmfirth Post Office, Station Road, Holmfirth, HD9 1AD (Winscar and Lower Windleden Reservoirs).
- Wortley Post Office, Park Avenue, Sheffield, S35 7DB (Underbank Reservoir).
- Bradfield Post Office, Woodfall Lane, Bradfield, Sheffield, S6 6LA (Damflask Reservoir).
- Lodge Moor Post Office, 58 Rochester Rd, Sheffield S10 4JQ (Rivelin Reservoir).
- Wharncliffe Side Post Office, Brightholmlee Ln, Wharncliffe Side, Sheffield S35 0DQ (More Hall Reservoir)

The post offices selected are within eight kilometres 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 a number of 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
- 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 2025 Drought Plan guidance.

14. Other options considered

Alongside the leakage and outage management activities we have mentioned in sections 9 and 10 above, we are accelerating capital schemes and maintenance activity to minimise outage across the grid zone to maximise water availability, protect reservoir stocks and reduce demand.

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 south area. In respect of specific hotspots, there is also heightened risk in that public water supply could be impacted due to the higher rate of decline of stocks in this area. Additional mitigation measures are being developed to

reduce the risk of this situation materialising, though these measures alone shall not alleviate the risk to the 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 South area. However, Natural England were approached in May to ensure they were aware of the developing dry weather situation and have been kept notified through spring and summer. The results of the assessment can be found in the accompanying EAR.

15.3 Local Rivers Trust & Wildlife Trusts

Yorkshire Water have reached out to the Don Catchment Rivers Trust (DCRT) and other interested groups as recommended by DCRT in their role as catchment hosts for the Don and Rother Catchment Based Approach.

15.4 Navigation Authority Consent

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

15.5 Internal Drainage Board

We have notified the relevant Internal Drainage Boards (IDB) 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

An email was issued to all active in area retailers on 24th April and 2nd May raising awareness of developing drought and providing advice on water efficiency and customer side leak reduction. The Retailer-Wholesaler Group (RWG) hosted a drought webinar for retailer contract managers on 28th May outlining the current situation nationally, with updates from all wholesalers. Further web events have been hosted monthly, with an ongoing weekly update email to retailers advising of any additional communications in the meantime.

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.

15.8 Objections

No objections have been raised to date.

16. Appendices

Appendix 1: Copies of existing abstraction licences, and statutory instrument or Local Act 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.

Appendix 3: Draft Permits