AMBERGATE DROUGHT PERMIT

NPS/DP/250025

Executive Summary

Severn Trent is applying to the Environment Agency for a Drought Permit relating to the abstraction licence at Ambergate, Derbyshire. We went into the spring with our reservoirs full. Following the record-breaking dry spring and summer periods storage levels at Carsington and Ogston reservoirs is lower than we want it to be for this time of year. We need a permit to allow us to continue to abstract water from the River Derwent if it stays dry and the river has lower flows. We will do this over winter to help refill Carsington and Ogston reservoirs ahead of next spring. Failure to refill sufficiently by spring present a real threat to security of supply to customers and the associated high likelihood of both customer restrictions and summer drought permits that are recognised as having higher environmental risks.

We've decided to apply for a permit now as this will help to limit any environmental issues if dry conditions continue through the autumn and winter, and we will put in place extra monitoring to make sure this is the case. In the winter months, river levels are normally at their highest so we can usually abstract enough water. This permit will allow us to continue to abstract if we have a dry winter and river levels are lower than normal. This is a precautionary approach to prepare for 2026, as has been encouraged by the Environment Agency at National Drought Group meetings. Waiting until spring may be too late to protect customer supplies. In a dry winter, using a 60% Long Term Average (LTA) Rainfall, based on a continuation of similar weather patterns to those we have experienced this year (we had 64% LTA February – September in Strategic Grid North), a drought permit would mean the reservoirs would be around 12% higher in Spring than without the permit.

We have commissioned a detailed environmental assessment to see what impact our plans may have on water quality, habitat, ecology and other users of the River Derwent. The abstraction to Carsington and Ogston reservoirs, when river flows are lower in line with the permit conditions, is expected to have a negligible effect on the flow, water quality and habitats within the River Derwent. We do not believe that there will be any noticeable difference in the river up and downstream of the abstraction at Ambergate and no impact on the normal activities or use of the river for abstraction, recreational use or simply enjoyment of the river habitat by other parties. Impact on ecology and wildlife of the river is likely to be minor. There will be no long-lasting impact on the biodiversity value of the River Derwent. We'll put in place a programme of monitoring to capture any significant changes to the river environment and/or impacts on its aquatic fauna. If we detect any significant impact, we can adjust our abstraction, return to the pre-permit licence conditions and/or undertake local mitigation measures at specific locations.

The evidence to support our application for a Drought Permit is set out in this document.

On the grounds of national security, in this document we have omitted the names and locations of certain critical national infrastructure.

Ambergate Drought Permit Application 2025

This is an application by Severn Trent to the Environment Agency for a Drought Permit under s.79A of the Water Resources Act 1991. The permit relates to abstraction licence 03/28/40/121 Ambergate.

The Ambergate licence is used for the transfer of water from the River Derwent to Carsington and Ogston reservoirs, in Derbyshire. The abstraction at Ambergate is part of a wider network of sources, including other reservoir sources, river abstractions and groundwater sources that supply customers in the Strategic Grid North Water Resource Zone (WRZ) with drinking water.

If we cannot sufficiently refill Carsington and Ogston reservoirs over the coming winter, then customers' 2026 security of supply will be put at risk due to the increased vulnerability of supplies to the 37,100 customers directly supplied from the reservoirs. These sources also provide water to 2,277,000 customers within our wider Strategic Grid North WRZ. Figure 1 illustrates the extent of the Strategic Grid North relative to our other WRZs (red outline).

Figure 1: Severn Trent's Water Resource Zones

1. The Drought Permit

1.1 What is a drought permit

A drought permit is a drought management power that, if granted, can allow more flexibility to manage water resources and the effects of drought on public water supply and the environment. The Water Resources Act 1991, as amended by the Environment Act 1995 and the Water Act 2003 empowers the Environment Agency (EA) to grant a drought permit on condition of the following criteria:

- a serious deficiency of supplies of water in any area exists or is threatened; and that
- the reason for the deficiency is an exceptional shortage of rain.

The scope of this drought permit and the potential effects on the downstream river are described in our company Drought Plan. A copy of our Drought Plan can be found on our website at https://www.severntrent.com/about-us/our-plans/drought-plan/. We are in the process of updating our current drought plan with a consultation due in Spring 2026.

The evidence to support our application for a Drought Permit is set out in this document, including:

- How the permit would work (section 1)
- Details of the exceptional shortage of rainfall we have experienced this year (section 3).
- Operational measures we have undertaken including our leakage activities (section 4, 6-8).
- How we have engaged our customers and our methods aimed at reducing demand (section 5).
- A summary of the potential environmental impacts from the implementation of the Drought Permit and where appropriate the mitigation measures to be taken if significant effects are identified through an instigated programme of environmental monitoring pre and during the Drought Permit (section 13).

The full environmental assessment is provided in the Ambergate Environmental Assessment Report (EAR) that describes baseline conditions, assesses the environmental impacts of making a reduction in licenced flow controls at St Mary's Bridge, Derby and explains how we will monitor and where necessary implement mitigation where significant effects are identified through the monitoring programme.

1.2 Proposed drought permit

The terms of the drought permit being sought are as follows:
Amend licence 03/28/40/121 to:

- Change the instantaneous flow in condition 1 of the licence from 650 megalitres to 470 megalitres
- Change in condition 2 of the licence from 680 megalitres threshold to 500 megalitres.

A copy of the draft permit we are requesting is included with this application. The final permit content is being finalised by the EA.

Our intention is for the permit to come into force as soon as possible following the application and to remain in place to 31 March 2026. If necessary, we may choose to apply to the EA for a permit extension for a further six months.

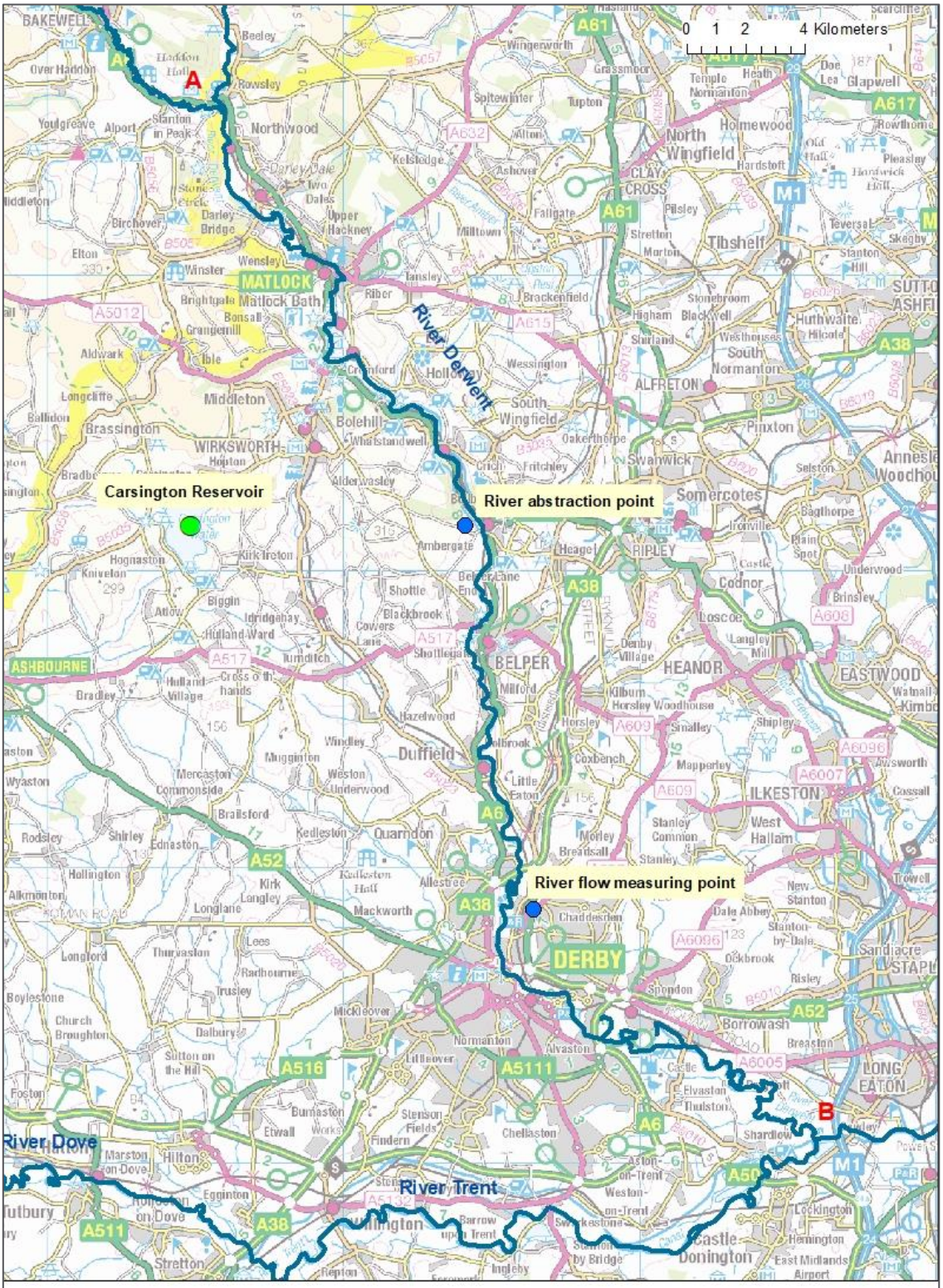
Applying for a drought permit at Ambergate reflects the exceptionally low rainfall and hot, dry weather we have experienced since February this year. The drought permit will allow us to abstract water to refill Carsington and Ogston reservoirs over winter at times when the current licence river flows would restrict this.

This will aid the refill of the reservoir for 2026. This will help prevent a severe shortage of water for customers should we experience a repeat of 2025 conditions in 2026.

We recognise that granting a drought permit is not without risk because we are seeking to abstract water when river levels are lower. It is important to note that whilst the drought permit would enable us to abstract water when river flows are lower than the licence currently allows, the drought permit limit is higher than the observed natural flows this summer. Implementing the drought permit would therefore still mean flows are maintained above the flow level that would have occurred naturally this year. We have commissioned an environmental assessment of the potential effects of the permit. The environmental assessment focuses on how the drought permit will affect the hydrological, hydrogeological and/or geomorphological environment of the River Derwent and then considers how this will impact ecology, designated sites, other abstractors, navigation and recreational users. Further details of environmental impacts and how these will be managed is presented in Section 13.

Figure 1.1 illustrates the extent of the river reach that has the potential to be affected by the flow changes.

Figure 1.1: Map showing the maximum extent of the area that could be affected



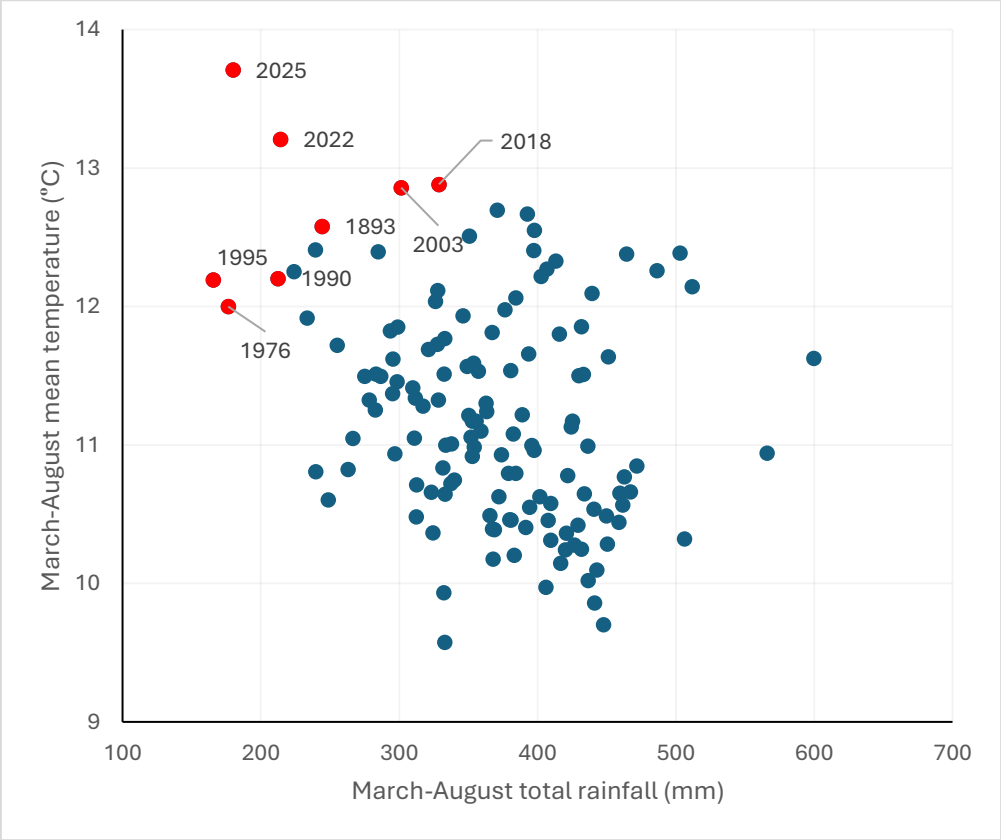
2. Why do we need this drought permit?

This drought permit application is necessary due to the exceptional shortage of rainfall experienced throughout the spring and summer of 2025. Since February conditions across the UK have been extremely dry, with the Midlands being particularly hard hit. Across the Midlands:

- Below average rain fell for seven consecutive months (February to August);
- March to June rainfall totals were the driest on record for the Severn-Trent region and the second driest for England as a whole[1];
- Just 112mm of rain fell across the Midlands during the summer months – 56% of the average rain we would expect to receive[2];
- September was above average rainfall and the forecast indicates total October rainfall could also be above average. Despite the increased rainfall base flows in the river have not yet fully recovered, preventing abstraction and reservoir refill under normal licence conditions.

Our Ambergate abstraction is located within the River Derwent catchment and provides water to our Strategic Grid North WRZ. As can be seen in Figure 2.1 across the Strategic Grid North WRZ 2025 has been one of the driest March to August periods on record (since 1890), with only 1995 and 1976 having been drier. It has also been the hottest March to August period on record.

Figure 2.1: Strategic Grid North WRZ comparison of March to August rainfall by year from 1890 to 2025



In early 2025 Carsington and Ogston reservoirs had been refilled and were over 95% full. However, since then the catchment has been severely affected by exceptionally low rainfall, impacting river and reservoir levels. A

[1] https://nrfa.ceh.ac.uk/sites/default/files/2025-07/
[2] https://www.metoffice.gov.uk/blog/2025/regional-weather-stats-for-summer-2025

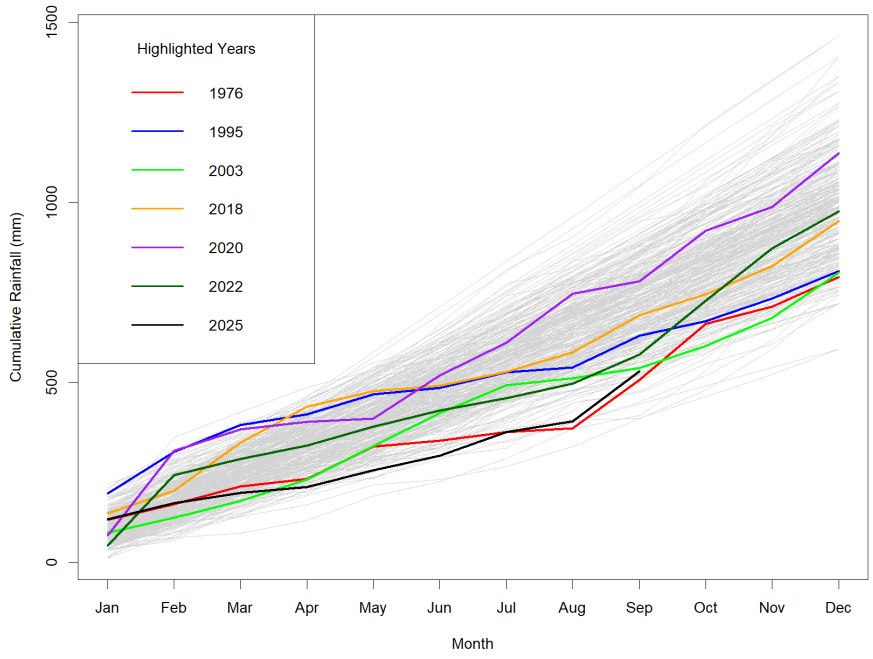
summary of our exceptional shortage of rainfall assessment can be found in section 3, with the full assessment in Appendix – Exceptional Shortage of Rainfall.

Since February the Derwent catchment and wider Strategic Grid North catchment have experienced below average rainfall, including the driest February to May period on record.

We initiated our Drought Action Team in March 2025. We have been monitoring the situation closely and have directed an enormous amount of activity on both supply side and demand side measures to protect raw water storage in our reservoirs and across our wider network. We have focused our attention on how we manage our reservoir storage over the continued dry weather, and we have balanced raw water storage across the Strategic Grid North WRZ using our river and groundwater sources as priority to preserve storage into the autumn and for next spring/summer.

Figure 2.2 below shows the cumulative rainfall totals for the Derwent (Mids) catchment from 1871 to 2025, with key dry and drought years highlighted. The cumulative rainfall for 2025 (black line) was similar to or less than 1976. Even if rainfall returns to around normal for the time of year, the Derwent (Mids) catchment annual total is likely to be significantly less than the long term average, leading to a risk of a severe deficiency of supplies in summer 2026.

Figure 2.2: Derwent (Mids) cumulative rainfall by year (1871 to 2025)



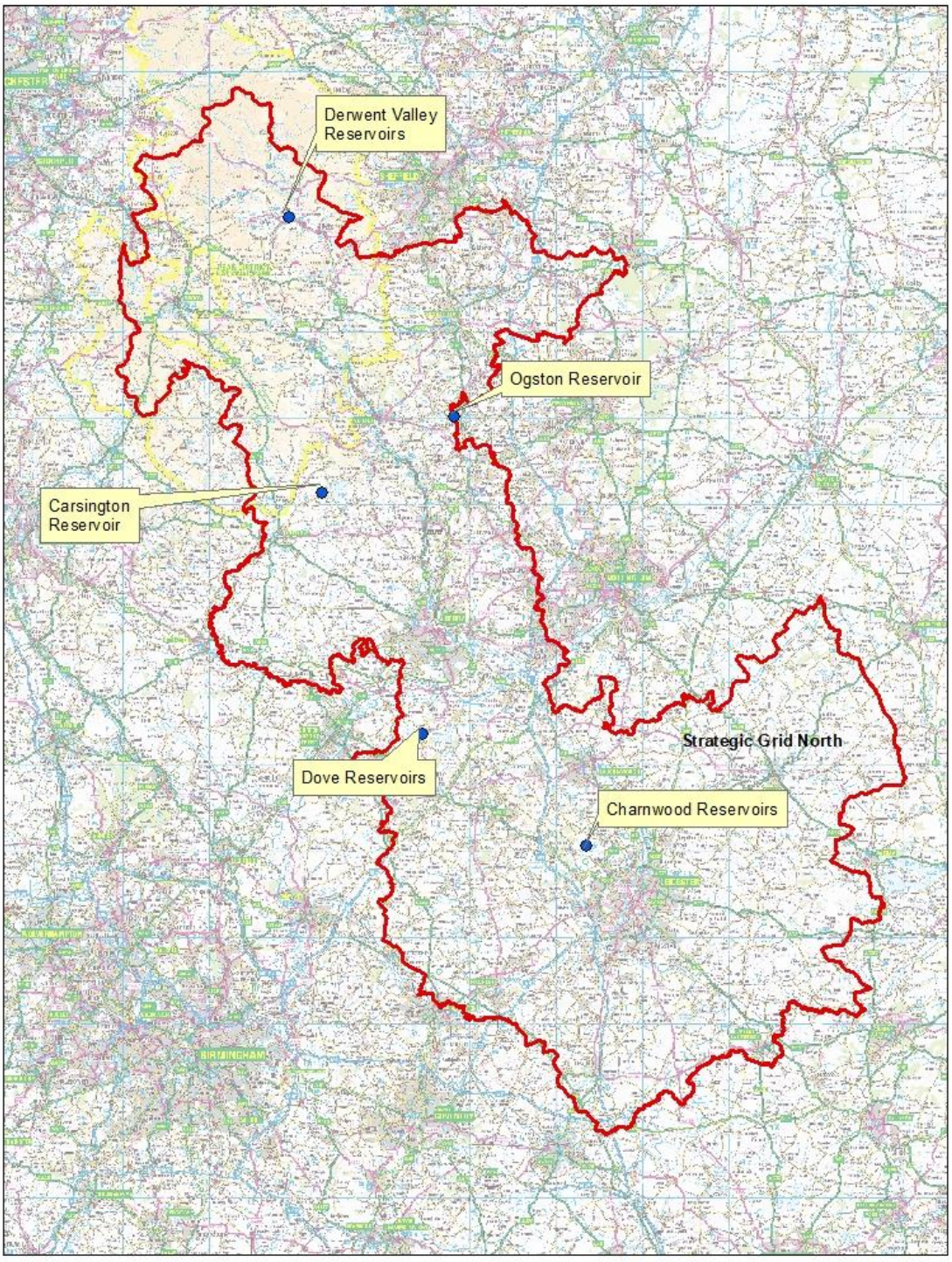
If there is not sufficient rainfall over the coming months our ability to adequately refill the reservoirs will be put at risk. The purpose of this drought permit is to help maximise the refill of Carsington and Ogston reservoirs over the coming winter, securing supplies for our customers to avert the imminent risk of a severe deficiency of supplies in summer 2026, ensuring we can support the downstream river system throughout 2026 and reducing the likelihood of other summer drought permits.

2.1 Strategic Grid North supply area

Carsington and Ogston reservoirs are located in the Strategic Grid North water resource zone. Figure 2.3 **Error! Reference source not found.**shows the location of the reservoirs in the context of the water resource zone.

The reservoirs are part of a wider network of sources, including other reservoirs, river abstractions and groundwater sources that supply customers with drinking water.

Figure 2.3: Strategic Grid North WRZ



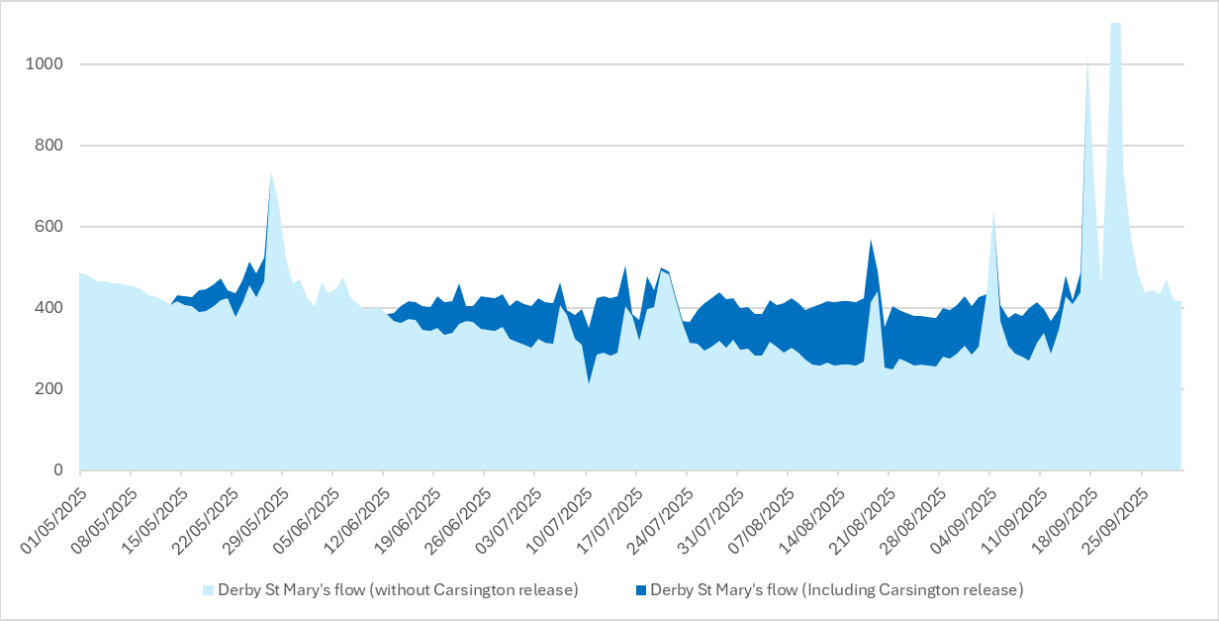
0 2.5 5 10 15 20
Miles

2.2 Daily water demand and how it is met from the available source

Carsington and Ogston reservoirs are part of a wider network of water sources in our Strategic Grid North WRZ. We operate these sources “conjunctively”, using more or less of different water sources depending on abstraction licence conditions, water availability and our customers demand for water.

As shown in Figure 2.4 we have been making releases from Carsington reservoir to support abstraction along the River Derwent at Sites E and F across the summer. By making these releases and also maximising the use of site J we have been able to keep these sites at higher flows which has helped to reduce abstraction at our Derwent Valley reservoirs and therefore stopped us requiring a potentially more harmful summer drought permit at those reservoirs.

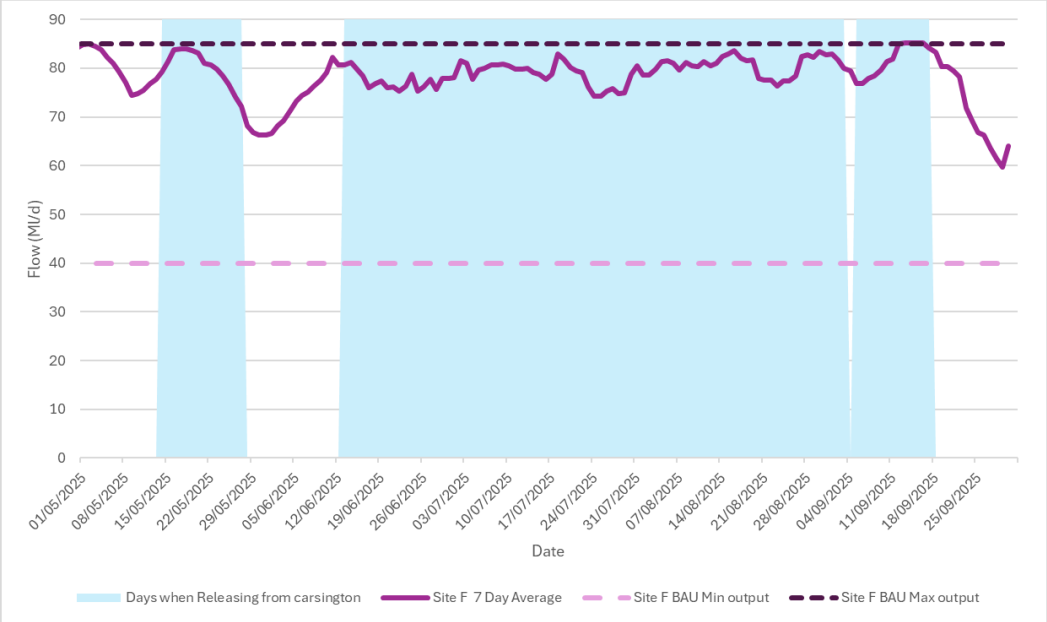
Figure 2.4: River Derwent flow at Derby St Mary’s Bridge Gauge, with releases from Carsington



As we move into autumn and reservoir levels in Derwent Valley and river levels in the River Derwent have begun to increase, we have reversed these actions and are now abstracting more water from Derwent Valley. River levels have improved and we have currently stopped making releases to the River Derwent from Carsington, however at most times they remain too low for abstraction to refill the reservoir under normal licence conditions. We will continue to balance abstractions and releases across the Strategic Grid North WRZ to help refill all the reservoirs across the coming winter and into spring 2026. More information on our drought plan actions can be found in section 4.

Figure 2.5 shows how releases from Carsington have helped to maintain high levels of abstraction at Site F across the whole summer by keeping levels above the lower Hands-off Flow (HOF) at Derby St Mary’s gauging station of 340Ml/d. The releases have also helped maintain abstraction at site E, which is controlled by the gauging station at Site F Weir.

Figure 2.5: Abstraction at site F and days of release from Carsington reservoir to the River Derwent



BAU (Business as Usual)

2.3 Forecast effects of continued dry weather on customers supplies

To forecast the impact of continued dry weather on our storage and the potential risk to customer supplies, we run a Low Flows Tool Water Resources model which uses our GR6J rainfall-runoff models, the latest gridded rainfall and potential evapotranspiration (PET) datasets available and recent observations provided by the Environment Agency.

For 2025 we have developed this new tool which allows us to forecast projections based on recent conditions alongside percentage of long-term average future rainfall. We have begun to use this tool to support our drought management activities and forecast future reservoir levels.

In the tool we have run 10 Long Term Average LTA (1991-2020) rainfall ensembles (sub sampled from the bias corrected drought library for 2025) through our model to create 10 flow ensembles. These have then been put into our reservoir projection model to forecast the potential position from October 2025 to the end of March 2026. Demand in the Aquator water resources model part of the Low Flows Tool is based on average 2018 baseline demands with the 2018 monthly profile as per the base line in our Water Resource Plan 2024 (WRMP24) modelling. This has been increased by 5% to more closely match Distribution Input from 2018.

Figure 2.6: Carsington/Ogston Reservoir Projection Based on 60% LTA Rainfall

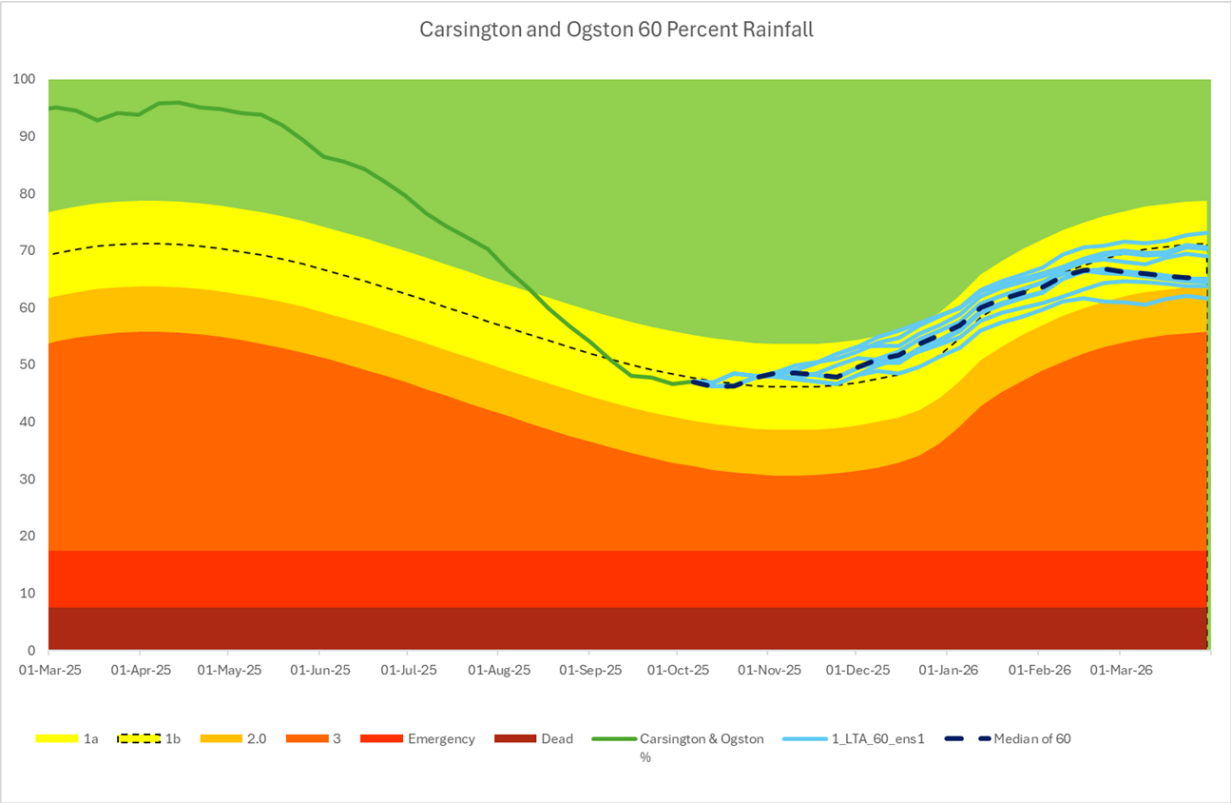
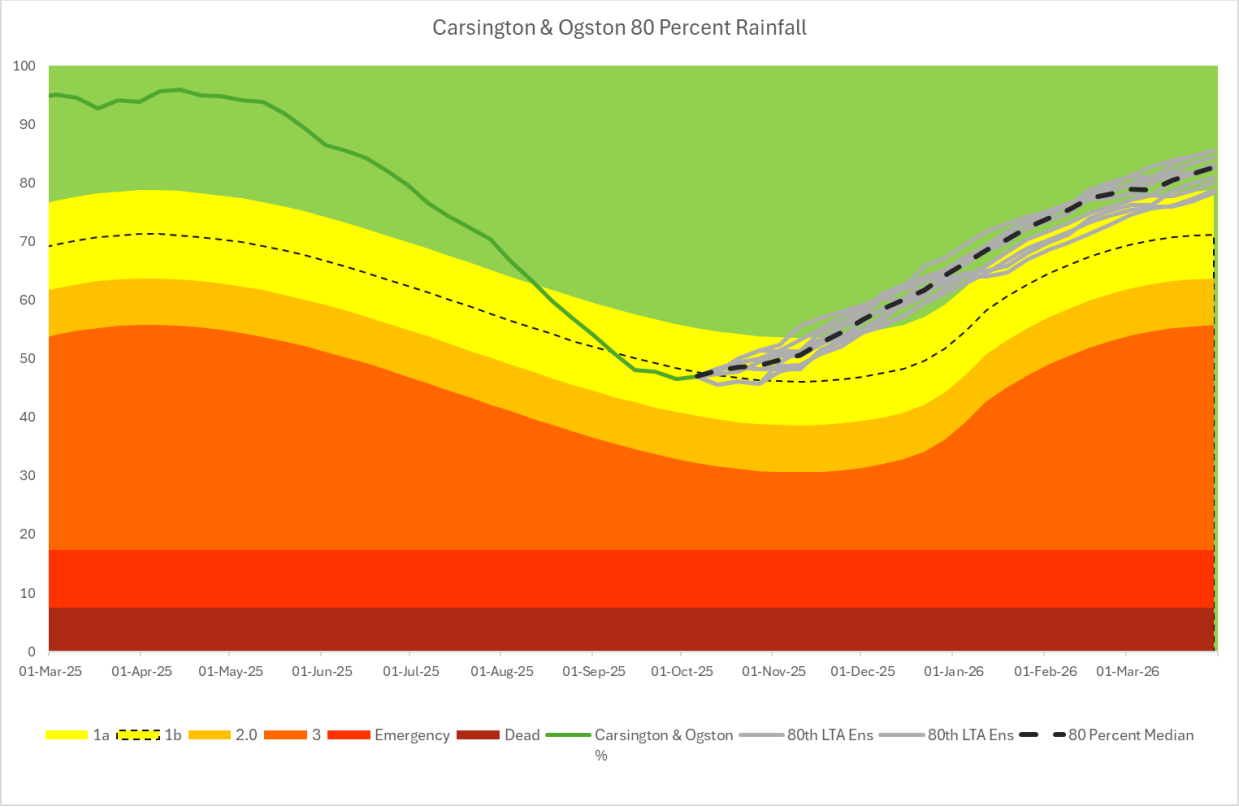


Figure 2.7: Carsington/Ogston Reservoir Projection Based on 80% LTA Rainfall



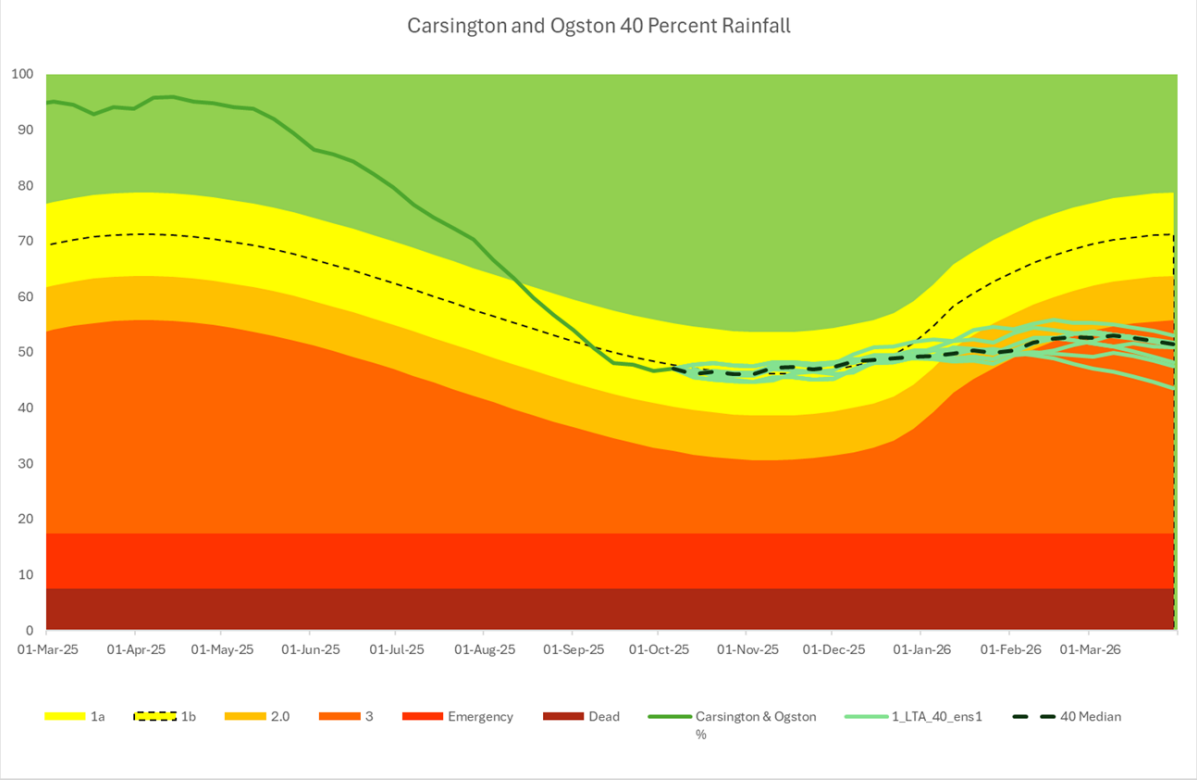
Our reservoir refill projections, illustrated in Figure 2.6 show that if we have 60% of LTA rainfall over the coming Autumn/Winter/early Spring (which is similar to the 67% LTA rainfall we have had in Derwent (Mids) catchment and 64% LTA for Strategic Grid North overall between February and September 2025), then under normal operation reservoir storage would be unlikely to recover to more than **65%** of total storage by the end of March 2026. This would leave us in level 1b of our strategic storage triggers close to level 2 and 30% below our target storage of 95% for pumped storage reservoirs for 1st April. That level would present an imminent and serious threat to public water supplies should we experience a repeat of the 2025 spring/summer rainfall patterns.

Figure 2.7 shows if we have 80% Rainfall LTA, which is well above the 67% LTA rainfall we have had February - September this year but still below normal rainfall, then under normal operation we would be unlikely to refill the reservoirs to above 85%. Which is still 10% lower than our target and only just above level 1a of our strategic reservoirs triggers in April.

Figure 2.8 shows that in the unlikely event we had an extremely dry winter with 40% of LTA rainfall, then under normal operation we would only hold storage level over the Winter. Going into the Spring, storage would only be around 51% by the end of March.

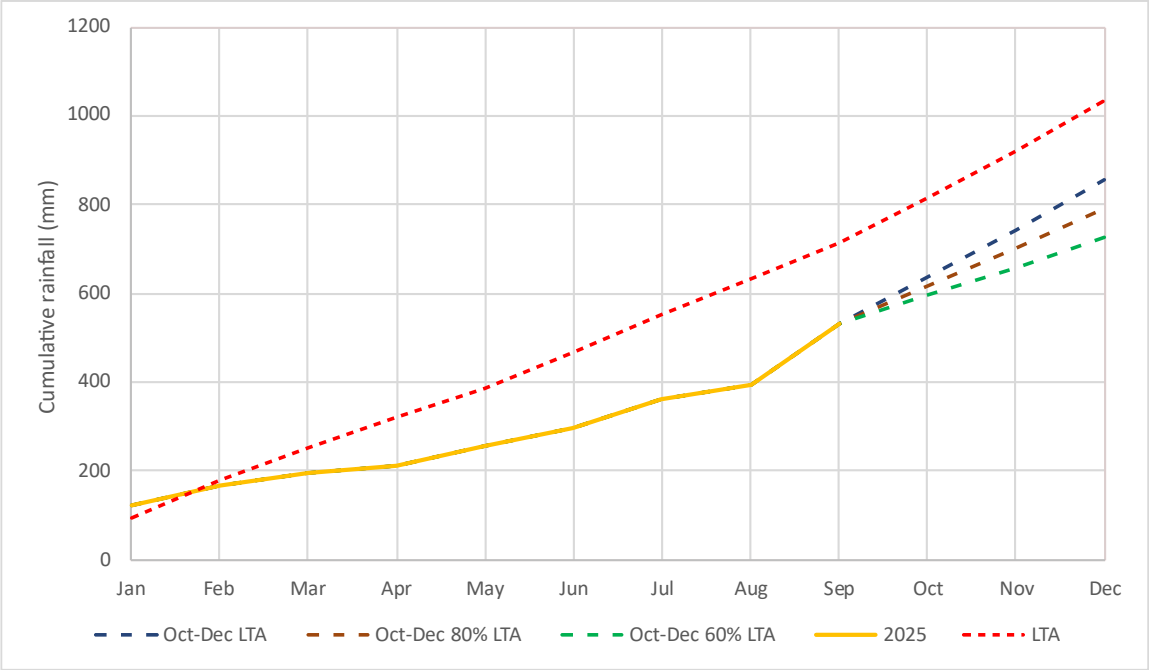
These projections assume that we are operating the reservoirs in line with the normal licence conditions and are making no releases to the river to support abstraction. It should be noted that the reservoirs have a small natural catchment area meaning that refill from runoff is limited. Having a prolonged increase in river flows as the result of rainfall is important for achieving refill.

Figure 2.8: Carsington/Ogston Reservoir Projection Based on 40% LTA Rainfall



Even if we were to have 100% of LTA for the rest of the year, the Derwent (Mids) catchment would remain in rainfall deficit. The dashed red line in Figure 2.9 is the long term average rainfall, with the yellow line showing the cumulative rainfall for 2025 for the Derwent (Mids) catchment to date.

Figure 2.9: Cumulative rainfall total for Derwent (Mids) catchment during 2025 with 100%, 80% and 60% of LTA from October to December



The purpose of the drought permit is to help maximise the Carsington and Ogston reservoirs refill over the coming Autumn, Winter and Spring to avert **a risk of serious deficiency of water customers' water supplies throughout 2026** and ensure we are able to support the downstream river abstractions next summer thus helping to protect the river environment.

If we cannot sufficiently refill Carsington reservoir over the coming months, customers' 2026 security of supply will be put at risk for 37,100 customers directly supplied from Carsington/Ogston reservoirs and also 2,277,000 customers within our wider Strategic Grid North water resource zone. This is because Carsington and Ogston reservoirs are used conjunctively with the other raw water sources in our Strategic Grid North.

The drought has not only impacted our Carsington and Ogston reservoirs, but also across the wider Strategic Grid North and company as whole. By September 2025, all the raw water reservoirs in the Strategic Grid North were exceptionally low for the time of year. Figure 2.10 shows that Carsington & Ogston, Dove and Charnwood were all still in amber status at the start of October. Derwent Valley has begun to refill, and we are now rebalancing our abstractions to use more water from that reservoir system and less from the other reservoirs.

Figure 2.10: RAG status of Reservoirs across the company 06th Oct 2025

It can be seen in Table 2.1 that our reservoir storage across the company remains around 50% and that Carsington and Ogston combined storage remains below 50%. Dove and Charnwood reservoirs are also very low for the time of year.

Table 2.1: Reservoir storage levels in October 2025

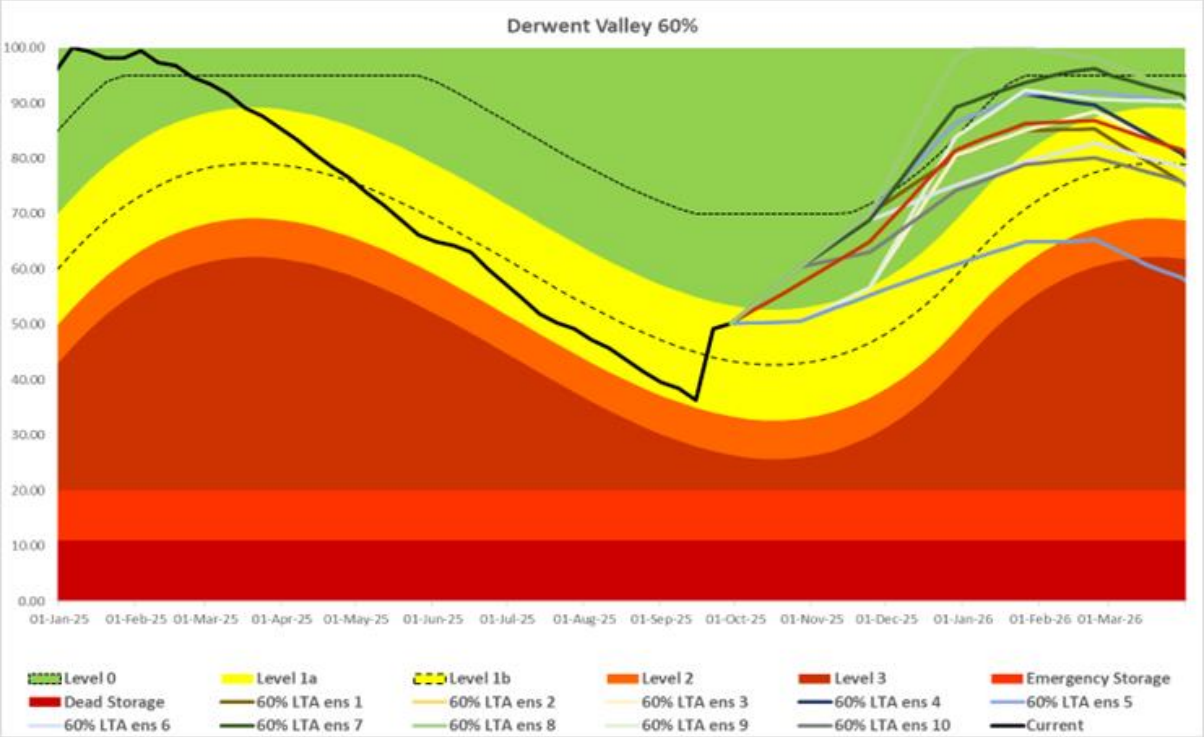
RAW WATER RESERVOIR STORAGE 06 October 2025							
Reservoir	Pumped or Natural Fill	CAPACITY	LAST WEEK'S STORAGE		CURRENT STORAGE		Difference
		(Ml)	%	(Ml)	%	(Ml)	%
TITTESWORTH	Natural	6440	52.1	3355	55.8	3594	3.7
ELAN VALLEY	Natural	99500	49.8	49581	52.9	52586	3.0
DRAYCOTE	Pumped	23000	73.4	16882	73.3	16859	-0.1
CARSINGTON and OGSTON		42381	**46.6**	19755	**47.0**	19925	0.4
OGSTON	Pumped & Natural	6050	59.3	3588	54.9	3321	-4.4
CARSINGTON	Pumped & Natural	36331	44.5	16167	45.7	16603	1.2
DERWENT VALLEY		46345	**50.2**	23261	**53.9**	24960	3.7
⌙ Howden	Natural	8998	30.4	2735	35.1	3158	4.7
⌙ Derwent	Natural	9478	61.6	5838	73.3	6947	11.7
⌙ Ladybower	Natural	27869	52.7	14687	53.3	14854	0.6
DOVE		19845	**44.5**	8828	**44.4**	8808	-0.1
⌙ Foremark	Pumped	13190	41.3	5447	41.5	5474	0.2
⌙ Staunton	Pumped	6655	50.8	3381	50.1	3334	-0.7
CHARNWOOD		4756	**23.8**	1130	**24.0**	1142	0.2
⌙ Swithland	Natural	2228	22.7	506	23.0	512	0.3
⌙ Cropston	Natural	2528	24.7	624	24.9	629	0.2
BARTLEY/FRANKLEY	Pumped	3281	72.7	2386	72.9	2392	0.2
WHITACRE	Pumped & Natural	2160	41.6	899	41.3	892	-0.3
TOTAL RAW WATER STORAGE		247708	**50.9**	126076	**52.9**	131157	**2.05**

Nb. Reservoirs inside the red box are in Strategic Grid North

Figure 2.11 shows that for Derwent Valley Reservoirs (which are also part of the Strategic Grid North WRZ) should we have 60% LTA rainfall across the winter we would mostly likely be in Level 1b of our strategic storage triggers, at around 70-75% of total storage, this would mean we would be going into the 2026 drawdown period 20-30% lower than normal.

Under these dry conditions we would be relying heavily on Sites E, F and J (which are all supported by Carsington and Ogston reservoirs) to help reduce our abstraction from the Derwent Valley reservoirs. Should this not be possible due to the low levels in Carsington and Ogston, we would have to increase our abstraction from Derwent Valley reservoirs, which could see those reservoirs hitting **Emergency Storage** or lower if we had similar conditions to 2025. This would pose **a risk of serious deficiency of water customers' water supplies** to the 111,800 customers directly fed by that source, the 2,277,000 customers within our wider Strategic Grid North water resource zone and customers of Yorkshire Water whose supplies are supported by a raw water export from the Derwent Valley reservoirs.

Figure 2.11: Derwent Valley reservoirs projections based on 60% LTA Rainfall



Applying for this drought permit over the winter period will also help protect and reduce risk to the wider river environment during 2026. If reservoir storage does not recover over the winter, then it will make it more likely that we would need to seek a summer drought permit in 2026 here or at the Derwent Valley reservoirs, which may potentially be more environmentally damaging due to the lower river flows that naturally occur at that time of year.

2.4 Why this permit is the most suitable solution

This drought permit is the most suitable solution to help Carsington and Ogston reservoirs this winter because it has a direct impact on the ability to abstract from the River Derwent should the winter be dry and the river remains below normal levels, limiting our ability to refill them over winter. We have now minimised our abstraction from the reservoirs to support refill. We took this action as soon as possible. Abstraction from the reservoirs in the summer was high to help preserve raw storage in our parts of the Strategic Grid North system. Our Environmental Assessment Report (EAR) also suggests the winter drought permit is environmentally low risk.

Table 2.2 shows the average Megalitre per day benefit in abstraction availability between the licenced 680Ml/d HOF (Hands off Flow) and the availability under the potential permit HOF of 500Ml/d at Derby St Mary's gauge under drier scenarios is significant.

Table 2.2: Difference in available daily abstraction with the drought permit

Difference in available abstraction in Ml/d for various percentile river flows between the licenced HOF and Drought Permit HOF	Nov	Dec	Jan	Feb	Mar
5th driest	33.3	15.0	37.9	52.0	78.6
10th driest	36.8	30.7	19.0	31.3	42.2
20th driest	39.9	16.7	1.8	5.3	19.3
30th driest	30.4	5.1	0.0	0.0	2.7

This permit directly increases our ability to refill these reservoirs and therefore will also support supplies to our customers and help protect the environment if next summer is dry. It does this by allowing us to balance storage across the wider Strategic Grid North and reduce the likelihood of a serious deficiency of supplies that could occur if we are unable to use storage from Carsington and Ogston to supply the areas covered by Ogston reservoir. Improved storage at Carsington and Ogston would help support a reduction in abstraction at the Derwent Valley reservoirs next summer, should 2026 be a similar dry year to 2025. The additional abstraction at the lower HoF under the drought permit conditions still maintains river flows at a higher level than those that have been observed in natural low flows this summer.

The 40% LTA rainfall projection (figure 2.8) shows that we could cross into Level 3 later in the winter, and the median of the 60% LTA rainfall projection (figure 2.6) is close to the boundary of Level 2. These scenarios present a clear **risk of serious deficiency of water customers' water supplies**. By acting now with the winter drought permit, we will reduce the likelihood of this happening and it should prevent us from having to resort to a higher environmental risk summer drought permit. Carsington and Ogston reservoirs have small natural catchments which limits the refill from runoff during and after rainfall events. River levels need to be high enough for us to abstract to refill the reservoir, which will require prolonged periods of rainfall and a sustained improvement in baseflow, unless we are able to implement the drought permit.

3. Exceptional shortage of rain (ESOR)

In this section we summarise our ESOR analysis. The full analysis can be found in Appendix -ESOR.
We have conducted our ESOR Assessment in line with the Environment Agency's guidance - 'Hydrological guidance for the assessment of an Exceptional Shortage of Rain (ESoR), 2025'. Our assessment has focused on the Derwent (Mids) EA catchment and Strategic Grid North WRZ area, with rainfall data from HadUK (1871–2024) and EA daily rainfall tool (DRT) (Jan–Sep 2025).

Technical Analysis Methods

- SPI and SPEI indices have been used to assess drought severity.
- Rainfall ranking, probability bands, and return period analysis have been applied.
- Long duration rainfall frequency analysis confirms 2025 as one of the driest years.
- Supporting data includes: Soil Moisture Deficit (SMD), river flows, effective rainfall, temperature.

Period of Analysis

- February 2025 (first month of significantly below-normal rainfall) to September 2025.
- October rainfall compared to LTA but not used in technical methods.

Evidence of an exceptional shortage of rain

- **Seven consecutive months** (February – August) of below average rainfall across the catchment areas. Even with heavy rainfall in September the February to September period was the 7th driest on record for the Derwent (Mids) catchment.

- Rainfall in Derwent (Mids) in April was just **24% of LTA** (based on the 1991-2020 LTA period).
- The SPI and SPEI values show "**Extremely Dry**" conditions across multiple periods from April to August. SPEI remained "**Extremely Dry**" for the 8-month period to September.
- Rainfall rankings showed multiple months have been ranked in the **top 5 driest in 155-year** record.
- The Derwent (Mids) catchment and the Strategic Grid North area had a rainfall return period of **143 years** for February to August. For February to September the rainfall return period was **21 years and 31 years** for Derwent (Mids) and Strategic Grid North respectively.
- Probability band based on Cunnane plotting showed the majority of periods ranked as "**Notably Low**" or "**Exceptionally Low**".

Impacts on river flows and reservoirs

- River Derwent flows dropped significantly from February onwards.
- Only sustained releases from Carsington Reservoir helped maintain abstraction levels at our River Derwent abstractions across the summer.
- The use of these releases to support the river abstractions helped to prevent triggering of a summer drought permit at Derwent Valley reservoirs.

Conclusion

From the ESOR analysis undertaken, it is clear that across the spring and summer of 2025 there has been an exceptional shortage of rainfall at both the Derwent (Mids) catchment level and across the wider Strategic Grid North WRZ. This is the reason that we have the risk of a serious deficiency of supplies of water in this area should we see a further dry period across the Autumn, Winter and Spring.

4. Evidence of operational measures followed and our drought plan

Throughout 2025 we have taken proactive measures to manage our supply network to protect storage in Carsington and Ogston reservoirs and try to avoid the need for us having to make this drought permit application. We describe in this section the different actions we have taken throughout the year and the alternative measures we have considered before making this drought permit application. Many of these actions and the associated triggers are described in our Drought Plan. In summary the escalating operational actions that are described below and in our Drought Plan shows that we have deployed the actions that could have a direct benefit on protecting Carsington and Ogston reservoir storage, alongside balancing raw water storage across our wider network to provide security of supply to our customers and prevent the need for summer drought permits.

4.1 We made sure we had sufficient reservoir storage in time for summer 2025

Figure 4.1 **Figure 4.1: Raw water availability status as of 3 March 2025**shows the raw water storage position going into March 2025 based on red, amber or green status. Storage levels at all our reservoirs were on target for the time of year.

Figure 4.1: Raw water availability status as of 3 March 2025

Due to our operational measures over the preceding winter our strategic water sources were above target levels in February 2025, meaning that we entered the dry spring in a very strong water resource position. Figure 4.2 shows the overall percentage storage in the reservoirs in our Strategic Grid North WRZ from 1st January 2025. At the start of February 2025 Carsington Reservoir was 94.9% full and was 100% full at the start of April.

Figure 4.2: Strategic Grid North Raw water storage 2025

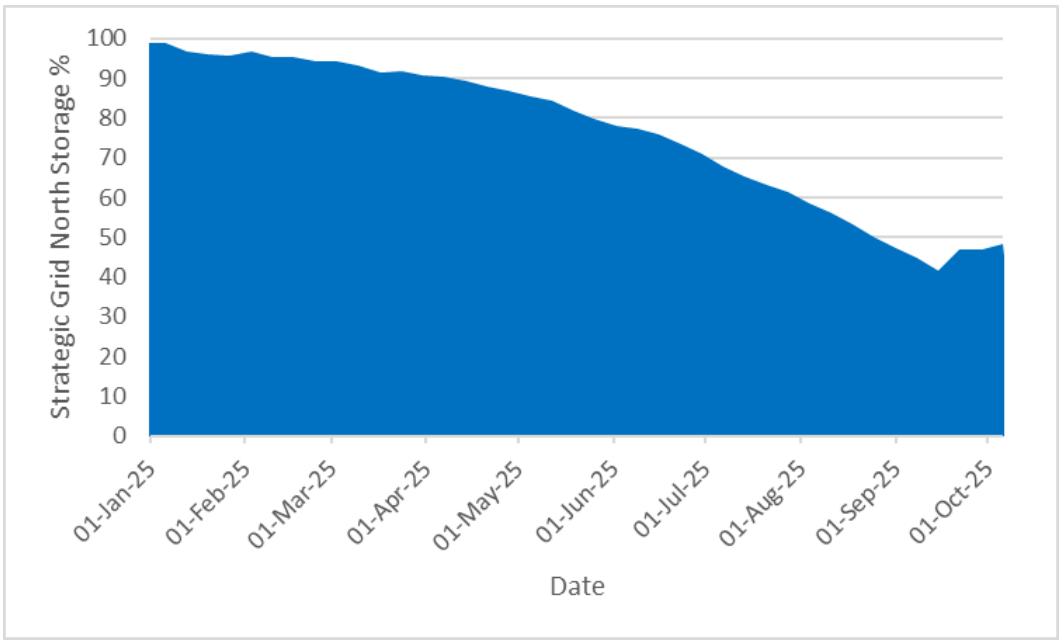


Table 4.1 shows the overall raw water storage position for our strategic sources in March 2025 and demonstrates that overall reservoir storage was above our target of 95% into early March.

Table 4.1: Raw Water Storage Summary March 2025

RAW WATER RESERVOIR STORAGE 03 March 2025							
Reservoir	Pumped or Natural Fill	CAPACITY	LAST WEEK'S STORAGE		CURRENT STORAGE		Difference
		(Ml)	%	(Ml)	%	(Ml)	%
TITTESWORTH	Natural	6440	100.0	6440	99.0	6376	-1.0
ELAN VALLEY	Natural	99500	98.7	98246	98.8	98266	0.0
DRAYCOTE	Pumped	23000	95.1	21873	94.3	21689	-0.8
CARSINGTON and OGSTON		42381	**94.6**	40080	**95.1**	40317	0.6
OGSTON	Pumped & Natural	6050	94.4	5711	93.5	5657	0.9
CARSINGTON	Pumped & Natural	36331	94.6	34369	95.4	34660	0.8
DERWENT VALLEY		46345	**94.6**	43833	**93.5**	43316	-1.1
⌙ Howden	Natural	8998	91.2	8206	92.0	8278	0.8
⌙ Derwent	Natural	9478	94.2	8928	92.1	8729	-2.1
⌙ Ladybower	Natural	27869	95.8	26699	94.4	26308	-1.4
DOVE		19845	**92.4**	18335	**92.8**	18414	0.4
⌙ Foremark	Pumped	13190	94.2	12425	94.7	12491	0.5
⌙ Staunton	Pumped	6655	88.8	5910	89.0	5923	0.2
CHARNWOOD		4756	**100.0**	4756	**100.0**	4756	0.0
⌙ Swithland	Natural	2228	100.0	2228	100.0	2228	0.0
⌙ Cropston	Natural	2528	100.0	2528	100.0	2528	0.0
BARTLEY/FRANKLEY	Pumped	3281	79.3	2602	72.9	2390	-6.5
WHITACRE	Pumped & Natural	2160	80.7	1742	78.4	1694	-0.3
TOTAL RAW WATER STORAGE		247708	**96.0**	237908	**95.8**	237218	**-0.28**

Nb. Reservoirs within the red box are in the Strategic Grid North Zone.

4.2 Our drought plan measures

This section shows how we have followed our drought plan and where we have taken additional actions to minimise impacts on supply. Tables 4.2 and 4.3 below detail the supply and demand actions implemented.

Table 4.2: Supply side drought plan actions taken throughout 2025

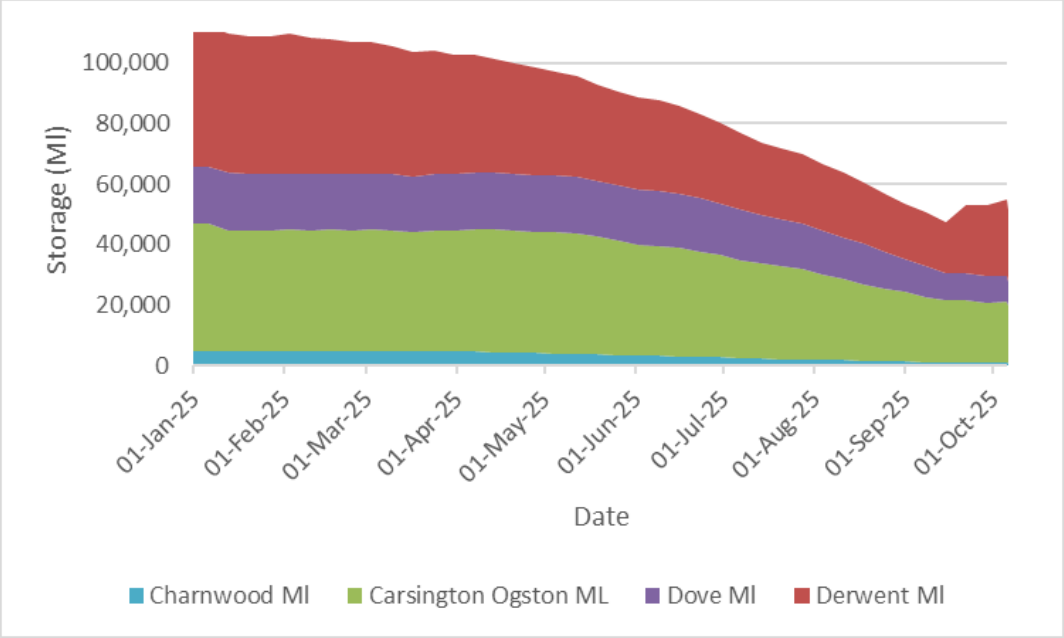
Trigger level	Supply activities	Started	Comments and impact
Trigger level 1a	Convene Drought Action Team (DAT)	March 2025	Emerging risk session 17th March (pre-DAT). DAT convened 24th March
	Consider reduced output of Site R	April 2025	Following the formation of our DAT in March, we significantly reduced our abstraction at this site across spring and summer. In April we reduced our Site R production down to an average of 109Ml/d across the month (against a state allowance of first 175Ml/d and then 155Ml/d).
Trigger level 1b DAT to decide on supply side options to implement and when. Actions within each trigger level are not in priority order.	Liaise with EA, Yorkshire Water and other neighbouring water companies	April 2025	**Environment Agency** We have regular monthly BAU Water Resources planning catch ups with the Environment Agency, which include a water resource situation update. We had a specific dry weather meeting with the EA on 4th April 2025, the week after our DAT was convened. We have provided the EA with weekly updates initially through update packs and then via weekly meetings and update packs from May onwards. We started specific Ambergate drought permit pre-app discussions in June 2025, with regular meetings from August 2025. **Yorkshire Water** We continue to hold regular monthly BAU calls with Yorkshire Water.
	Review maintenance schedule and Asset Creation work	April 2025	Since our Drought Action Team started, we have been reviewing our planned outage at our works across the WRZ, ensuring that only outages that improve the overall situation are allowed to go ahead and only when demand allows without impacting the demand on our reservoir storage. Our Water Production Management team have been meeting regularly with Asset Creation to ensure only work that does not reduce our production capacity has been undertaken.
	Maximise abstractions depending on storage and flows	April 2025	Our Drought Action Team has been carefully balancing the use of sources across the WRZ since April 2025. When the reservoirs dropped into Level 1 at Derwent Valley, we quickly moved away from BAU management of sources (where we manage our sources equally based on cost and resource) to dry

		weather/drought operation (we manage the sources based on storage and licence availability alone). Early in the drought we minimised the use of Derwent Valley and maximised the use of other sources, particularly our river abstractions on the River Derwent initially using available flows in the river and later in the summer utilising releases from Carsington reservoir to support the abstractions. We have also increased our use of groundwater sources in this zone and the adjoining Nottinghamshire zone to support the reduction in use of reservoir sources. For example the Strategic Grid North has only one GW source which was used at an average of 1.8Ml/d between April and September 2025, as compared to 0.21Ml/d in the same period in 2024 In Nottinghamshire we have used an average of 164Ml/d of GW in between April and September 2025 compared to 150Ml/d in 2024 across the same period. There have been no groundwater outages in the Strategic Grid North. We have balanced use across our reservoirs to draw them down across the summer at a similar rate. See Figure 4.3. This has meant that all of our reservoirs in this WRZ are now drawn down to low levels and will require refilling over winter. Being able to refill Carsington and Ogston this winter will ensure that we can balance supplies across the Strategic Grid North next summer.
Consider importing via Elms Farm – depending on demand and availability	Potentially November	Due to the extended spatial extent of the drought which has also covered our Strategic Grid South and Central WRZs, there has not been spare water available to reverse flows at Elms Farm to support the Strategic Grid North WRZ during this particular event. As our storage across other parts of the network improves, we will consider reducing the Elms Farm export and whether it is possible to bring imports in from the Strategic Grid South.
Reduce Site R output to min sustainable flow	May 2025	In May we further reduced our average abstraction at site R to 105Ml/d (against a state allowance of 155Ml/d then 135Ml/d). Where possible we minimised abstraction down to below 100Ml/d. In June, even during periods with very high temperatures, our WTW abstraction averaged 126Ml/d (State allowance 135Ml/d). Prior to the peak temperatures the abstraction was kept down to 90Ml/d.

		During July, again a month with a number of peak temperature events, we kept abstraction to our WTW to an average of 112Ml/d (State allowance 115Ml/d). When possible we kept the WTW down to 90Ml/d. In August we dropped our WTW below its previous minimum sustainable flow. Managing to keep the abstraction to the works to 83Ml/d during a further hot and dry month. We implemented a temporary pump back system on our network in August that has allowed us for the first time to reduce our abstraction at site R to below 80Ml/d consistently for a number of weeks. In October, now that the Derwent Valley reservoirs have begun to refill, we have increased our abstraction from there and reduced abstractions from the other reservoirs in the Strategic Grid North which remain low, including Carsington and Ogston.
Consider site J reduction	October 2025	We have been balancing the use of our sources in Strategic Grid North over summer. This has meant that site J had not been reduced across that period. Over winter we will be reducing abstraction at site J where possible.
Switch off site J	N/A	We have been balancing the use of our sources in Strategic Grid North over summer. This has meant that site J has not been switched off.
Prioritise Carsington refill	Sept/Oct onwards	Carsington has been used to support river sources this year alongside increased use of site J, which means it is below its normal level for the time of year and will require a longer refill period than normal at high abstractions. In September and October catchment filled reservoirs have seen an increase in levels with periods of rainfall, however, due to the pumped nature of Carsington's refill this is slower and needs further support. This permit will support the prioritisation of Carsington refill by allowing us to abstract if the levels in the River Derwent are lower than normal.
Reduce Langley Mill	May 2025	Reduced average use from 18Ml/d to 14Ml/d with a reduction to 13Ml/d from 20th May. From the 16th July onwards it was again further reduced to 10.5Ml/d average.
Strelley Support for Misk Hill	April 2025	Continuous support throughout with additional use of Strelley boosters. This has been enabled by the increased use of Notts GW this summer.
Support of Strelley from Notts Boreholes and Site E	April 2025	Consistent increased support from Site E. Notts boreholes increased to support reduction in export from Strelley.
Reduce King's corner to Strelley Flow	April 2025	Reduced to minimum, with some temporary increase to support the area in high demand.

	Consider releases from Carsington or DV to support Ambergate and site F	June 2025	We have been making releases across the summer to support our downstream abstraction to supply site F. This has in turn meant that those works could be maximised and our Derwent Valley abstraction could be minimised. Releases started on 13th June 2025 and have been used across the summer to ensure maximum abstraction has been available on the River Derwent since then. Releases peaked at around 157Ml/d in August. We have aimed to control the release carefully to ensure we are only releasing what is needed to ensure that we can abstract. We have also been releasing from Carsington reservoir to support abstractions from Ogston reservoir. We have used these releases to balance our reservoir storage across Strategic Grid North.
	Consider imports from elsewhere or rezoning	July 2025	We have reviewed our options to rezone small sections of the WRZ, but due to the wide spatial extent of this particular drought, this is not possible in this case.
	Consider Drought or emergency sources	July 2025	We have had a workstream reviewing the use of our drought sources since July 2025.

Figure 4.3: Strategic Grid North raw water storage 2025 with individual reservoir storage



Alongside the demand activities listed in Table 4.3 below further information on our customer engagement can be found in Section 5.

Table 4.3: Demand side drought plan actions taken throughout 2025

Trigger level	Demand Activities	Started	Comments and impact
Trigger level 1a	Specific and targeted focus on promoting water efficiency through regional media, exploiting existing relationships	April 2025	We have had a constant flow of press articles across the region focussing on being water efficient and sharing messaging on the shortage of rainfall.
	Social media campaigns	April 2025	We educated customers across the region about how to save water with indoor and outdoor water saving tips. Further details in Section 5.
	We will showcase our work in finding and fixing leaks, promotion of leakline, reporting leaks online and report a leak app	April 2025	We used messages to encourage customers to find and fix internal leaks by using the VYN platform through various channels. Autumn/Winter will kick off further specific leakage campaigns.
	Show good examples of our customers taking action to reduce consumption	N/A	Not part of our current hot weather plan.
	Working with the gardening industry to promote saving water in the garden	April 2025	We have used Royal Horticultural Society advice in our customer messages to promote water saving in the garden.
	Work with WaterWise, Water UK and other water companies to ensure joined up and consistent messaging	April 2025	We have had meetings with numerous companies, including through Water Resources West where we shared key messages for consistency. We have engaged with both WaterWise and Water UK during dry weather.
	Working closely with non-household retailers to understand their predicted water use profiles over the coming weeks	June 2025	Had regular meetings with New Appointments and Variations (NAVs) where we updated them on demand situation and created dual branded comms. Also shared content with NAVs. Discussions with large users in hotspot areas on their water use and offering water audits.
Trigger level 1b	Specific focus in the regional media on water usage and efficiency	May 2025	Eight media days held at Carsington Water. Our media days include one-to-one media briefings, with each publication given 45 minutes of their own time to ask any questions.
	Radio campaign showing what we do and what customers can do	7th July	During July - September we ran a water saving radio advert in the following hotspot areas: Birmingham, Derbyshire, Leicestershire, Tittesworth, North Staffs and Coventry.
	Paid for elements of advertising, including features and promotions	14th July	We used digital water saving adverts.
	Possible increased activities such as water efficiency product giveaways via radio and TV	7th July	As the weather remained warm and dry we ramped up our comms by using radio in our drought hotspot areas, including Derbyshire and Leicestershire, for water saving. We also issued a company-wide email campaign.

	Higher profile of water saving on the website, including front page banner	16th July	Updated landing page (stwater.co.uk) and created banner on the home page of the website.
	Increased use of social media including Facebook and Twitter campaigns	April 2025	Continued using social channels to push out internal and external water saving tips, to encourage people to save water, especially in periods of hot weather and high demand.
	Press features on water resources activity, summarising how we plan for dry spells and how customers can help	April 2025	Regular drumbeat of advertorials across the summer in local news.
	Formal media appeals to conserve water	May 2025	As above, we hosted eight media days with BBC and ITV with our summer messaging which resulted in media messages.

4.3 Other Actions undertaken

In addition to the drought plan actions listed above we have taken a number of proactive actions during the summer months to balance our raw water storage across the Strategic Grid North:

- Used flow regulation to reduce demand, as covered in section 5.
- Used enhanced pressure management to reduce demand and leakage as covered in sections 6 and 7.
- Additional work with employee communications and water efficiency pledges as covered in section 5.
- Implementation of our pump back scheme to allow us to reduce Site R to our lowest ever operating levels.
- We have proactively managed our abstractions at other sources to fully utilise available licence to support reduced abstractions at Carsington.
- We have proactively conserved supplies through demand management as outlined in sections 6 and 7.

4.4 Operational Changes we will make to avoid future drought related problems

Our operating target for the autumn and winter is to optimise the amount of water we put into supply from Carsington during this period. This will be minimum where possible, but we will closely balance the output from Carsington and from our other storage reservoirs in the Strategic Grid North to ensure that all are refilled as much as possible over the winter. This includes balancing abstraction from Derwent Valley, Carsington/Ogston, Dove and Charnwood reservoirs.

Within our Water Resource Management Plan (WRMP), that was published in April 2025, we have planned a series of supply improvements to secure additional deployable output and transition over the coming years to a greater level of drought resilience. The main scheme that provides greatest benefit during a drought is the termination of the export to Yorkshire Water. While other options will provide additional deployable output, this scheme will also increase raw water storage that can be used for our customers during prolonged hot weather events. Our WRMP can be found at https://www.severntrent.com/about-us/our-plans/water-resources-management-plan/.

5. Customer engagement

5.1 Campaigns

Throughout the year, we have increased our programme of water saving messaging to customers and stakeholders alike following our hot weather plans and drought plan actions. We have done this through radio, press, social media and direct communications including regular school education sessions to inspire efficient water use, and to offer customers simple water saving tips they could follow.

Our customer engagement programme continues to explore how best we can use behavioural science and best practice marketing principles to encourage positive behaviour change and drive down water usage. In early 2025 we reflected on the key learnings from our 2024 campaign and designed an approach for 2025 which used a similar creative execution to keep our messaging consistent and improve customer recall.

Our strategy has been to:

- Run a cross-channel campaign throughout our region with additional paid media spend on summer water saving messages targeted to our drought hot spot areas of Birmingham, Derbyshire, Leicestershire, North Staffs and Coventry;
- use organic social media and paid channels, including radio and social media, to maximise our reach and to maximise customer and stakeholder trust;
- use press activity to increase reach, with both pan region and county specific stories;
- engage colleagues to be role models and share messages with friends, family and neighbours;
- engage with communities, stakeholders and future generations;
- use agile comms: and
- embed feedback from customers as we go and adapting our approach.

Behavioural science has shaped how we engage with customers, including:

- focusing on financial motivations which have had the largest impact in changing water behaviour;
- avoiding telling customers what they can and can't do and instead provide more practical support (e.g., don’t tell customers to stop using paddling pools, instead encourage them to refill less); and
- ensuring our messages support long term behavioural change so we can mitigate climate impacts (e.g., ensuring each piece of engagement is additive).

Table 5.1 includes a summary of our region wide campaigns and comms activities to raise awareness of lack of rainfall and promote water efficiency. The creative images for these activities can be seen in the Customer Engagement Appendix.

Table 5.1: Campaigns and comms activities

Category	Details	Reach
Email campaign	All customer email	1.5 million customers
Radio campaign	Summer water saving ad – drought prone areas: Birmingham, Derbyshire, Leicestershire, Tittesworth, North Staffs and Coventry.	1.48 million impressions^
Paid online media	Summer water saving tips: You Tube, display and paid social	5,073,269 impressions*
Media	Media days hosted at our reservoirs	8 events
Press	482 press pieces	1.8 billion reach
Organic social media	62 posts	1,237,458 impressions
Employee comms	87 pieces including water saving pledges	123,892
Website updates	4 updates throughout the summer including a front page banner	

^ Refers to the number of times an ad is heard *Impressions refer to the number of times an ad is displayed on a user's screen

Campaigns have included sharing messaging around the lack of rainfall causing lower reservoir levels, and water saving tips and ideas for around the home and in the garden.

On social media throughout the summer we have been sharing water saving tips and summer messages. In the period between 01/04 and 30/09 we have shared 62 posts (2-3 per week) across Facebook, Instagram, LinkedIn and TikTok, generating over one million impressions. The best performing channel so far has been LinkedIn, with a total reach of 65,819 (representing a 4.06% engaged rate) and 71% positive sentiment.

Our press story social content has generated 48,000 impressions across all channels, with the best performer being a story about providing bowsers to support the animals at West Midlands Safari Park.

Our community engagement has involved local pop up events to engage face to face with customers offering them suitable water efficiency devices. We held 9 events across the Strategic Grid North.

The vast majority of our colleagues are also our customers, and we believe they have an important role to play in spreading water saving messages to local friends, family and neighbours. We have run 87 pieces of internal comms across eight internal channels including email, our monthly team talk packs, intranet articles, posters and directorate vlogs. This represents over 123,000 colleague touchpoints. Through this activity we have asked colleagues to make five water saving pledges, with over 6,000 total pledges recorded.

5.2 Targeted activity in Strategic Grid North

In the Strategic Grid North WRZ we have activated focused activity to support reducing water demand in the area. Table 5.2 provides details of what the campaigns included and when they were run.

Table 5.2: Strategic Grid North WRZ campaign details

Campaign	Details	Run time/When
Press activity	88 pieces of warm weather / water saving tips with a reach of 317.3 million.	1*st* April - ongoing
Water saving events	9 events, engaging with 987 people and giving away over 8,000 water saving devices with a potential saving of up to 100,000 litres per day. Also 25 schools visited educating 5,067 students, and 11 site tours hosting 227 customers.	June - ongoing
Radio campaign	Focused on water saving and being more careful with usage in warmer months. This was aired on Capital East Midlands – Derbyshire and Capital East Midlands – Leicestershire.	July - September

In addition, we also ran water saving messages in drought hot spot areas (Birmingham, Derbyshire, Leicestershire, Tittesworth, North Staffs and Coventry) across radio, You Tube and digital advertising, such as banners on websites until the end of September. We integrated 'hot weather' triggered creatives that activated automatically across socials when the temperature reached 24°C. This activity was forecast to provide a combined radio reach of 987,000 and nearly two million impressions from digital and video channels.

As we go into autumn and the weather has cooled down, we've returned to mainly business as usual comms activity across the wider region, with a focus on communicating with our customers through organic social media channels to promote indoor water efficiency tips. We will continue to run press activity and paid social media in the Strategic Grid North with water saving messages during the drought permit.

Campaigns and our agile communication with customers are key to support the work we do to reduce demand for water. While the nature of these activities means it is hard to quantify a demand saving as standalone activities they support the work we do with customers across the business as outlined in section 5.3.

5.3 We have worked with customers to reduce their demand for water

In this section we highlight the activities we have taken to help reduce customer consumption.

Home water efficiency services

We continue to offer home water efficiency checks for our customers. During a home check, we check the water fittings at the property, install water saving devices where appropriate and carry out simple plumbing repairs. This is delivered free of charge to the customer. The leads for these services are generated in several ways:

- If a customer requests one – via several channels including video through our View Your Network (VYN) platform or in-person where we have hosted events in target areas.
- If meter data shows continuous or high use at a property, we proactively contact those customers to offer the service.
- Customers who have come through our retail channels due to a high bill are offered the service.

We quantify savings of these checks – either via establishing the volume of any leaks repaired or by estimating the impact of any products installed. Last year across the company we delivered 19,578 of these visits with an estimated benefit of 4.2Ml/d. A large proportion of these were proactively focused on social housing, which yields lower benefits but was targeted to assist some of our most vulnerable customers. We know that leak repairs offer by far the largest savings, so this year we have targeted all our resource on those properties we believe have a leak, either from high consumption data, leak alarms or reported by customers.

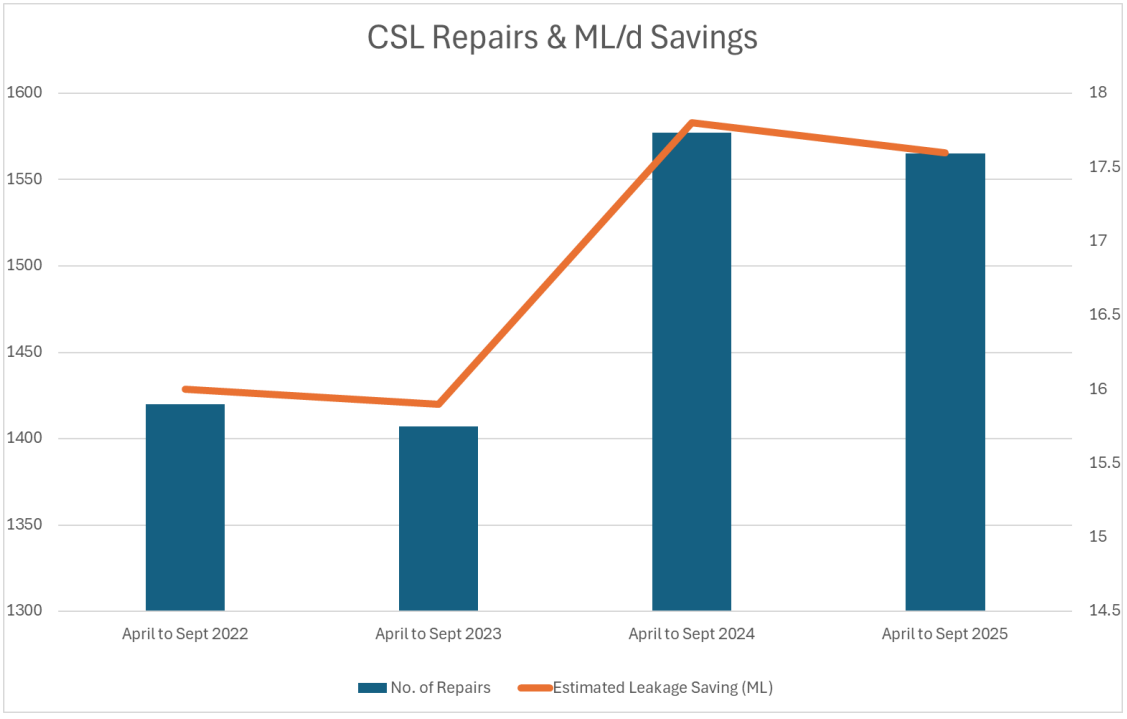
In the Strategic Grid North WRZ we have prioritised all customer requests for an audit and since April, we have delivered 1206 of these visits, with an estimated saving of 0.524Ml/d. These are for customers targeted as high consumers or with leaks and is around a 20% increase from last year.

Customer side leakage

Our approach to leakage includes finding leaks on customers' pipework (both customer supply pipes and internal leaks) and encouraging those customers to repair these through our Customer Leak Support process. This approach encompasses both leaks in the traditional sense (broken pipework) and continuous flows from broken, faulty or badly controlled appliances including leaking toilet flush systems. It includes both domestic and non-household properties. In the minority of cases where customers are unwilling or unable to fix their leaks, we will carry out a repair either free of charge, or with enforcement to recoup the costs. In all our communications to customers about water use, encouraging customers to find and repair their own leaks and seek support from us is a major strand.

Across the company 16,500 customer-side leaks have been detected and repaired with a median repair time of 27 days over the past 12 months. The number of customer leaks repaired in the Strategic Grid North WRZ has gone up by more than 10% since 2022 (for the April to September period). Based on average savings per repair, it is estimated that the repair of customers supply pipes has saved 17.6Ml/d in the Strategic Grid North as shown in Figure 5.1 below. Most of these repairs have been carried out by customers once we have made them aware.

Figure 5.1: Strategic Grid North WRZ customer supply pipe leakage savings and repairs



We have increased the number of finds and repairs this year compared to the last drought. In the Strategic Grid North between April and September 2025, 1,565 customer leaks have been repaired, compared to 1,420 over the same period in 2022. Approximately 85% of repairs are completed by the customer.

Flow regulation

Our strategy for reducing per capita consumption over the next five years (AMP8) is to do more metering and more solutions which produce reliable, sustainable impacts on consumption of water from the network. Driving sustained behaviour change has proven very difficult. A key mechanism for doing this is our use of flow regulators alongside meter installations, which limit the maximum flow into a property. This remains far above the legal minimum supply standards, should not prompt customer complaints and is proven to reduce total consumption at a property. We have installed 31,555 flow regulators across the company so far company-wide with around 8,615 in the Strategic Grid North. Our data from smart metered customers with flow regulators installed shows an average 4.76% saving in total water use and a lower-than-average increase in use across these properties during hot weather. Our delivery model aligns the installation with the roll out of smart meters, meter exchanges, meter optants and proactive meter installs and we plan to complete 250,000 installs in 2025-26. In our WRMP we identified use of the flow regulators, alongside our metering programme, as an innovative option. As such. the scale and benefits were uncertain, so we did not assign a water saving benefit at that stage. Based on the results we saw in the early trials we have accelerated this programme this year to deliver the number we have and are able to assign significant water savings that contribute not only to immediate drought benefits but also long-term demand reduction ambition in out WRMP. This is a new workstream and we are continuing to optimise delivery.

Engaging with non-household customers

We have contacted all large non-household users in the area and informed retailers that we are proactively contacting their customers. We contacted over 500 business in Derbyshire and Leicestershire to inform them of the need to use water wisely and offer water saving audits free of charge to our non-household customers. We have spoken to many different types of businesses, including golf courses, schools, large production factories and councils to discuss ways they can actively support reducing their consumption.

Up to July, small non-household audits offered were provided by specialist contractors and agreed with the retailer. In July we reallocated resource and trained 10 of our field personnel to conduct small non-household audits to increase the effectiveness and rate of completion of this work. We have used this direct resource for businesses in total across our area, with 128 audits in the Strategic Grid North so far, conducting water use audits, installing products and flow regulators. Savings from these audits will be determined from future meter readings to allow us to calculate the savings made.

Large non-household audits have also been undertaken with focus being on businesses who can make the greatest savings, manufacturing, pubs, sports facilities and hotels. Since April we have completed 518 audits company-wide with savings of 0.248Ml/d, however we expect this saving to increase as we complete the full audit process with businesses. In the Strategic Grid North we have completed 143 audits with an estimated saving of 0.156Ml/d.

Engaging with New Appointments and Variations (NAVs)

We are working closely with the NAVs across our region. Between early June and the end of September we have had fortnightly meetings and we keep them updated on our water resources position and the communications we have going out. We have created jointly branded communication templates which are shared with the NAVs so they can use consistent water saving advice with their customers in those areas. We continue to engage with NAVs on a monthly basis.

Individual customer contact trial

We have emailed and texted customers directly asking them to use water wisely, particularly during the drought period, and to offer water saving tips and links to our household audit services. We have also been able to use our smart metered data for the first time to assess the benefits of some of this activity.

We are making use of our smart meter data to quantify the impact of direct messaging during hot summers for the first time this year and we continue to explore this data as more smart meters go live. During a control trial in Coventry we found that a direct text asking customers to use less water had the opposite impact when comparing to a control group who were not contacted. This could be because of the way we use text messaging typically only for incident management. It could be that customers read the message to mean a restriction is coming and wanted to 'stock up'. We continue to use our smart meter data to try to improve our communications on water saving during hot weather periods. Data from this test is included in the customer engagement appendix.

6. Implementation of a temporary use ban (TUB)

In this section we explain why we did not implement a TUB in the summer period and why the likely demand savings from us implementing a TUB in autumn or winter would be minimal. A statement of no environmental impact from this drought permit is provided in Section 13.

Why we did not implement a TUB in the summer period

As explained in section 3, we have experienced an exceptional shortage of rain (ESOR) during the spring and summer of 2025. This shortage of rain developed over time. It was on 15th July 2025 that the Environment Agency declared our operating area to be in drought: Environment Agency press release: West and East Midlands move into drought.

Temporary Use Bans (TUBs) are one of the options available within our drought toolkit. However, by their nature they are temporary and therefore the benefits associated with their application must be considered alongside other options. We must also recognise that customers expect us to take action ourselves to prevent reaching Level 2 TUBs triggers, in line with our prescribed levels of service and also seek voluntary reductions before imposing restrictions. We describe the measures we have taken to reduce pressure on Carsington and our other Strategic Grid North water resources in the other sections of this application as follows:

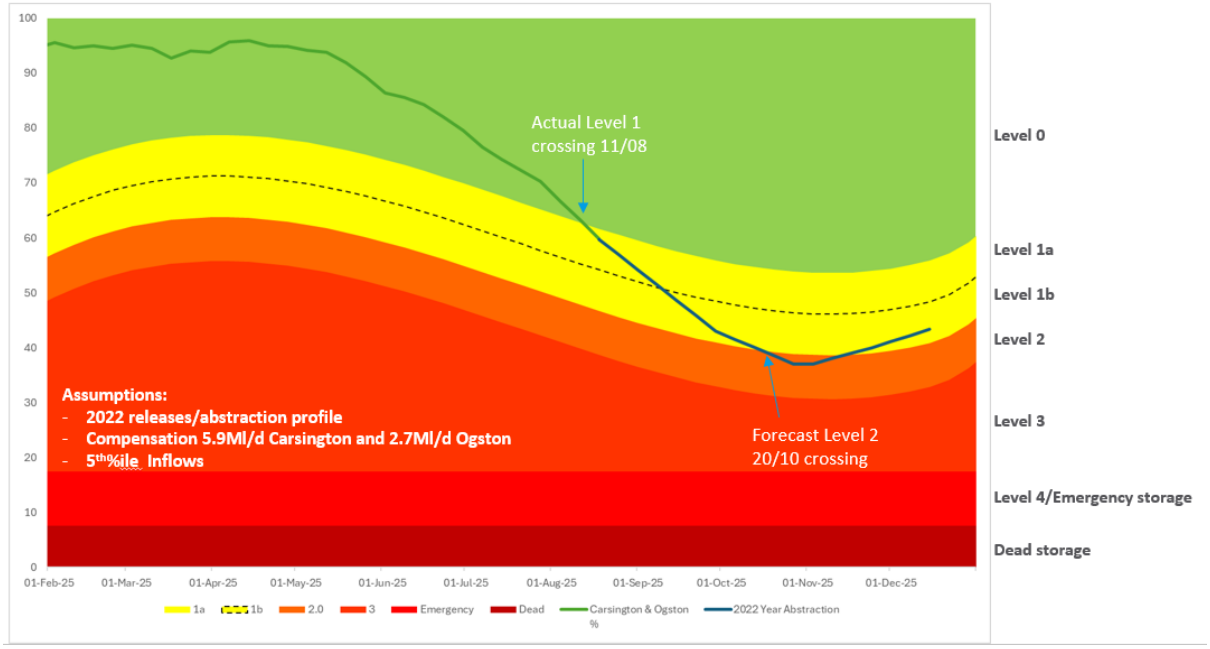
- In section 4 we explain how we followed the actions in our Severn Trent drought plan 2022-27.
- In section 5 we explain our water efficiency activities and how we carried out extensive communications with our customers about the need to reduce their demand.
- In section 7 we set out our increased leakage reduction efforts.
- In section 8 we explain how we managed outages to reduce pressure on our water resources.
- In section 9 we explain other options we had considered and reasons for rejection and the consequences of the permit being rejected.

Through adopting all these measures we did not hit the Level 2 trigger at any sites, and as detailed in this section demand reduced from mid-July. It is in this wider context that we considered whether a TUB was needed or could have benefited.

Considering a TUB between April and mid-July 2025

During the spring and summer of 2025 we continually followed our Drought Plan as the data on water resources, rainfall and effectiveness of our measures to reduce demand evolved.

Figure 6.1: Carsington reservoir storage levels August 2025



As shown in Figure 6.1 above our reservoirs have trigger levels for different actions in our Drought Plan. In our Drought Plan Level 2 is the trigger for considering applying a TUB. We also made sure we took account of our agreement with the Environment Agency following the 2022 drought to start preparing for a TUB when a reservoir reached Level 1 at any of our strategic reservoirs.

In April to mid-July our Carsington reservoir level was in Level 1, with other associated reservoirs in the North Strategic Grid, notably Derwent Valley well above Level 2. At that stage it was too early to consider implementing restrictions. In those months we did not know that there would continue to be low levels of rain that would cause Carsington to move into Level 1b or the Derwent Valley reservoirs level to fall closer to Level 2. It would not align with the levels of services for our customers in our drought plan to apply a TUB when there was such an amount of headroom between our Carsington and Derwent Valley reservoir levels and the Level 2 curve. However, we did start making preparations for a TUB should rainfall continue to be exceptionally low and customer demand remained high indicating a potential benefit of TUBs restrictions.

Considering a TUB from mid-July to August 2025

Rainfall continued to be low in late July and in August resulting in ongoing lower flows in the River Derwent and a need for further releases to support our river abstraction points downstream. As illustrated in Figure 6.1 we crossed into Level 1 on 11 August. Using insight from the previous drought in 2022 we projected the likely releases required from Carsington. This projection is shown in Figure 6.1 and shows an anticipated crossing into Level 2 in October for a brief period before the reservoir starts to recover during the autumn / winter refill period. During this period the Derwent Valley reservoirs level was moving closer to Level 2. In keeping with our Drought Plan we continued to implement our demand reduction measures.

We continued to remain above Level 2 therefore our approach was that we should follow our Drought Plan and not implement a TUB, but still consider if there were special factors, such as unusually high demand, that would justify us imposing a TUB in Level 1, even if we had not hit Level 2. In line with our agreement with the Environment Agency following the 2022 drought we initiated our TUB workstream at Severn Trent to prepare the relevant information and communications should we need to apply a TUB.

As July progressed we continued to apply demand management measures to reduce demand in the Strategic Grid North WRZ. These measures started to have a noticeable effect from mid-July and into August. On top of our other measures to reduce demand we rolled out enhanced pressure management to all suitable areas with a pressure reducing valve (PRV) and pressure controller ahead of the third heatwave. We reduced pressures on 780 DMAs; 223 of which are in the Strategic Grid North WRZ. The measures we implemented started to have a noticeable effect on demand in the Strategic Grid North WRZ by the second half of July and August as shown in Figure 6.2. The impact of our pressure reduction work can be clearly seen as demand reduced significantly from mid-July even though mean daily temperatures (yellow line) remained high. The fourth heatwave, which hit in August, reached similar temperatures to the second and third heatwaves in July, however, whilst demand increased slightly during this time it was well below the July peaks.

Figure 6.2: Daily distribution input (DI) in the Strategic Grid North WRZ in summer 2025

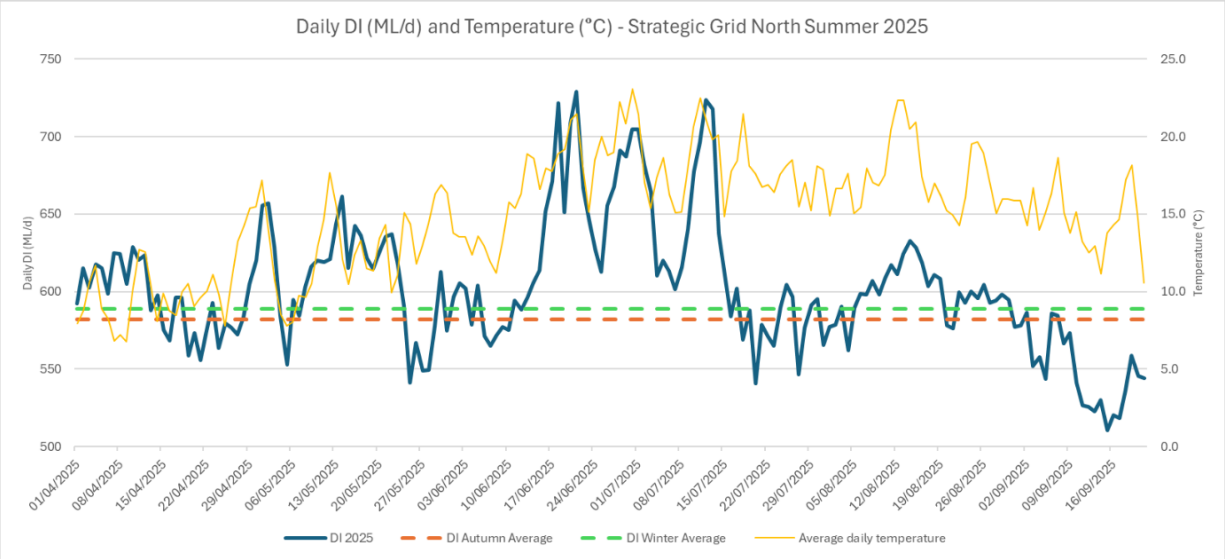


Figure 6.2 shows that overall demand in the Strategic Grid North WRZ fell sharply after the third June/early July heatwave. The fourth heatwave from 11-17 August and a partially warm Late Summer Bank Holiday weekend (23-25 August) saw much lower peaks than in late June and early July in the Strategic Grid North. It is understood that disaggregating the influencing factors is difficult, however this data suggests our demand reduction measures, particularly the extensive pressure management affecting all forms of water use not just certain types of outdoor water use, contributed to this reduction as is described in section 7 and Figure 7.7.

The green line in Figure 6.2 shows average winter daily Distribution Input (DI) for the Strategic Grid North WRZ of 588.8Ml/day over the last 4 years (derived from the Table 6.1) and the orange line shows the average autumn DI of 581.9Ml/day. The autumn and winter average lines may be a little on the low side because of population and non-household demand growth over the last 4 years but are a useful indicator of what a low customer demand period would be. Demand in the Strategic Grid North WRZ was lower than observed earlier in the summer and around winter levels for most of late July and August, suggesting that applying a TUB would have little benefit on top of all the measures we were taking to reduce overall demand.

Table 6.1: Average autumn and winter month daily DI values in Strategic Grid North (in Ml/d)

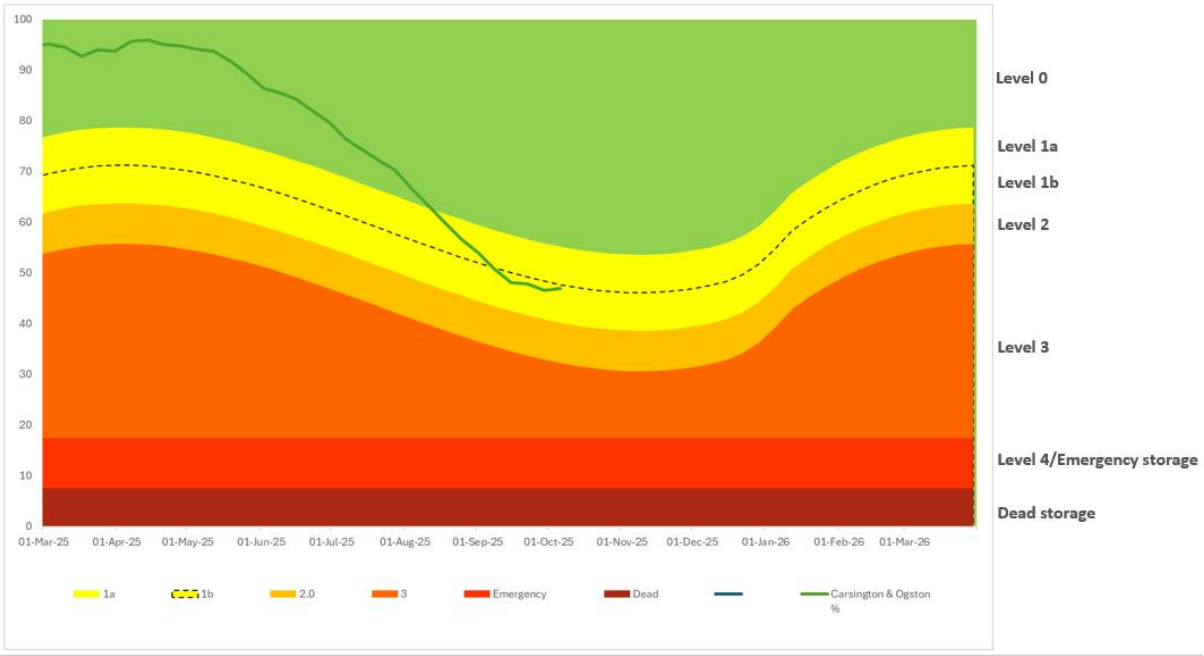
	Autumn				Winter			
Year	**Sep**	**Oct**	**Nov**	**Average**	**Dec**	**Jan**	**Feb**	**Average**
21-22	599.2	583.9	597.7	593.6	584.2	595.8	592.9	591.0
22-23	563.1	554.3	556.0	557.8	590.6	570.8	584.1	581.8
23-24	592.5	585.4	591.1	589.7	584.6	588.8	594.9	589.4
24-25	578.8	595.2	585.5	586.5	585.5	601.7	592.1	593.1
4 Year Average	583.4	579.7	582.6	581.9	586.2	589.3	591.0	588.8

In section 7 on leakage we provide evidence of how our Enhanced Pressure Control (EPC) has reduced demand over summer. Figure 7.7 compares the percentage change in leakage in non-EPC and EPC areas, based on the average value for leakage in the first week of July and the average leakage value for the last week of August. We found that where we applied EPC leakage reduced by 6%, but where there was no EPC, leakage reduced by only 3%.

Considering a TUB in September 2025

In September 2025 the Carsington reservoir draw down rate reduced, with levels just into Level 1b. Notably, the associated Derwent Valley reservoirs level continued to remain above Level 2, and the rainfall mid-month meant levels improved and moved away from the Level 2 boundary. In line with regulatory guidance our approach was that we should continue to follow our Drought Plan, which would not trigger a TUB at this stage, but still consider if there were special factors, such as demand and how close the reservoir storage was to Level 2, that would justify us imposing a TUB even if we had not hit Level 2.

Figure 6.3: Carsington reservoir storage levels September 2025



From late August 2025 the weather across England and Wales changed with bands of low pressure bringing rain sweeping in over our region, including the area of the Strategic Grid North WRZ. This led to a further reduction in demand. Figure 6.2 shows daily DI on the Strategic Grid North WRZ fell below average winter levels from the beginning of the month and remained there.

It was clear at this point that a TUB would have minimal benefit in reducing demand further because there was very little outside water use happening. Furthermore, there were benefits for future droughts of not applying a TUB at this point because applying one during a period of low demand and frequent showers, when we had not hit our Drought Plan trigger of Level 2 at the reservoirs, could damage the credibility and efficacy of the TUB for a future summer when we and the environment may need it most.

Analysis carried out as part of the UKWIR Review of 2022 drought demand management measures project showed that the impacts of TUBs applied by the six companies in 2022 were minimal by the September of that year. As such most of the companies removed their TUBs during the early Autumn. Applying a TUB outside of the April to October window would have limited to no benefit if people are not using water outside their homes.

Why the likely demand savings from implementing a TUB in autumn or winter would be minimal
Implementing a TUB this autumn or in the coming winter would have a minimal impact on demand because:

1) Daily DI is at winter levels already
2) Diurnal demand patterns show no indications of outdoor water use in the evening

This data suggests that there is very little discretionary outdoor use that a TUB could affect.

In addition, we suggest that applying a TUB during autumn or winter could damage the credibility and efficiency of a TUB which we might need in spring or summer next year if we experience another dry period. In addition, we are accelerating our one million smart meter roll out, with a particular focus on starting in Derbyshire. We are concerned that if applied an autumn or winter TUB customers might think the roll out of smart meters is a means of policing the TUB, thereby reducing engagement and uptake of smart metering. This would have a longer-term detriment for the environment by reducing the enduring savings of the smart metering programme.

We know that is it hard to align communications directly to changes in demand as there are many elements that affect demand including rainfall, temperature and weather, holiday periods, weekends and time of year. Therefore, evidence to clearly show impacts of communications or TUBs alone are hard to see in DI. We do however undertake customers studies to monitor their understanding and impacts from our activities.
It is important to recognise the potential adverse effect that could come from a winter TUB, with public disengagement. We know customers don't appreciate the longer-term nature of water resources and often see the current weather conditions as reflective of the 'resources' situation. Imposing restrictions in winter could erode trust and mean less engagement with our enhanced water efficiency messages over winter (e.g. frost and burst pipe protection, indoor water use and leaks) and if there would be another dry year in 2026 and crossing into Level 2 in 2026.

Our July survey evidenced that 64% of customers thought they have had a hosepipe ban in the last 10 yrs. 67% of those who recalled water saving comms said they had reduced their water use. We know from 2022 drought research that 86% of customers understand that they should use less water in a drought which is encouraging. 69% of customers indicated they act on the communications we send out. However, as with data provided on the individual customer trial in section 5, we can also see that customers can use more water initially when messaged, maybe subconsciously doing jobs involving water before further messaging asking for water efficiency consideration or possible restrictions being applied. We are testing the impact of how messages are delivered on customer use as part of a behavioural incentive pilot study and initial results indicate that the way the message is delivered can have a negative impact on water use i.e. being told not to use water can have the opposite effect.

Our customer research and communications teams have worked closely during the recent drought to understand customers views and provide comms to drive down demand where possible. However, we also know that doing additional activities such as the pressure control valves, additional leakage find and fix hours gives more consistent and measurable results.

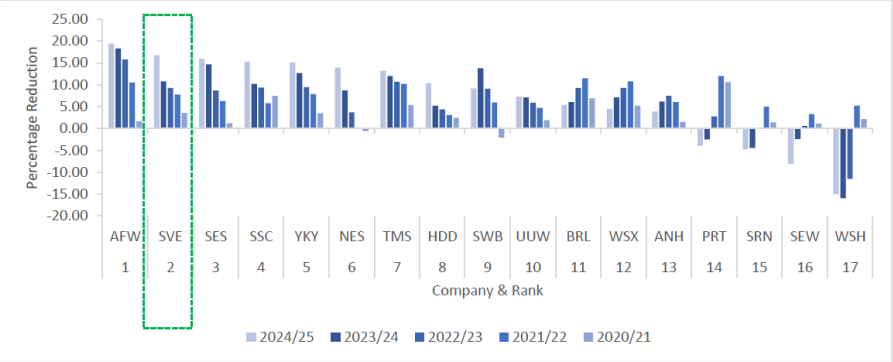
7. We have continued to reduce leakage across our network

In this section we explain how we have reduced leakage across our network and in the North Strategic Grid in particular.

Severn Trent's leading performance on leakage

Severn Trent has been the leading Water and Sewerage Company (WaSC) on leakage reduction over the last 5 years, as shown in Figure 7.1 below. We reduced our leakage by a record 16.8% in AMP7, beating our regulatory target for AMP7 of 15%. This was on top of reducing leakage by 12.5% over the ten years between 2010 and 2020. We were also one of only a few water companies to hit their leakage targets for the end of AMP7.

Figure 7.1: Severn Trent's leakage reduction was the largest of the WaSCs in AMP7



We are on track for this year's leakage target. Our AMP8 commitment is to reduce leakage by a further 15%. We also remain committed to achieving a 50% reduction in leakage by 2045 from 2020 levels.

How we have reduced leakage

Our leading performance on leakage reduction reflects a large number of activities we have carried out:

- We continue to **in-source** all our leak find activity with area-based teams being accountable for leakage levels working closely with targeting and repair teams. We focus on skills and succession planning, including continuing our leakage apprenticeship programme.

- Doubling our **leakage repairs** and improving **repair efficiency.** We have deployed new no-dig techniques to repair small leaks, which allows us to repair leaks more quickly.

- We have refined our **customer side leakage** policy and the support we offer. We have used messages to encourage customer to find and fix internal leaks by using the VYN platform. We include information on working with customers on supply pipe leakage in section 5.

- This year we have installed 900 additional **pressure control** units, which has enabled us to moderate pressure variance and reduce total pressure, with the impact of reducing leakage volume and burst risk.

- We have set up new **upstream network leak detection** teams to detect leakage on our trunk mains and service reservoirs. This is an important step as we move to full flow-balance reporting for our upstream network areas at the end of this year 2025-26.

- **Improved understanding** of consumption and unaccounted for water. Our Unaccounted-for-Water team continued to collect evidence on water consumption from missing and unallocated properties, vacant properties that were occupied, and unmetered supplies to water storage tanks for firefighting and sprinkler systems. This allows us to better target network leakage activity and consumption and private side leaks.

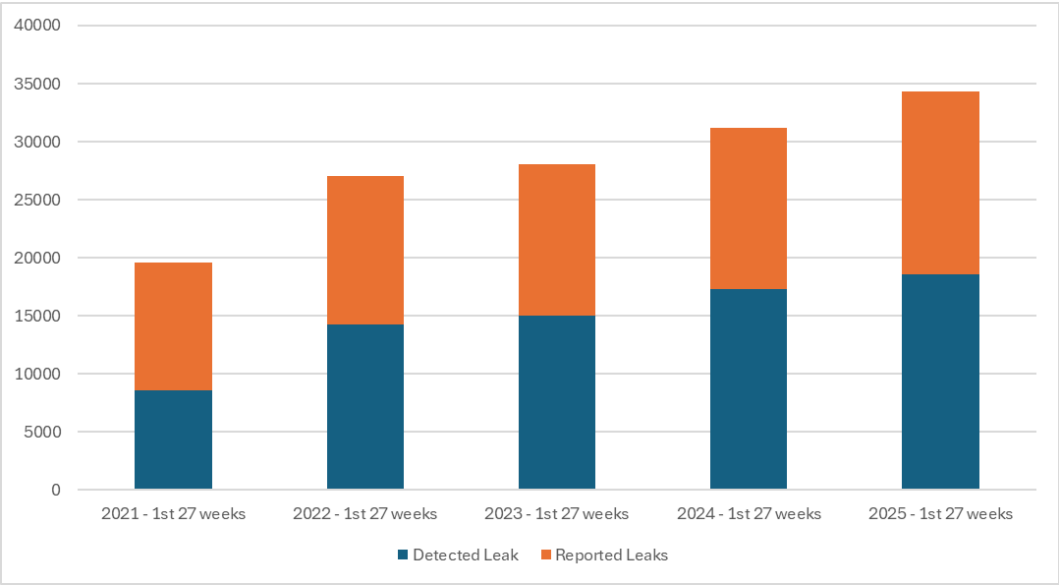
- We are taking steps to improve our **understanding of increased customer water consumption during hot weather**. Using our small area monitors, commercial consumption monitors and half yearly consumer meter readings we will gain greater confidence in our ability to differentiate between true increases in water consumption and leakage.

Increased leakage repairs

The activities above have contributed to a large increase in **leakage repairs** over the last five years. In 2024-25 we identified and fixed 60,600 leaks in total, an increase of 3,000 since 2023-24. Our efforts over the last two years have brought leakage in our District Metered Areas down to a record low and we had strong recovery from the winter breakouts.

Figure 7.2, using data for the first 27 weeks of the reporting year, shows that we have increased company leakage repairs every year for the last four years, including 2025.

Figure 7.2: Company Leak repairs over the first 27 weeks of each reporting year (detected by us and reported by customers)



Why hot weather increases actual leakage and measured leakage

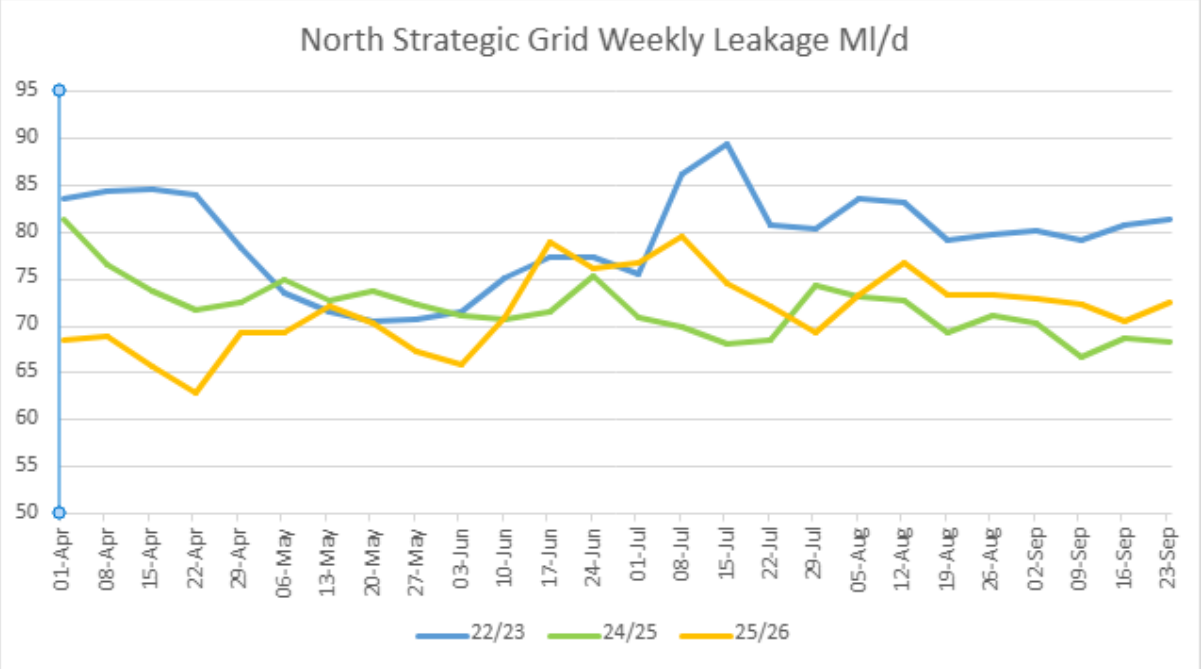
Hot weather increases actual leakage through ground movement. This year we have experienced challenging operating conditions from a leakage and consumption perspective. The prolonged dry weather has meant dry soil conditions, showing as the highest soil moisture deficit in our region for five years at least. The dry soil condition causes ground movement which leads to more pipe breaking and increased leakage.

Hot weather increases measured leakage through more night-time use. Reported leakage uses average estimates of household night use. The night-time period is when demand is at its minimum and therefore operational leakage can be measured most accurately. However, hot weather increases night-time water use because people wait for the temperature to reduce before going to bed, are unable to sleep due to the hot night temperatures and take showers or baths later in the evening or night. The increase in night-time demand makes it difficult to distinguish between changes in customer consumption and changes in leakage performance. Logging and smart metering give us some insight into this which we use in targeting our leakage reduction activity. Despite this, we remain on track to deliver our leakage reductions this year in line with our plans.

Reducing leakage in the Strategic Grid North

Figure 7.3 below shows weekly DMA leakage in the Strategic Grid North for April to September 2025 (the yellow line). This year's leakage is on average below last year's leakage for the same time period (0.6% lower), despite this year's drought conditions. Compared with the last drought year, 2022, (the blue line) leakage is more than 9.5% lower this year.

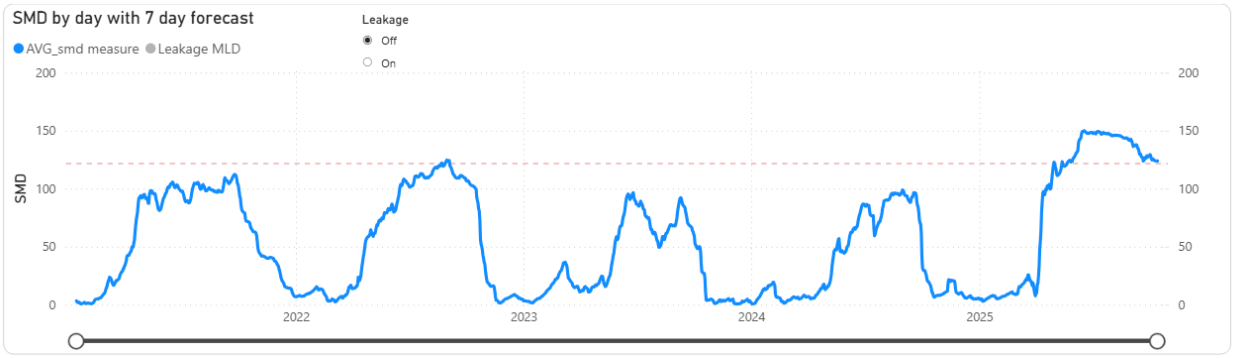
Figure 7.3: Leakage in the Strategic Grid North DMA's 2022 (last drought year), 2024 (last normal year) and 2025 (this year)



The reduction in leakage this year comes despite the dry spring and summer of 2025 creating more challenging ground conditions. The Soil Moisture Deficit (SMD) in the Strategic Grid North[3] region peaked at 150, this is 52% higher than in 2024 and 20% higher than in 2022. The SMD has also stayed persistently higher this year, than in 2022. For instance, in 2022 SMD only stayed above 120 for seven days, this year the SMD value has been above 120 for over 140 days, see Figure 8.4. The higher and more persistent SMD creates ground movement and increase in pipe breaks and leakage. The Strategic Grid North has a high mount of clay soils and cast iron is still a very common pipe material, therefore we are likely to see a higher effect of SMD on leakage.

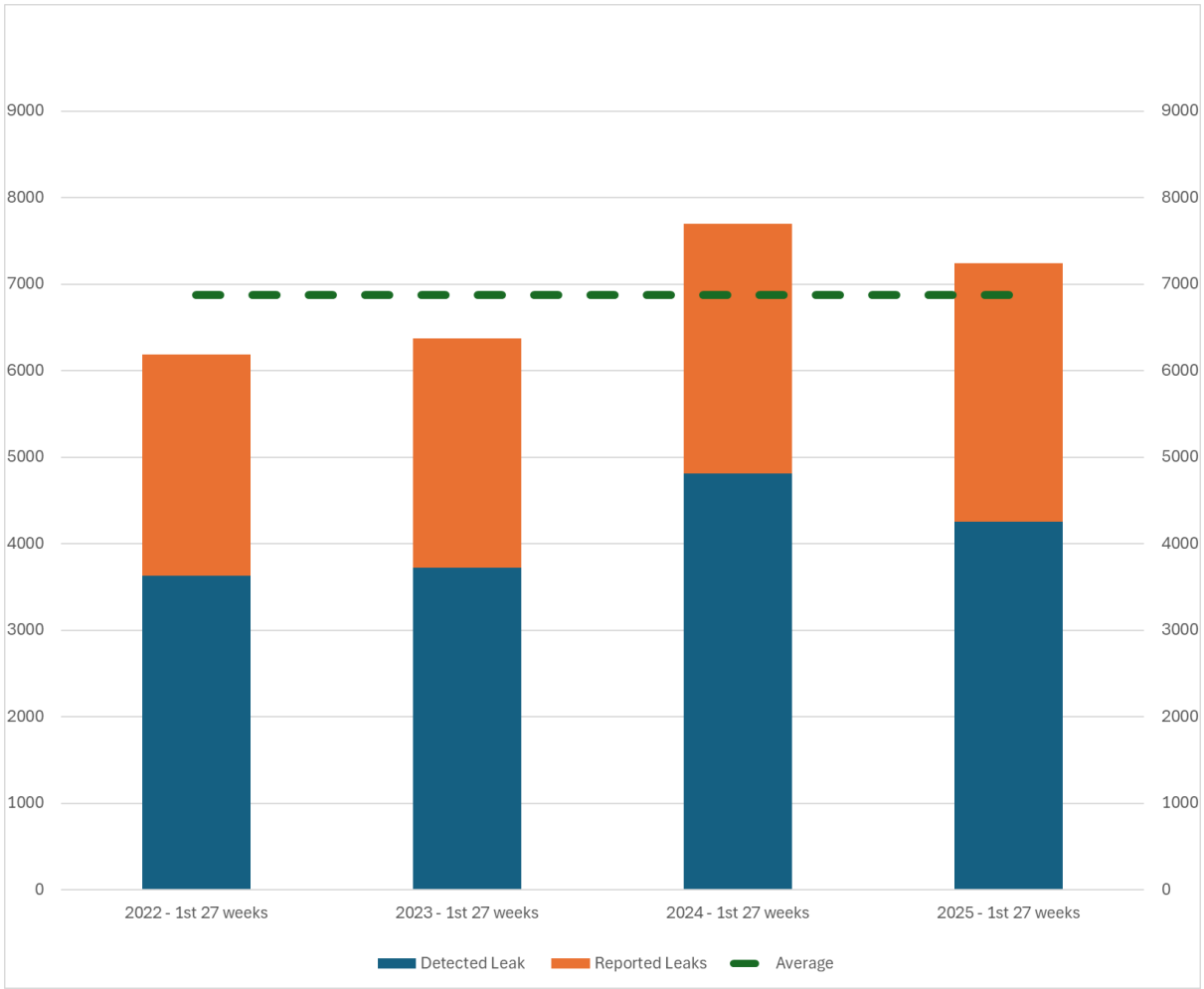
[3] Because we use SMD data at the county level, we have combined data for Leicestershire, Nottinghamshire and Derbyshire to create SMD values for Strategic Grid North.

Figure 7.4: Soil Moisture Deficit (SMD) in Strategic Grid North 2021 to 2025



Since our last drought in 2022 we have significantly increased our front-line resources for reducing leakage as show in Figure 7.5. This year our detected and reported leaks are up by 17% compared to 2022.

Figure 7.5: Leaks detected and reported in Strategic Grid North WRZ 2022 to 2025



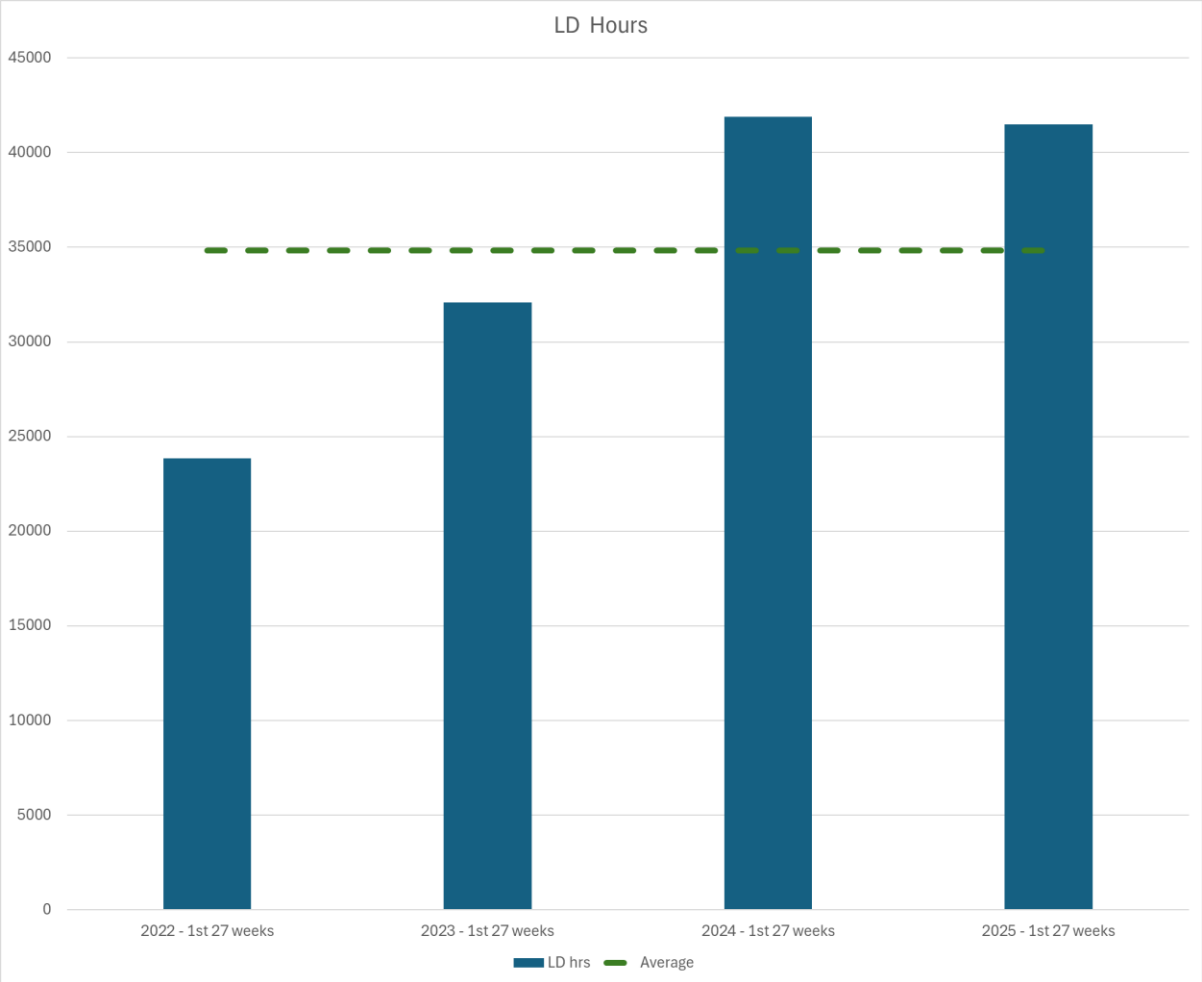
In 2025, leak repairs in the Strategic Grid North have been above average. We estimate that repairing these leaks in the Strategic Grid North has prevented 43.5 megalitres (Ml) of leakage. However, because most repairs offset new leakage rather than reduce existing leakage, you won't see a direct 43.5Ml drop in the

reported leakage figures. Instead, it's important to understand that without these repairs, leakage would be 43.5Ml/d higher.

The number of hours spent by our technicians on leakage detection in the Strategic Grid North has gone up significantly since our last dry spell in 2022. For the April and September time period, the number of leak detection hours was up 74% (see Figure 7.6).

Across the summer our technicians, support staff and leakage managers have been working overtime to lower leakage. We have calculated that more than 3,000 overtime hours have been completed in relation to reducing leakage in the Strategic Grid North between April 2025 and September 2025.

Figure 7.6: Strategic Grid North Leakage Detection Hours



The number of leakage detection hours from the start of April to end of September 2025 has averaged 1,537 hours a week in the Strategic Grid North WRZ. This is above the average for this time of year. We will be increasing the number of leakage detection hours during the period of the drought permit we are applying for. Between September 2025 and March 2026, we are expecting an average of 1,953 Leakage Detection hours per week, an increase of around 27%.

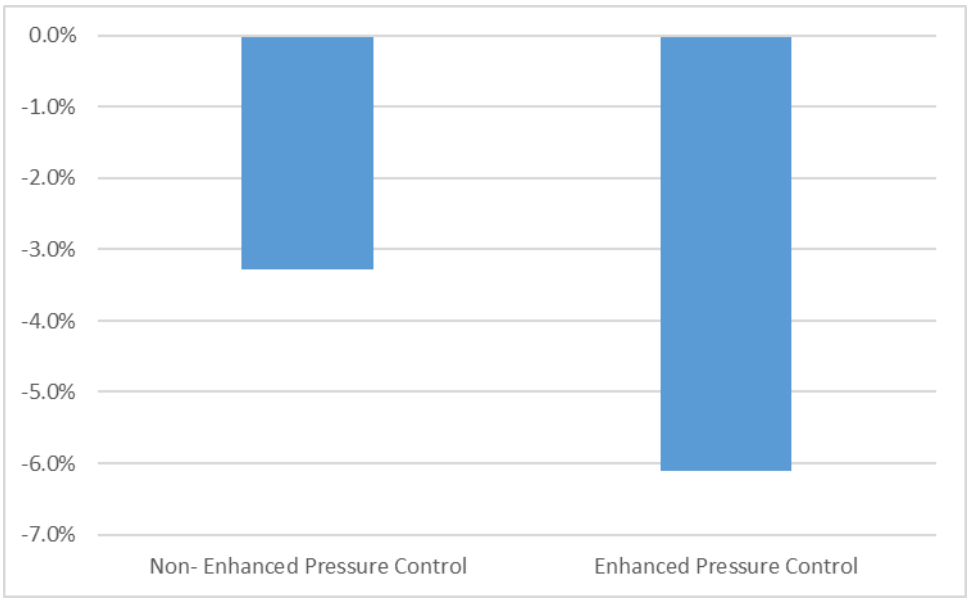
To help further lower leakage and demand, in July this year we carried out Enhanced Pressure Control (EPC). At night where operationally possible, we have lowered pressure to 10 metres head, this is five metres below previous levels. Lower pressure has two distinct benefits, first it leads to lower burst rates and secondly it

lowers leakage due to less water coming out of any leaks. We plan for all pressure reduction valves (PRV) across the region to be fitted with a controller by March 2026. Once they have a controller we will look to carry out further enhanced pressure control.

By comparing the change in leakage between Non-Enhanced Pressure Control areas and Enhanced Pressure Control areas, we can get a view of the benefit EPC is giving us in high demand months. It must also be recognised that reduced pressures across the network will help in reducing overall customer demand. We will continue to optimise the EPC programme to deliver the maximum demand benefits which will support ongoing demand reduction, not just in drought periods.

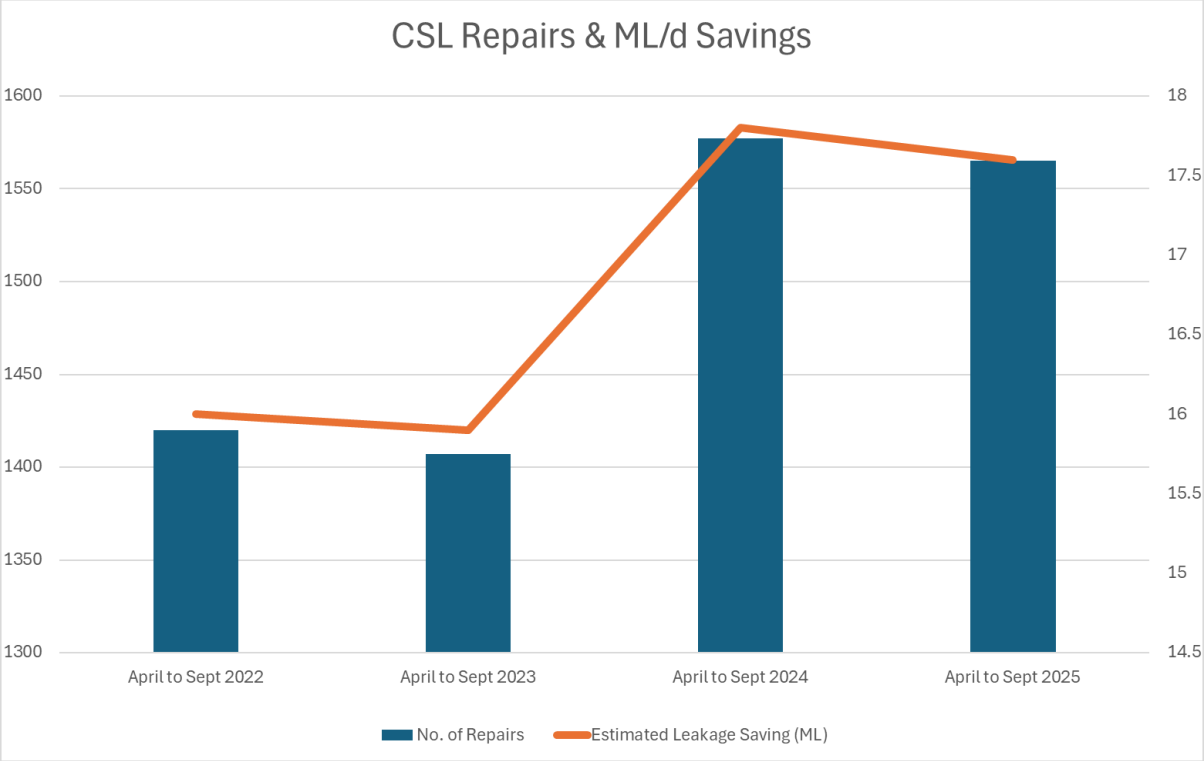
In Figure 7.7, we compare the percentage change in leakage in non-EPC and EPC areas, based on the average value for leakage the first week of July and the average leakage value for the last week of August. We can see where we applied EPC leakage reduced by around 6%, but where there is no EPC, leakage reduced by only 3%.

Figure 7.7: Strategic Grid North percentage change in leakage from 1-7 July to 25 –31 August



We have also worked hard to reduce leaks on customer supply pipes. The number of customer leaks repaired in the Strategic Grid North WRZ has gone up by 10% since 2022. We estimate the repair of customer supply pipes has saved 17.6 Ml/d, see Figure 7.8. Most of these repairs have been carried out by the customer once we have made them aware.

Figure 7.8: Strategic Grid North Number of customer leaks repaired and estimated leakage saving (in Ml/d)



8. We have managed our planned outage approach and reduced unplanned outages to ensure our resources are used effectively

In this section we explain how we have managed our planned outage approach and reduced unplanned outages to ensure our resources are used effectively. Minimising the impact of planned outage relates to how we plan our proactive programme of asset maintenance. Minimising unplanned outage is both influenced by the efficacy of our previous asset maintenance and the speed of response and preparedness to deal with unplanned incidents and events.

Our raw water sources and WTWs need maintenance to ensure they serve our customers and the environment effectively. We start planning for the summer in the preceding winter. We manage our outages to allow maintenance to happen at times with lowest impact on our customers and the environment.

Figure 8.1 shows our outage data for the Strategic Grid North resource zone since the exceptional shortage of rainfall (ESOR) began in February. Our total outage has been 1602.26Ml over 241 days which equates to 6.65Ml/d.

Figure 8.1: Total Outage in Strategic Grid North from 1 February 2025 to 30 September 2025

Outage	Ground water	Surface water	Total
Planned Outage (in Ml)	0.00	1437.52	1437.52
Unplanned Outage (in Ml)	0.00	164.74	164.74
Total (in Ml)	0.00	1602.26	1602.26
Average Ml/d of outage	**0.00**	**6.65**	**6.65**

The data shows that average outage during the ESOR was very low at 6.65Ml/d compared with average Distribution Input (DI) for the Strategic Grid North WRZ of around 600Ml/d, outage was about 1.1% of total DI.

We have assessed the outages we have had from in the first half of 2025-26 against our outage allowance for our WRMP24 in the Strategic Grid water resource zone. We had an outage allowance of 76.17Ml/d and outages across the zone have been 3.99Ml/d between April and September. The supply demand balance in our WRMP24 for 2025/26 gave us a surplus of 25.83Ml/d. Assessing this for the outage we have had would increase the supply demand balance by 72.18Ml/d giving a surplus of 98.01Ml/d. Note, this is for the Strategic Grid zone as in our published WRMP24 as we do not have an outage assessment yet for the revised water resource zones that will be used for our WRMP29 plan.

We reduced our planned outages during summer 2025 to zero in the Strategic Grid North to support water resources. In particular, during the four heatwaves (7–22 June, 27 June–2 July, 9–15 July and 11–17 August) there was no planned outage on our network.

Figure 8.2 lists the water treatment works (WTWs) affected by outage since the ESoR period began for the North Strategic Grid water resource zone.

Table 8.2: Outages by site from 1 February to 30 September 2025 in the Strategic Grid North WRZ

Site	# Of Outages	Ml Lost Planned	Ml Lost Unplanned	Total Ml Outage	Average Ml/d of outage
Site R WTW	1	127.8		127.8	0.5
Site E WTW	1		12.6	12.6	0.1
Site B WTW	4	37.7	92.9	130.5	0.5
Site D WTW	1		59.3	59.3	0.3
Site F WTW	1	1271.7		1271.7	5.3

Site R is the WTW that uses water from the Derwent Valley reservoirs. During almost the entire ESOR period we operated Site R at far below its maximum capacity to preserve raw water in the reservoirs. For example, on 13th June 2025 at the beginning of the summer we had just 9Ml/d of outage, but an 88Ml/d voluntary restriction at Site R to protect raw water storage at Derwent Valley. This was the pattern during the whole summer of low outages elsewhere on the strategic grid but a large voluntary restriction at Site R WTW.

Site R and Site B had a planned outage at each site in April 2025 for routine maintenance, cleaning of the DAF (dissolved air floatation) systems. This was done to ensure the sources was fully operational throughout summer. Due to the short nature of the outages being three days each and during a period of lower demand there was little impact from these outages on our reservoirs.

Site F had a planned outage in March 2025 when one of the clarifiers had a broken scraper which required repair to put it back into use. This affected the output of the site but was completed prior to the summer period where we expect higher demands.

From March onwards, all unplanned outages in the Strategic Grid North have been treated as high priority to ensure that we could balance the water resources in the system.

Our water production team leads have been meeting three times per week with colleagues from network control, water resources, commercial and capital teams; to help ensure all unplanned outages are fixed urgently and that resource (people) is shared across the area of concern.

Our capital engineering team have been supporting the operational teams to ensure any outages are recovered as quickly as possible.

9. Other options considered and consequences of the permit being rejected

The drought management actions we have taken follow the list of escalating options that are described in our Drought Plan. We have prioritised those activities that have benefits attributed to storage preservation within Carsington and also included actions we have taken over and above out drought plan activities in section 4.

Other ideas we have investigated and rejected include:

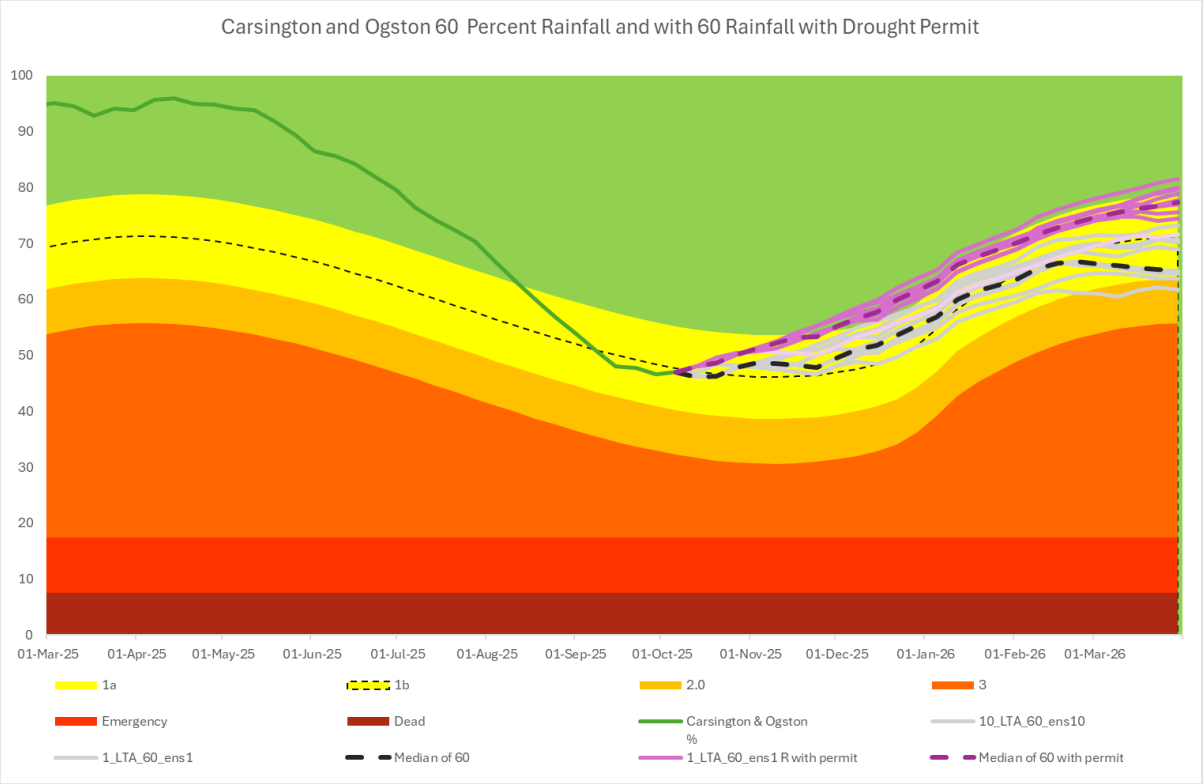
- Taking on temporary agents to interact with customers directly about water saving – we tried this in 2022 and it resulted in unclear messaging, customer complaints, process confusion and with limited evidence of benefit. Training and experience is required to get these messages across well and this is best done with existing staff.
- Contracting external, temporary agents for leak detection – our leakage model is successful and relies on in-house resource and "patch" ownership with accountability for local leakage levels resting with defined teams. We have used external temporary resource and it can create issues such as misaligned incentives, wasted repair resource and particularly causes issues with customer side leaks.
- We have looked at using Elms Farm reversed flow during October 2025 and across the winter and discounted this currently (though it will continually be reviewed). This is because Elan Valley reservoirs abstraction is currently at maximum, so cannot be increased to support the Central area and Strategic Grid South. Also our licence at site G remains tight between now and the end of March. Furthermore, our Lower Shustoke reservoir from which we abstract to site A in Strategic Grid South remains low currently.
- We contacted other abstraction licence holders within the catchment to assess the potential for any temporary water trading opportunities that could be undertaken with the appropriate permitting and licences in place.

Consequences of the Drought Permit application being rejected

The purpose of the drought permit is to reduce the Hands off Flow (HoF) limits as measured at the Environment Agency's gauge at Derby St Mary's on our abstraction point at Ambergate. This does not alter the volume or rate of abstraction at Ambergate, however increases the opportunities for abstraction if we were to experience a dry winter.

As illustrated in Figure 9.1 reducing the HoF from 680Ml/d to 500Ml/d is likely to increase the winter refill by around 12% of reservoir storage if we have a dry winter with 60% of LTA rainfall (similar to the level of rainfall we have seen across this year from February to September).

Figure 9.1: Carsington/Ogston reservoirs Projected refill with and without Winter Drought Permit 60 % LTA



This permit would allow us to refill Carsington reservoir to 77% rather than 65% without the drought permit under this scenario. This is around 5000Ml of extra water which would be available to support the customers directly fed from the reservoirs as well as the customers across the Strategic Grid North WRZ.

As shown in Figure 2.11 in Section 2.3, under the 60% LTA scenario, Derwent Valley reservoirs would also remain low by March 2026. This would also be the case for our other reservoirs across our Strategic Grid North WRZ such as the Charnwood and Dove reservoir complexes, both of which are currently at their lowest point in the last 30 years. The 5000Ml of extra storage in Carsington and Ogston combined would be critical in this scenario to support the reduction in abstraction which would be available from these other reservoirs sources, particularly Derwent Valley, which under this scenario would likely only be around 75% full at the start of April 2026 and could hit emergency storage if 2026 is similar to 2025 and abstraction from the reservoir could not be reduced. This would present a **real and imminent risk** of failing to meet public water supply needs for the 111,800 customers directly fed by that source, and would risk a **serious deficiency of the supplies** to the 2,277,000 customers within our wider Strategic Grid North WRZ. There could also be a risk to customers of Yorkshire Water whose supplies are supported by a raw water export from the Derwent Valley reservoirs.

Should the permit be rejected, this will increase the risk of going into next summer with the reservoirs below normal levels as our winter recharge potential will be reduced. Should winter and spring continue to be dry there is increased likelihood of more significant restrictions on our customers and furthermore an increased likelihood of impact to the environment through summer drought permits on associated reservoirs supplying the Strategic Grid North.

10. Navigation Authority

As required by the March 2025 Drought permits and drought orders EA guidance, we are obliged to notify any navigation authorities and local drainage boards of our intent to apply for a permit. For the water courses

affected by this drought permit application, we have not identified any navigation authorities or drainage boards.

11. Notices and advertisements

As set out in the guidance, we have put our notice into the London Gazette which will be published on the 22 October 2025. We have also identified one local paper for publication; this is the Derby Telegraph.

Evidence of notices being published will be sent to the Environmental agency.

12. Public inspection arrangements

Our application will be made available in the affected area for parties to view, free of charge, during normal working hours for a period of seven days from the publication of the notice:

- Ripley Library, Grosvenor Road, Ripley, Derbyshire DE5 3JE, 01629 532982
- Severn Trent Water, Raynesway, Derby DE21 7JA
- Environment Agency, Trentside Offices, Scarrington Road, West Bridgford, Nottingham, NG2 5BR, Tel: 03708 506 506
- Severn Trent Water, 2 St John's Street, Coventry, CV1 2LZ, Tel: 02477 715000
- Severn Trent Water's Website at https://www.stwater.co.uk/Ambergate-drought-permit

Objections may be made in writing to the Environment Agency at psc-waterresources@environment-agency.gov.uk or Water Resources Permitting Support Centre, Environment Agency, Quadrant 2, 99 Parkway Avenue, Parkway Business Park, Sheffield, S9 4WF.

Objectors may also send a copy of their objection to the address below or by email to: FutureConsultation@severntrent.co.uk

13. Managing environmental impacts

To support the Drought Permit application, we have commissioned an Environmental Assessment Report (EAR) that assesses the environmental impact on the River Derwent, from the partial relaxation of control flows at St Mary's Bridge, Derby, against baseline conditions. The EAR describes mitigation measures to reduce the level of impact where appropriate and details an Environmental Monitoring Plan (EMP) to understand the actual environmental impacts during and post-drought.

Overall, the assessment finds that the Drought Permit will not significantly affect the hydrological, hydrogeological and/or geomorphological regime of the River Derwent and no significant impacts are predicted on its ecology or other water users. The summary conclusions of the EAR are:

- the abstraction at Ambergate to Carsington Reservoir when river flows are lower at St Mary's Bridge is expected to have a minor effect on flows and neglible effect on water quality and habitats within the River Derwent;
- the impact on ecology including protected species, fish and macroinvertebrate is likely to be minor downstream of the Ambergate abstraction;
- no impacts predicted on any designated sites; and
- no significant impact on other abstractors, recreational usage or aesthetic value of the River Derwent.

Although no significant impacts are predicted from the application of this drought permit, environmental monitoring will allow for validation of predicted effects, particularly for those assessments with elements of inherent uncertainty. The environmental monitoring programme will be carried out whilst the drought permit

is in operation to identify where significant impacts may be occurring and will allow us to respond with appropriate mitigation where necessary.

The proposed mitigation measures to prevent or reduce the level of impact will include:

- the reduction of, or the cessation of abstraction at the lower HoF.

14.Consulting our key stakeholders

We have already consulted earlier this year with all stakeholders as part of our drought plan review pre-consultation (2027-2032) and will now engage with them again on Ambergate drought permit option.

Communication Plan

In parallel with submitting our application to the EA, we:

- Contact statutory stakeholders (statutory letter, notice and leaflet).
- Write letters to all other stakeholders (non-statutory letter and leaflet).
- Discuss any concerns with stakeholders (with calls or face-to-face meetings if required).
- Place formal notifications in the London Gazette and one local paper.
- Make the full application available in locations in the affected area and on our website (as set out in the notice) for interested parties to view (as detailed in section 12).
- Place a record of our permit application on our website.

Engagement and communication strategy

We have contacted all stakeholders to notify them of the intention to make the permit application, how we will protect against the potential impacts and how they can find out more about the permit we are applying for.

We have compiled a list of stakeholders using records of known downstream river users and feedback from local teams. Our stakeholders can be categorised into three areas: statutory, notifiable and community.

Our strategy for each stakeholder category is the following:

- **Statutory stakeholders**: We contact statutory consultees in parallel with the application being advertised and notify them of why we are requesting the permit.
- **Notifiable stakeholders**: We have worked with the Environment Agency (EA) to identify the downstream river users and abstractors who have the potential to be affected by the permit. We write to them prior to the application being advertised, explaining the need for the permit, how we will protect against the potential impacts and options to contact us to find out more. We also write to broader stakeholders including MPs and Councils.
- **Community stakeholders:** We write to all identified community stakeholders in parallel with the application being advertised to notify them of the timing and need for the permit, how we will protect against the potential impacts and options to contact us to find out more about the permit we are applying for.

All stakeholders have had a formal consultation letter but many of them we have also spoken to directly prior to this. These early discussions have been useful and no matters of concern have been raised directly during these conversations. We will continue to keep stakeholders updated over the drought permit period as appropriate.

Appendix – Customer Engagement

The details of the campaigns and water efficiency activity we have done are included in section 5 – Customer engagement. This appendix includes examples of the creatives that are linked to these activities.
Our campaign has included sharing with customers messaging around the lack of rainfall meaning lower reservoir levels, internal and external water saving tips. Below are some examples.

Social media posts

Media posts following media engagement

Severn Trent: Be water-wise after dry March and sunny April

17TH MAY SEVERN TRENT WATER BUSINESS ENVIRONMENT

WATER-WISE: Severn Trent customer operations director Steph Cawley *(Image: Severn Trent)*

'Water is our most precious resource': Severn Trent pledges to reduce leakage by another 15% amid £400m investment

Severn Trent Customer Operations Director Steph Crawley explains the work the company is doing to reduce leakage from pipes - and urges customers to be waterwise

By **Steph Crawley, Severn Trent Customer Operations Director**

h
..
blished 12 hours ago | Last updated 6 hours ago

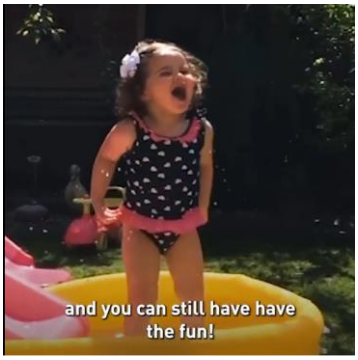
Shropshire Star

Water saving messages across You Tube and digital display in drought hot spot postcode areas. This media activates automatically when the temperature reaches 24°C.

Creative examples below:

Lawns:

Paddling Pools:



Water Butts:

Comparison of water consumption impacts of direct customer communication – this shows the difference between a test group (1000 customers texted directly and asked to use less water) and a control group. The test group used more water after the communication was received.

Appendix- Exceptional Shortage of Rainfall (ESoR)

1. Introduction

This section of the drought permit document details our Exceptional Shortage of Rainfall (ESoR) assessment in accordance with the Environment Agency's guidance - 'Hydrological guidance for the assessment of an Exceptional Shortage of Rain (ESoR), 2025'. Our overview and hydrological content is outlined in section 2 of the main document.

We have conducted the following technical analysis methods to support our ESoR assessment:

- Standardised Precipitation Index (SPI) and Standardised Precipitation and Evaporation Index (SPEI)
- Rainfall ranking
- Rainfall probability bands
- Long duration rainfall frequency analysis and return periods

We have also included additional supporting evidence:

- Soil Moisture Deficit
- River flows
- Effective rainfall
- Long Term Average (LTA) rainfall
- Temperature

Our methodology for the ESoR assessment has been shared with the relevant Environment Agency hydrology team.

2. Rainfall data

We have used one Environment Agency hydrological catchment and one bespoke catchment area of interest for the Carsington & Ogston reservoirs. We have been provided monthly HADUK/DRT rainfall from the Environment Agency for:

- 'Derwent Mids' – EA catchment
- Strategic Grid North Water Resource Zone (WRZ) - bespoke

The areal rainfall datasets are from 1871 – 2025. These include monthly rainfall from HADUK data from January 1871 to December 2024, along with DRT data from January 2025 to September 2025. Justification of our use of bespoke catchments is given in Section 4.

For section 6.3 we have used Environment Agency DRT data from the 1st of October to the 15th, then a medium-range 11 day rainfall forecast from our meteorological provider 'Weatherquest' for the 16th to the 26th. This is a medium-range ECMWF driven forecast, with a 50 member ensemble deriving the mean.

3. Period of analysis

The period of rainfall deficit used to support our ESoR case has been agreed with the relevant Environment Agency teams.

The first month of significantly below normal rainfall was February 2025. We have included the latest rainfall data up until the end of September 2025 in our technical rainfall analysis. The eight-month period of analysis reflects our drought response timeline and raw water decline in our region. We have also included brief analysis of the rainfall for October compared to the Long Term Average as agreed with the Environment Agency, to show the rainfall up to point of application. Full details can be found in Sections 5 and 6.

The Environment Agency declared drought for the East and West Midlands on 15 July. As of the start of February 2025 the Ogston and Carsington reservoirs collectively were 95.6% full, with overall company storage excluding Clywedog at 97.1%.

Figure 1: Raw Water storage total company and Ogston & Carsington

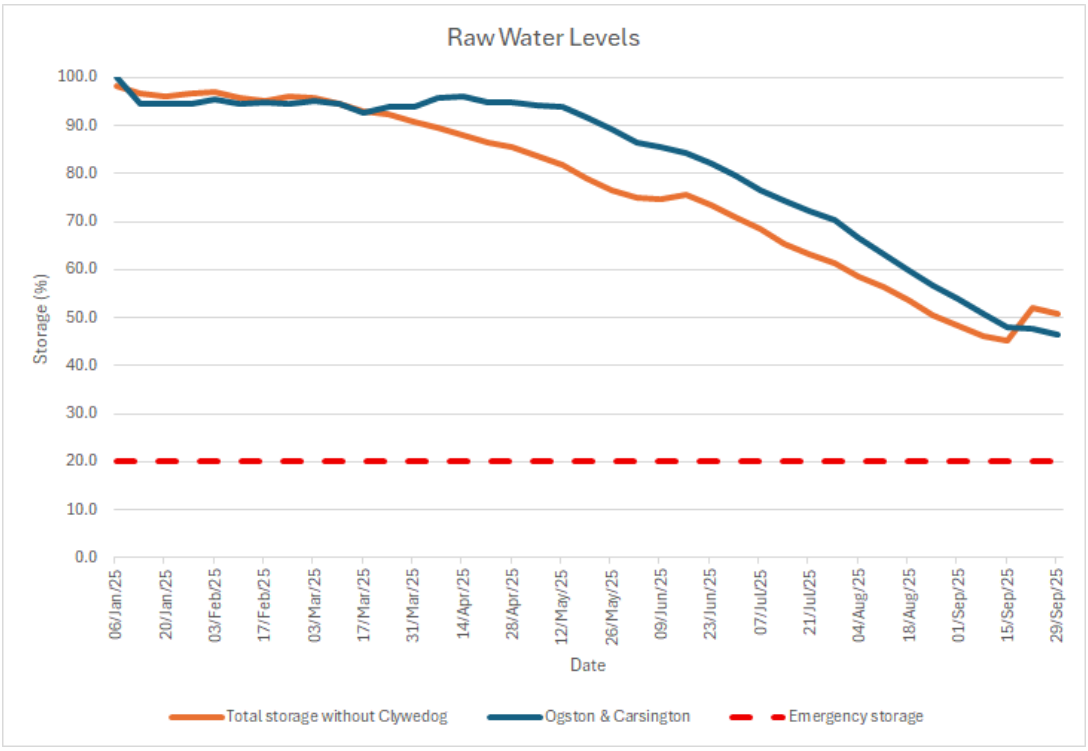


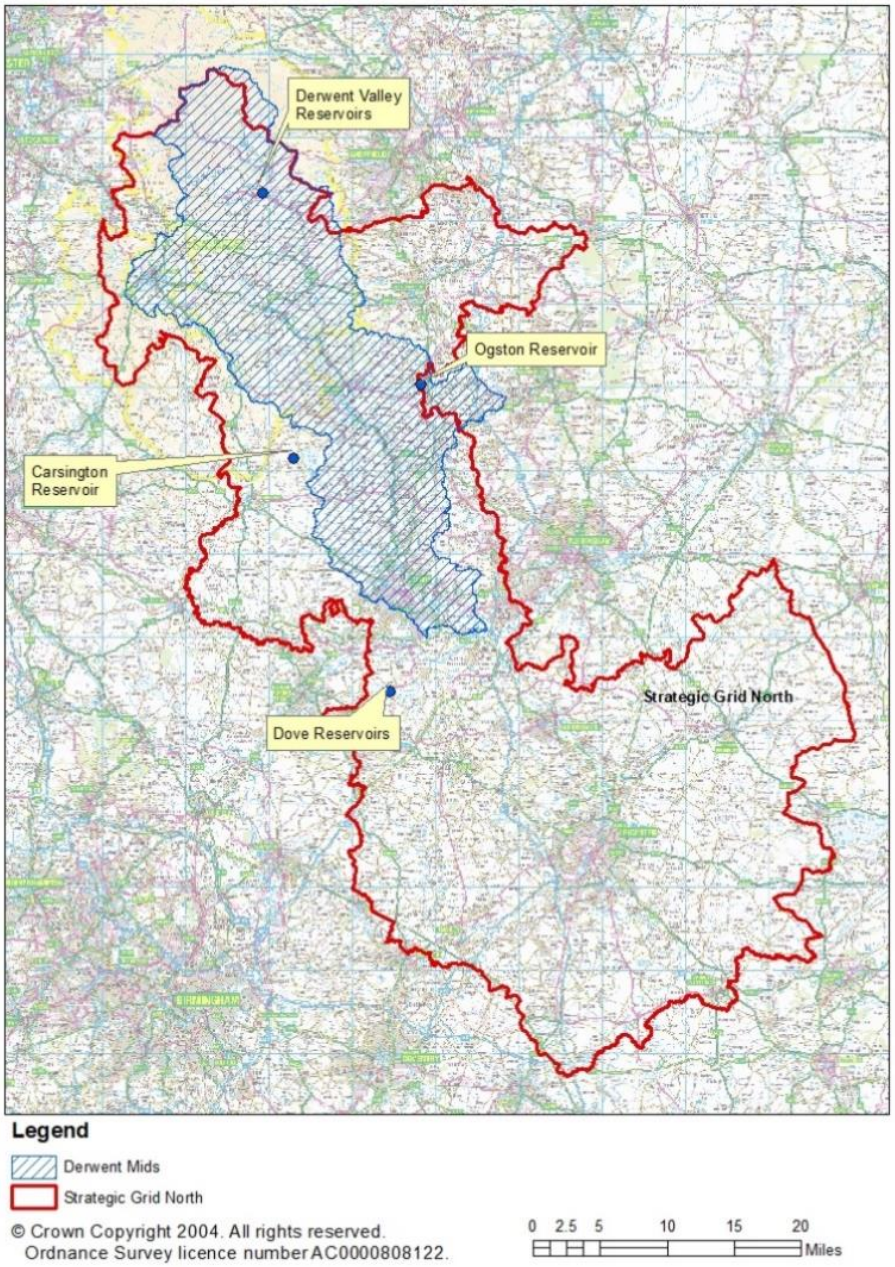
Table 1: Raw Water storage of key company reservoirs for week commencing 3rd of February 2025

	Max capacity (Ml)	Storage (Ml)	Storage (%)
Derwent Valley reservoirs complex	46345	46105	99.5%
Dove reservoir complex	19845	18331	92.4%
Charwood Reservoir complex	4756	4730	99.5%
Ogston & Carsington	42381	40498	95.6%
Elan Valley Reservoir complex	99500	99182	99.7%
Tittesworth	6440	6440	100.0%
Total storage with Clywedog			96.3%
Total company storage without Clywedog			97.1%

4. Geographical extent of analysis

We agreed with the Environment Agency that we would use a EA hydrological catchment (Derwent Mids) and one bespoke catchment (Strategic Grid North) for our rainfall analysis, the catchments are illustrated in the map below.

Figure 2: Map of Strategic Grid North WRZ and 'Derwent Mids' EA hydrological catchment



The EA catchment 'Derwent Mids' has been used as a focused area of interest for our Ogston and Carsington reservoirs and represents the impact of the dry weather on river flows which support these key reservoirs.

The Carsington and Ogston reservoirs are part of a wider network of water sources which we use to supply our customers in our 'Strategic Grid North Water Resource Zone' (WRZ). We operate these sources "conjunctively", using more or less of different water sources depending on abstraction licence conditions, water availability and customer water demand. The Strategic Grid North catchment has been used to represent the wider impact of the rainfall deficit across the WRZ, providing context to our position at the Carsington & Ogston reservoirs.

5. Technical rainfall analysis methods

5.1 SPI & SPEI

To indicate whether a drought is emerging, it is useful to use mechanisms such as the Standardised Precipitation Index (SPI) and the Standardised Precipitation Evapotranspiration Index (SPEI). SPI normalises rainfall based on a historic record, enabling the comparison between geographic areas and across different time periods to determine how dry it has been relative to a standard measure. SPEI is a water balance index that incorporates evapotranspiration. It's a multi-scalar index that enables the identification of different drought types and compares drought severity.

SPI is calculated on a monthly basis for a moving window of n months, where n indicates the rainfall accumulation period. SPI values are given in units of standard deviation from the long-term mean of the standardised distribution. As shown in Table 1, negative values correspond to periods that are drier than average, whilst positive values indicate periods that are wetter than average.

Table 1: SPI categories definition

SPI value	SPI category
>= 2.0	Extremely wet
+1.5 to +1.99	Severely wet
+1.0 to +1.49	Moderately wet
-0.99 to +0.99	Near normal
-1.0 to -1.49	Moderately dry
-1.5 to -1.99	Severely dry
<= -2.0	Extremely dry

SPEI follows the same process and also incorporates evapotranspiration in the form of potential evapotranspiration (PET) data. This is essentially a simple climatic water balance, allowing the index to account for both hot/cold conditions, as well as dry/wet conditions.

The EA SPI tool issued in 2025 has been used to calculate SPI and SPEI. The input data uses the Environment Agency monthly HADUK/DRT rainfall from 1871-2025. Additionally, to calculate SPEI, monthly PET data from January 1961 to September 2025 is used.

Table 2 and Table 3 show the SPI and SPEI figures for rainfall data at Derwent Mids, and Strategic Grid North WRZ for the period from February to September 2025, and the accumulation period up to 9 months.

Table 2: SPI and SPEI for rainfall data at Derwent Mids

Parameter	Date	1m acc.	2m acc.	3m acc.	4m acc.	5m acc.	6m acc.	7m acc.	8m acc.	9m acc.
SPI	Feb-25	-0.62	0.00	0.42	0.18	0.06	0.70	0.24	0.32	0.12
	Mar-25	-1.40	-1.59	-0.73	-0.11	-0.29	-0.35	0.34	-0.08	0.00
	Apr-25	-1.84	-2.33	-2.46	-1.44	-0.65	-0.77	-0.79	-0.04	-0.43
	May-25	-0.55	-1.71	-2.34	-2.57	-1.65	-0.86	-0.95	-0.94	-0.20
	Jun-25	-0.70	-1.19	-2.05	-2.54	-2.67	-1.90	-1.12	-1.17	-1.15
	Jul-25	-0.20	-0.70	-1.05	-1.75	-2.25	-2.47	-1.84	-1.16	-1.21
	Aug-25	-1.68	-1.27	-1.41	-1.66	-2.24	-2.68	-2.87	-2.26	-1.59
	Sep-25	1.29	0.21	-0.01	-0.35	-0.59	-1.11	-1.52	-1.77	-1.37
SPEI	Feb-25	-0.78	-0.06	0.25	0.05	-0.02	0.69	0.12	0.26	0.02
	Mar-25	-1.86	-1.91	-1.17	-0.51	-0.65	-0.64	0.21	-0.37	-0.21
	Apr-25	-1.77	-2.01	-2.70	-2.29	-1.42	-1.60	-1.37	-0.45	-0.82
	May-25	-1.38	-1.88	-2.15	-3.11	-2.74	-1.94	-2.12	-1.77	-0.84
	Jun-25	-1.44	-2.00	-2.26	-2.33	-2.85	-2.63	-2.18	-2.15	-1.92
	Jul-25	-0.41	-1.16	-1.67	-1.97	-2.08	-2.50	-2.39	-2.04	-1.96
	Aug-25	-1.61	-1.31	-1.47	-1.72	-1.95	-2.00	-2.23	-2.14	-2.06
	Sep-25	1.19	-0.28	-0.44	-1.00	-1.39	-1.68	-1.79	-2.01	-1.79

Table 3: SPI and SPEI for rainfall data for Strategic Grid North WRZ

Parameter	Date	1m acc.	2m acc.	3m acc.	4m acc.	5m acc.	6m acc.	7m acc.	8m acc.	9m acc.
SPI	Feb-25	-0.50	0.15	0.45	0.29	0.21	1.13	0.69	0.69	0.43
	Mar-25	-1.53	-1.56	-0.64	-0.12	-0.21	-0.22	0.76	0.32	0.36
	Apr-25	-1.49	-2.17	-2.28	-1.32	-0.65	-0.67	-0.64	0.41	-0.03
	May-25	-0.54	-1.53	-2.18	-2.37	-1.53	-0.87	-0.86	-0.80	0.22
	Jun-25	-0.97	-1.38	-2.11	-2.61	-2.68	-1.96	-1.26	-1.20	-1.13
	Jul-25	-0.11	-0.77	-1.09	-1.67	-2.17	-2.32	-1.77	-1.23	-1.19
	Aug-25	-2.01	-1.36	-1.60	-1.81	-2.29	-2.73	-2.85	-2.29	-1.74
	Sep-25	0.99	-0.29	-0.39	-0.79	-1.01	-1.44	-1.85	-2.01	-1.62
SPEI	Feb-25	-0.62	0.19	0.35	0.28	0.26	1.11	0.63	0.66	0.31
	Mar-25	-1.90	-1.90	-1.00	-0.44	-0.47	-0.37	0.69	0.12	0.23
	Apr-25	-1.77	-1.96	-2.54	-1.91	-1.40	-1.37	-1.17	0.11	-0.48
	May-25	-1.44	-1.95	-2.11	-2.88	-2.41	-1.90	-1.82	-1.58	-0.28
	Jun-25	-1.87	-2.12	-2.35	-2.26	-2.73	-2.48	-2.19	-2.02	-1.90
	Jul-25	-0.47	-1.34	-1.76	-1.98	-2.01	-2.28	-2.07	-1.98	-1.86
	Aug-25	-1.73	-1.37	-1.62	-1.85	-2.03	-2.03	-2.22	-2.07	-2.06
	Sep-25	0.83	-0.84	-0.91	-1.42	-1.65	-1.85	-1.87	-2.05	-1.85

The Derwent Mids catchment has been experiencing increasingly dry conditions over the months until September. From April to August, the SPI figures indicate an “Extremely Dry” category for various accumulation periods. The April-August, March-August, February-August, and January-August accumulation periods were all classified as “Extremely Dry.”

Similarly, the Strategic Grid North WRZ has also shown drying trends from April to August, with SPI figures confirming an “Extremely Dry” classification for the same accumulation periods: April-August, March-August, February-August, and January-August. In addition, August rainfall alone and the January-September period.

5.2 Rainfall ranking

The rainfall analysis for the Derwent Mids compares the 2025 rainfall to previous years at a local level.

Table 4: Rainfall rankings 2025 against the 155-year record for Derwent Mids (1 = driest)

2025	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1 month	41	12	9	42	35	64	13	141
2 month	81	12	4	7	21	33	18	91
3 month	100	36	3	2	3	26	11	76
4 month	86	72	10	2	1	8	9	57
5 month	81	58	49	6	4	3	4	40
6 month	119	55	40	34	4	4	2	23
7 month	89	97	35	34	23	7	3	15
8 month	94	72	76	31	20	18	5	7

Table 4 shows the ranks of the total rainfall in each month for 2025, against the 155-year record (1871 to 2025) for periods of one to eight months for Derwent Mids. Lower ranking represents the drier periods i.e. ranking 1 is the driest:

- April: the one, two and three-month rainfall totals (i.e. April, March to April and February to April) were ranked in top 9 driest in the 155-year record.
- May: the three and four-month rainfall totals (i.e. March to May and February to May) were ranked as the 2nd driest on record.
- June: four-month rainfall total (March to June) was ranked 1st driest. While three, four, five and six-month totals all were ranked in top 4 driest, indicating persistent dry conditions in the area.
- July: four, five, six and seven-month rainfall totals were ranked in top 8 driest on the record.
- August: 13th driest August on the record. Additionally, the five, six and seven-month rainfall totals were ranked in top 4 driest on the record.
- September: eight-month rainfall total was ranked 7th on the record.

Table 5: Rainfall rankings 2025 against the 155-year record for Strategic Grid North (1 = driest)

2025	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1 month	43	10	13	39	27	65	8	128
2 month	89	11	4	8	17	30	18	63
3 month	105	45	3	5	3	23	10	57
4 month	98	70	15	3	1	11	7	33
5 month	92	70	44	8	2	4	3	27
6 month	136	64	41	34	5	5	3	14
7 month	117	117	43	32	17	10	2	11
8 month	117	92	101	36	23	15	5	6

Table 5 shows the ranks of the total rainfall in each month for 2025, against the 155-year record (1871 to 2025) for periods of one to eight months for Strategic Grid North. Similar to the Derwent Mids, for Strategic Grid North the April three month, May four month, June four month, June five month, July five month, August five, six and seven month, and September eight month rainfall totals, all were ranked low. All these ranks were in the range of 1st to 6th driest in 155-years record. This indicates that the rainfall conditions across Strategic Grid North were consistently dry from February to August.

5.3 Rainfall probability Ranking/bands

Rainfall probability ranking is a method used to categorise rainfall totals into categories ranging from 'exceptionally high' (EH) to 'exceptionally low' (EL). We have used the Cunnane (1978) plotting position method, which calculates the probability of one of the ranked values being lower than expected and categorises rainfall data into descriptive categories.

Table 7: Cunnane (1978) bandings

Code	Label
EH	Exceptionally High
NH	Notably High
AN	Above Normal
N	Normal
BN	Below Normal
NL	Notably Low
EL	Exceptionally Low

Table 8: Derwent Mids rainfall probability ranking (8 months to September 2025)

Period (Months) of Cumulative Rainfall	Period Ending in Month											
	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25	Jun 25	Jul 25	Aug 25	Sep 25
1	90.0	80.2	136.4	120.4	44.4	28.8	16.6	45.6	40.2	66.5	29.6	139.5
	N	N	AN	AN	BN	NL	NL	BN	BN	N	NL	NH
	86%	76%	122%	127%	53%	39%	24%	68%	50%	81%	36%	176%
2	246.4	170.1	216.6	256.8	164.8	73.2	45.4	62.2	85.8	106.7	96.1	169.1
	AN	N	N	AN	N	NL	EL	EL	NL	BN	NL	N
	134%	81%	99%	124%	92%	47%	32%	46%	58%	65%	58%	104%
3	274.6	326.6	306.5	336.9	301.2	193.6	89.8	91.0	102.4	152.3	136.3	235.6
	N	AN	N	N	N	BN	EL	EL	EL	BN	NL	N
	103%	113%	95%	108%	104%	77%	40%	44%	47%	66%	55%	96%
4	366.5	354.7	463.0	426.9	381.3	330.0	210.2	135.4	131.2	168.9	181.9	275.8
	N	N	AN	N	N	N	NL	EL	EL	EL	NL	N
	105%	95%	115%	102%	96%	91%	66%	46%	45%	57%	58%	85%
5	411.1	446.6	491.2	583.3	471.3	410.1	346.6	255.8	175.6	197.7	198.5	321.4
	N	N	N	AN	N	N	N	EL	EL	EL	EL	BN
	96%	98%	101%	118%	94%	87%	80%	66%	47%	53%	52%	82%
6	506.6	491.3	583.0	611.5	627.7	500.1	426.7	392.2	296.0	242.1	227.3	338.0
	N	N	N	N	AN	N	BN	BN	EL	EL	EL	BN
	102%	92%	103%	106%	108%	87%	79%	79%	63%	53%	50%	73%
7	611.2	586.8	627.7	703.4	655.9	656.5	516.7	472.3	432.4	362.5	271.7	366.8
	AN	N	N	AN	N	N	BN	BN	BN	EL	EL	NL
	108%	97%	97%	106%	99%	100%	80%	78%	75%	66%	51%	69%
8	731.0	691.4	723.2	748.0	747.8	684.7	673.1	562.3	512.5	498.9	392.1	411.2
	AN	N	N	N	N	N	N	BN	NL	NL	EL	EL
	115%	103%	101%	101%	100%	93%	93%	79%	75%	75%	62%	67%

Table 9: Strategic Grid North (8 months to September 2025)

Period (Months) of Cumulative Rainfall	Period Ending in Month											
	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25	Jun 25	Jul 25	Aug 25	Sep 25
1	73.8	67.5	97.6	92.8	36.7	19.5	17.7	40.2	29.1	60.1	20.3	97.5
	N	N	AN	AN	BN	NL	NL	BN	BN	N	EL	AN
	90%	84%	119%	131%	61%	35%	32%	70%	42%	83%	29%	149%
2	233.0	141.3	165.1	190.4	129.5	56.2	37.2	57.9	69.3	89.2	80.4	117.8
	NH	N	N	AN	N	NL	EL	EL	NL	BN	NL	N
	158%	87%	102%	125%	99%	49%	34%	51%	55%	63%	57%	87%
3	261.2	300.5	238.9	257.9	227.1	149.0	73.9	77.4	87.0	129.4	109.5	177.9
	AN	NH	N	AN	N	N	EL	EL	EL	BN	NL	N
	120%	132%	98%	111%	107%	80%	43%	46%	48%	65%	52%	86%
4	337.9	328.7	398.1	331.7	294.6	246.6	166.7	114.1	106.5	147.1	149.7	207.0
	AN	AN	NH	N	N	N	NL	EL	EL	NL	EL	BN
	117%	110%	129%	105%	101%	92%	69%	50%	45%	58%	56%	75%
5	374.3	405.4	426.3	490.9	368.4	314.1	264.3	206.9	143.2	166.6	167.4	247.2
	N	AN	AN	NH	N	N	N	EL	EL	EL	EL	BN
	104%	110%	112%	129%	98%	90%	82%	69%	48%	54%	52%	74%
6	455.5	441.8	503.0	519.1	527.6	387.9	331.8	304.5	236.0	203.3	186.9	264.9
	N	N	AN	AN	NH	N	BN	BN	EL	EL	EL	NL
	109%	101%	111%	115%	120%	90%	82%	80%	64%	55%	49%	68%
7	540.0	523.0	539.4	595.8	555.8	547.1	405.6	372.0	333.6	296.1	223.6	284.4
	AN	N	N	AN	AN	AN	N	BN	NL	NL	EL	NL
	114%	105%	103%	114%	109%	111%	84%	81%	74%	67%	51%	64%
8	631.2	607.5	620.6	632.2	632.5	575.3	564.8	445.8	401.1	393.7	316.4	321.1
	NH	AN	AN	AN	AN	N	N	BN	BN	NL	EL	EL
	120%	110%	107%	107%	109%	102%	103%	82%	76%	75%	62%	64%

Out of the 72 time periods relevant to a February start period; Over two thirds ranked as Notably Low or Exceptionally Low, 24 for Derwent Mids and 25 for Strategic Grid North. Many of these where over the longer

time periods of 3-8 months, with only 9 out of 42 such periods not ranking as Notably Low or Exceptionally Low. Across the full 8-month period (February to September) both catchments ranked as Exceptionally Low.

Both Derwent Mids and Strategic Grid North had above Normal rainfall in September. However, the 8 months to September as a whole saw Below Normal or drier conditions in 11 out of 16 monthly values across the two catchments.

5.4 Long duration rainfall frequency analysis and return periods

We have undertaken a frequency analysis of the rainfall data for Derwent Mids and Strategic Grid North WRZ. We looked specifically at the frequency of levels of cumulative rainfall in mm for the 7-month and 8-month period February to August/September from 1871 to 2025 (155 years), and where on the distribution 2025 rainfall sits. Different distributions (Normal, Weibull and Gamma) were tested for a best fit and Normal distribution was found to be the best fit.

For February to August the rainfall has a chance of occurring 0.67% of the time with a return period of 143 years for both catchments. For February to September, the rainfall has a chance of occurring 4.76% of the time with a return period of 21 years for Derwent Mids catchment, and 3.23% of the time with a return period of 31 years for Strategic Grid North WRZ.

Normality test of the data:

The Shapiro-Wilks test was used to test if the February to September rainfall data is normally distributed. The null hypothesis of this test is that the data follows a normal distribution, and the alternative is that it does not. The test provides evidence to reject the null hypothesis (i.e., there is evidence that the dataset is not normally distributed if the p-value is less than the 0.05 threshold. The p-values for the February to September dataset were 0.87 and 0.99 for Strategic Grid North WRZ and Derwent Mids respectively, the above threshold p-values shows no evidence for the datasets being not normally distributed.

This is also supported by the qq-plot in Figure 3 and 4. In the plot, the blue line represents a perfect normal distribution, and the points are our dataset. The points follow the same shape as the line, providing further evidence that it is normally distributed.

Figure 3: QQ plot for Strategic Grid North showing February to September rainfall in the 155-year period

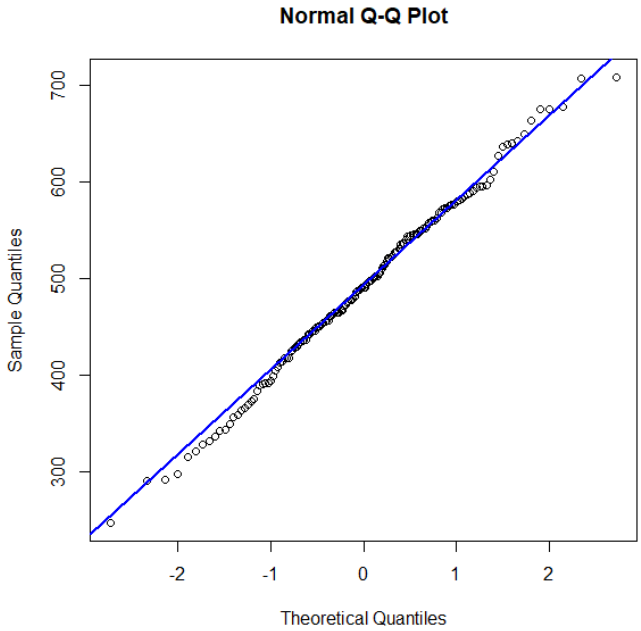


Figure 4: QQ plot for Derwent Mids showing February to September rainfall in the 155-year period

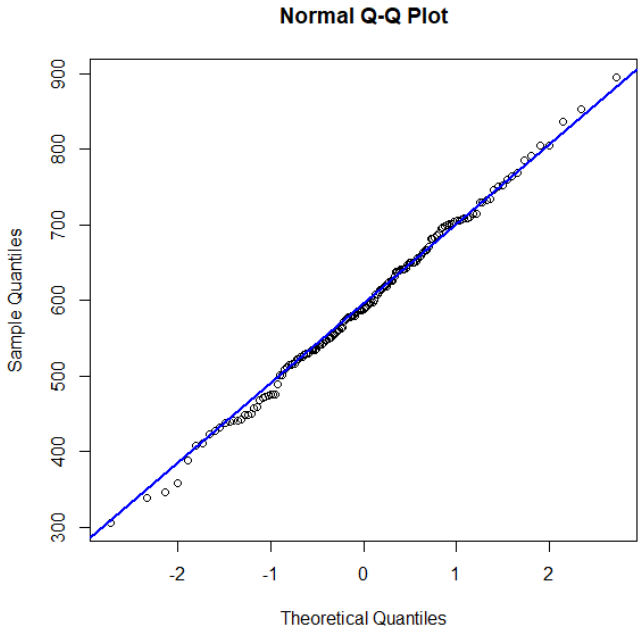


Figure 5 (Derwent Mids) and Figure 6 (Strategic Grid North WRZ) show that the volume of rainfall recorded between February and September 2025 was likely between 5 percent and 1 percent for both catchments. The probability values for 2025 February-September rainfall totals of 411.20 mm and 321.1 mm were 0.048 and 0.032 for Derwent Mids and Strategic Grid North WRZ respectively. This gives the return period of 1 in 21 years and 1 in 31 years for Derwent Mids and Strategic Grid North WRZ respectively.

The Rainfall across this period is in the top 5% of dry years for both Derwent Mids and Strategic Grid North WRZ. Additionally, the probability for 2025 February-August rainfall totals of 271.7 mm and 223.6 mm was 0.007 for both Derwent Mids and Strategic Grid North WRZ, giving the return period of 1 in 143 years for both.

Figure 51: Distribution Plot showing position of 2025 February to September rainfall in the 155-year period for Derwent Mids

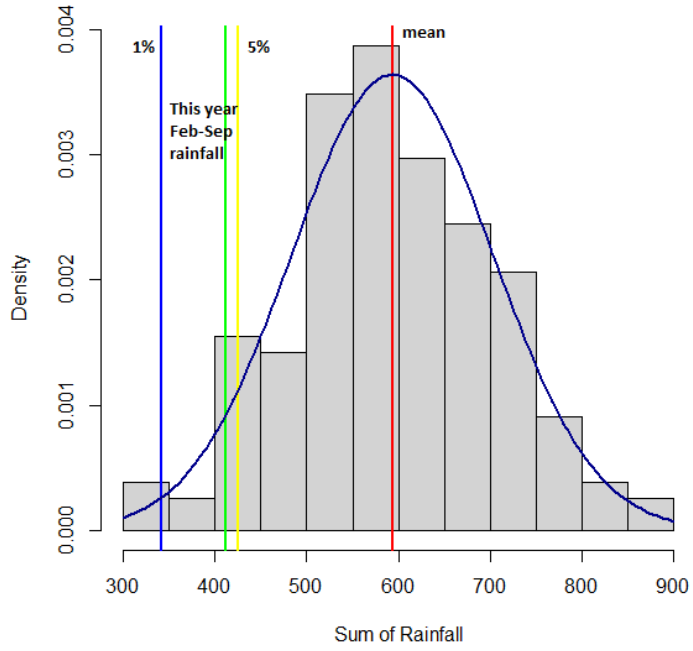
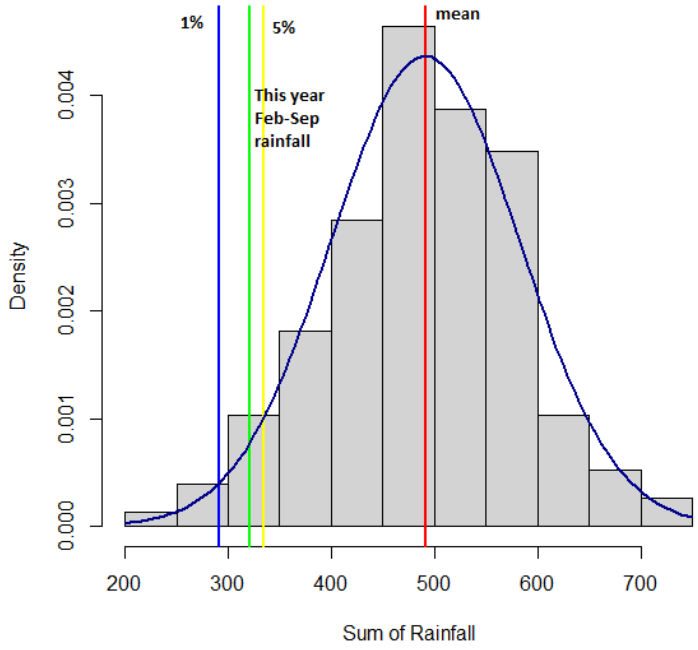


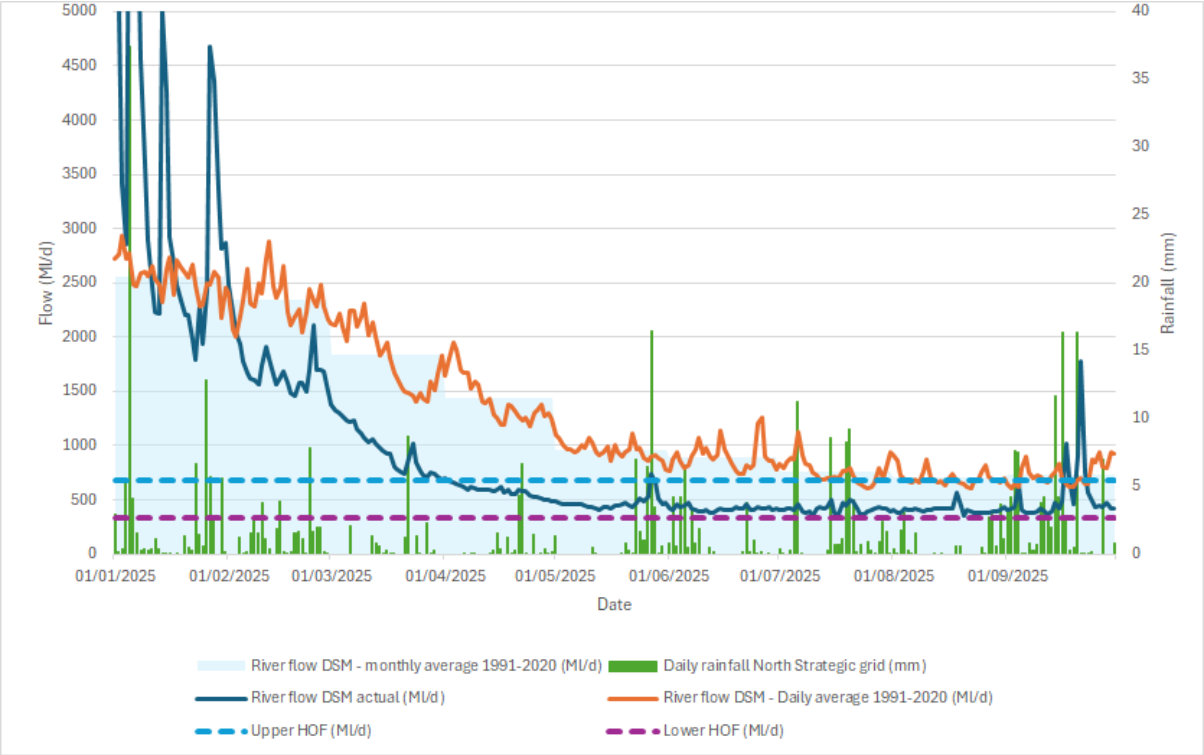
Figure 62: Distribution Plot showing position of 2025 February to September rainfall in the 155-year period for Strategic Grid North



5.5 Rainfall, river flows and raw water

Effective rainfall is the portion of the rainfall directly responsible for runoff. The river flow data for Derwent at Derby St. Marys was obtained from the Hydrology Data Explorer Portal.

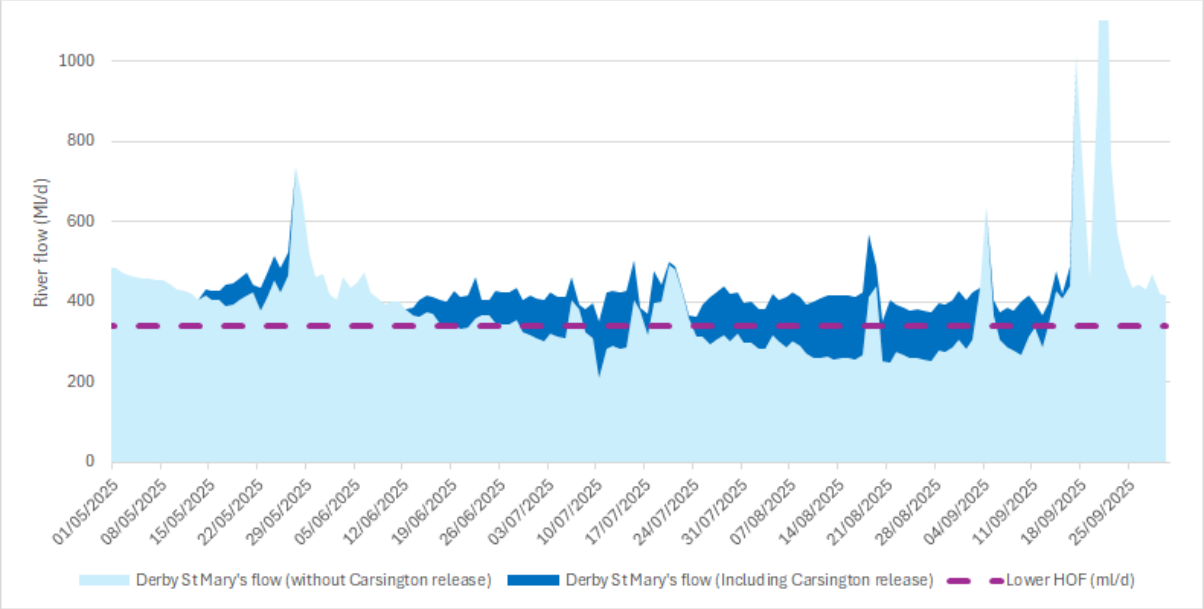
Figure 73: River flows and rainfall Derby Saint Mary's (DSM) and rainfall North Strategic Grid.



Actual river levels in figure 7 (Dark blue) at Derby St. Mary's have been lower than both the daily and monthly averages for all bar a handful of days in early February and late September. Levels dropped from circa 2500Ml/d at the start of February to a base of around 450Ml/d by early to mid-May. The river level remained around this level and below until the end of September. It is to be noted, as per Figure 8, that the river would have been lower still, had there not been releases from Carsington to support downstream abstractions.

Any notable rainfall events (green bars) resulted in a short-term recovery of river level followed by a return to the previous trend within days. The end of September saw some larger peaks in river flow above monthly average due to some high rainfall events, but this quickly dropped away to below 500Ml/d.

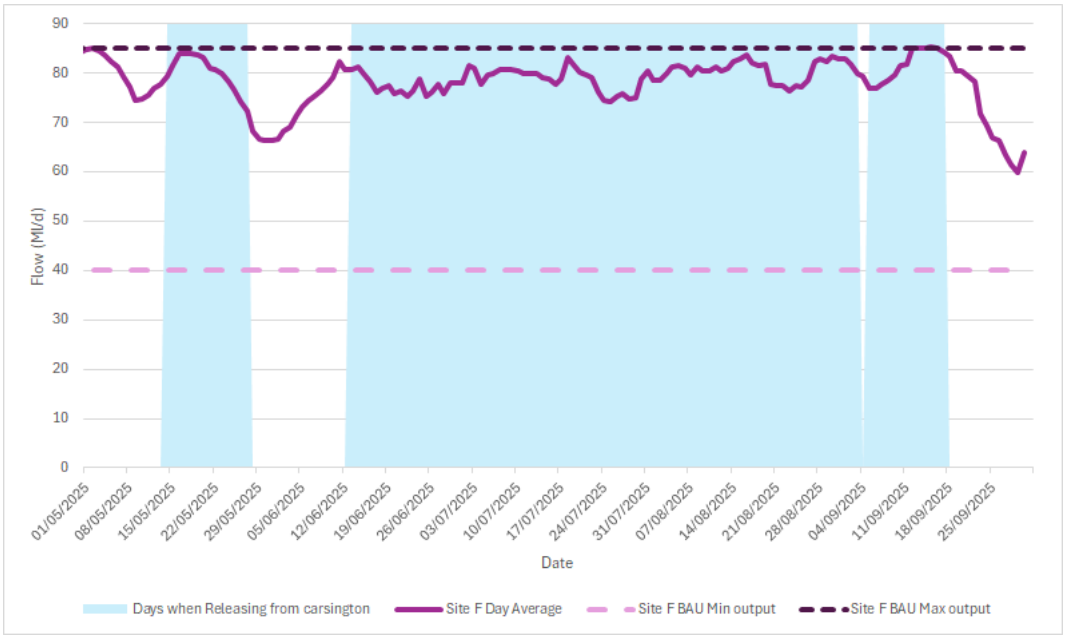
Figure 8: River releases from Carsington Water to the River Derwent.



The lower than average (1991-2020) river levels highlighted in figure 7 required a significant period of releases from Carsington Water into the River Derwent to support downstream abstractions. Figure 6 (above) clearly highlights how releases between mid-May and mid-September (dark blue) helped to sustain levels in the River Derwent above the Derby St Mary's lower HOF level of 340Ml/d. Without the quantity released (Dark Blue) river levels would have followed close to the lower (light blue) level in Figure 8 above.

Had river levels been at the lower level then abstraction at Site F figure 9 below would have been required to reduce to just above minimum levels (dotted light purple line) for the majority of this period. However, with river releases which kept the river above the lower HOF, production at the WTW was able to be maintained at near to peak abstraction from the beginning of May through to mid-September.

Figure 9: Comparison of Site F production versus river releases from Carsington



This sustained production at Site F has helped to facilitate the reduction of flows at Site R thereby taking demand off the Derwent Valley reservoir levels.

Releases from Carsington reservoir have also been used to support abstraction at Site E, which would have had to be stopped, had the flow at Church Wilne Weir dropped below the 340Ml/d HOF. These two abstractions combined made a significant difference to the abstraction required Site R which ensured that Derwent Valley Reservoirs did not drop below level 2 during the summer, which would have instigated a possible summer drought permit at that site.

5.6 Percentage of Long Term Average (LTA) rainfall

The Environment Agency's HadUK/DRT dataset for hydrological area rainfall has been used to compare the last 8 months rainfall to LTA and significant historic drought periods. As recommended in the hydrological guidance document we have used the 1991-2020 LTA period as a comparator. We have also assessed the same data using the 1961-1990 LTA period, which showed a similar outcome to that detailed below.

Figure 10 : Actual monthly rainfall percentage variance from Long-Term Average (Derwent Mids) based on Had-UK & EA DRT data

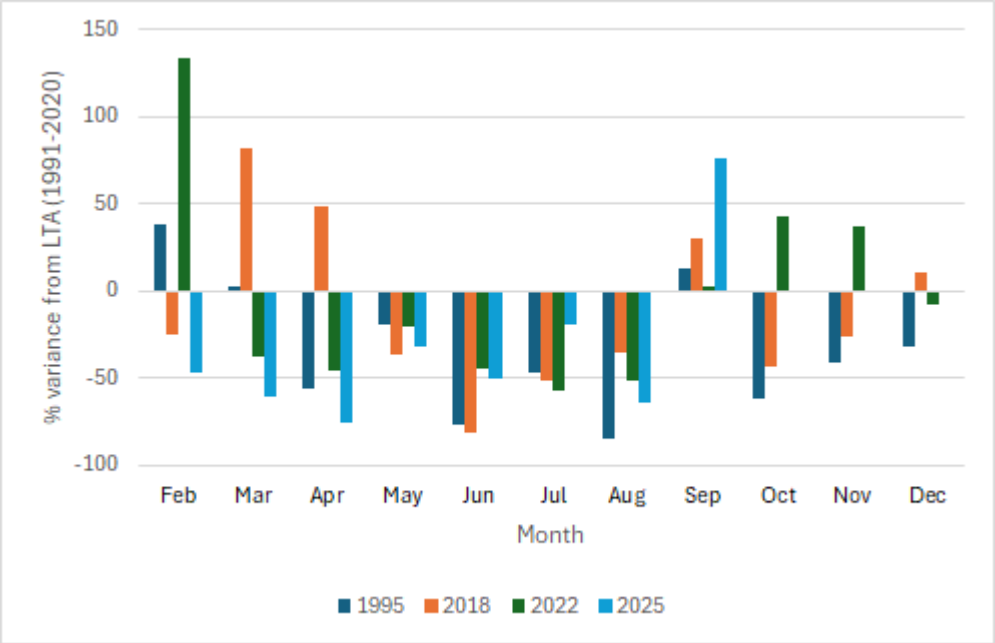


Figure 11: Cumulative actual rainfall mm (Derwent Mids) based on Had-UK & EA DRT data

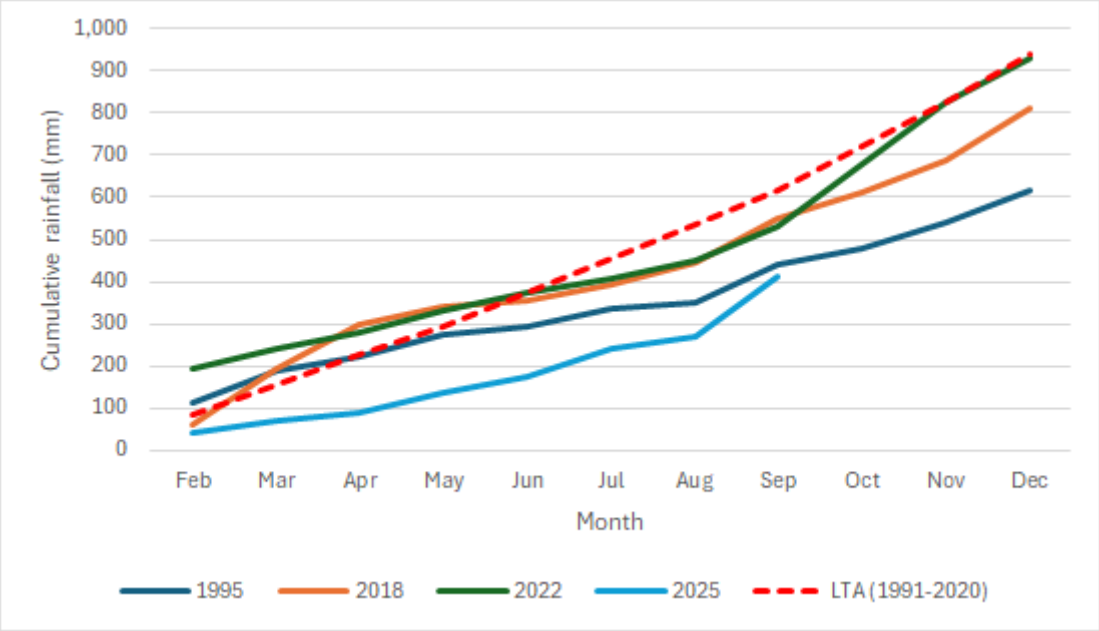


Figure 12: Actual monthly rainfall percentage variance from Long-Term Average (Strategic Grid North) based on Had-UK & EA DRT data

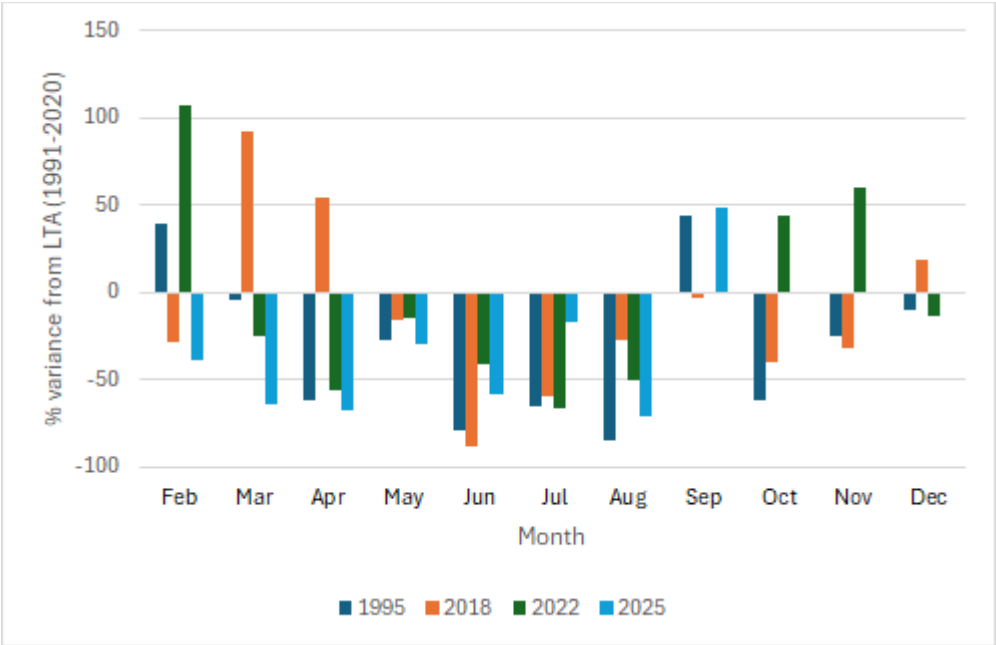
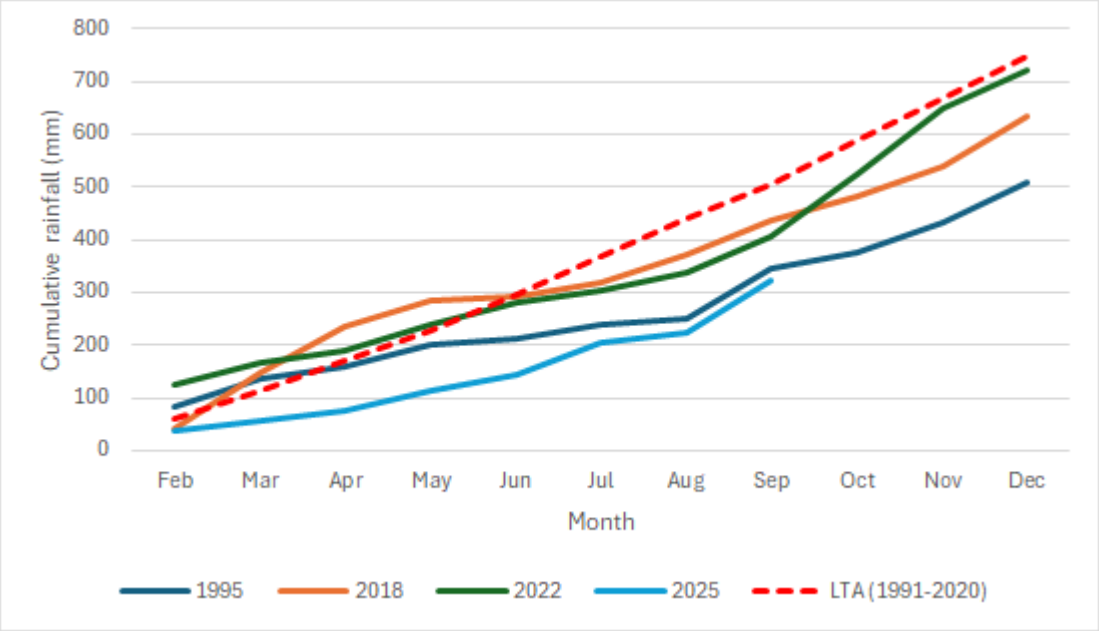


Figure 13: Cumulative actual rainfall mm (Strategic Grid North) based on Had-UK & EA DRT data



All monthly rainfall totals from February onwards, except September, for both catchment areas have been below LTA. The first three months for both catchments were especially dry with Derwent Mids recording a shortfall against LTA of 135mm and Strategic Grid North a 97mm shortfall. April was the driest month for both Derwent Mids (17mm) and Strategic Grid North WRZ (18mm).

The cumulative rainfall totals have been below LTA and below the three comparator drought periods (1995, 2018 and 2022) for every month since February, resulting in a significant rainfall deficit. The cumulative deficit against LTA for the full 8-month period is 206mm for Derwent Mids and 184mm for the Strategic Grid North WRZ.

Table 10: Derwent Mids actual rainfall Vs LTA monthly rainfall based on Had-UK & EA DRT data

Month	Total Rainfall (mm)	LTA (1991-2020)	Percentage of LTA	Percentage of 3 month LTA	Percentage of 6 month LTA	Since start of Feb
Feb	44.4	83.7	53%	104%	108%	53%
Mar	28.8	73.3	39%	77%	87%	47%
Apr	16.6	68.1	24%	40%	79%	40%
May	45.6	66.9	68%	44%	79%	46%
Jun	40.2	81.2	50%	47%	63%	47%
Jul	66.5	82.3	81%	66%	53%	53%
Aug	29.6	82.5	36%	55%	50%	51%
Sep	139.5	79.3	176%	96%	73%	67%

Table 11: Strategic Grid North actual rainfall Vs LTA monthly rainfall based on Had-UK & EA DRT data

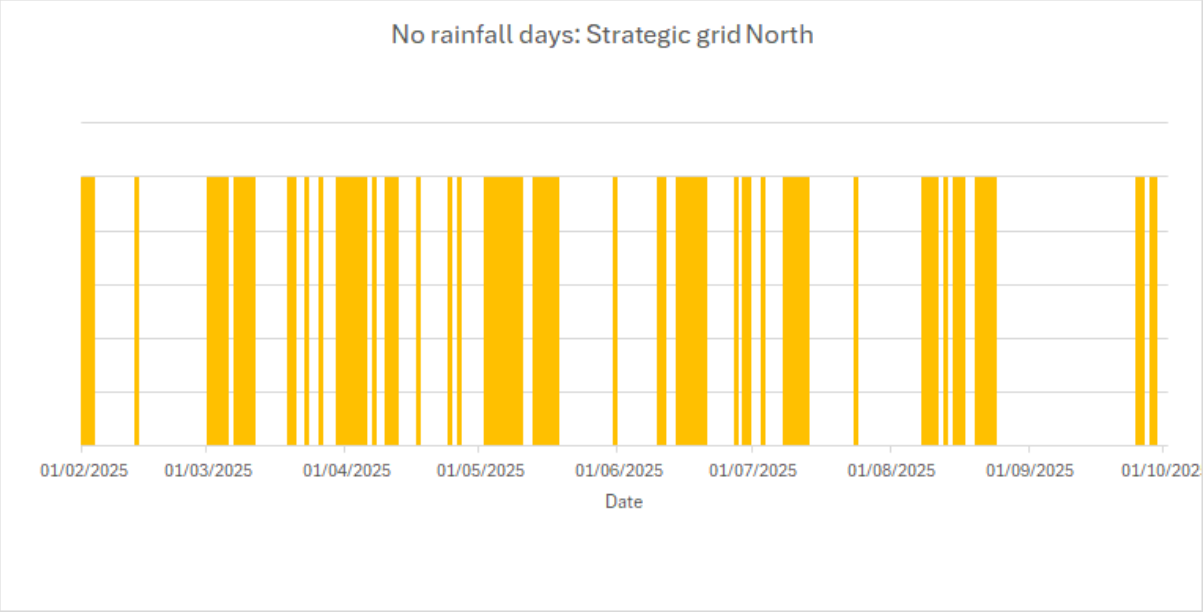
Month	Total Rainfall (mm)	LTA (1991-2020)	Percentage of LTA	Percentage of 3 month LTA	Percentage of 6 month LTA	Since start of Feb
Feb	36.7	60.0	61%	107%	120%	61%
Mar	19.5	55.0	35%	80%	90%	49%
Apr	17.7	55.5	32%	43%	82%	43%
May	40.2	57.4	70%	46%	80%	50%
Jun	29.1	69.6	42%	48%	64%	48%
Jul	60.1	72.0	83%	65%	55%	55%
Aug	20.3	70.2	29%	52%	49%	51%
Sep	97.5	65.6	149%	86%	68%	64%

Rainfall for the eight months to September was 67% of LTA for the Derwent Mids, and 64% of LTA for Strategic Grid north. The three months to April was an exceptionally dry period recording only 40% of LTA at Derwent Mids and 43% for the Strategic Grid North.

5.7 Non-rainfall days

For the Strategic Grid North catchment a large proportion of the dry days which occurred, happened between March and mid-May (52%) with many dry days clustered together. There were 39 periods of three or more consecutive dry days, and one extended period of nine consecutive dry days ending on the 10th May as illustrated in Figure 14.

Figure 14: Chronological spacing of non-rainfall days (Strategic Grid North)



6. Supporting information

6.1 Soil Moisture Deficit

Soil Moisture Deficit (SMD) measures how much water is required to restore soil moisture to it optimal state. It is normally measured in millimetres (mm) of water, with the mm value representing the amount of water required to reach optimal state. The data is sourced from Meteomatics SMD dataset. The index is 0 if the permanent wilting point is reached and 1 when at field capacity.

Figure 15: Melbourne Bog Lane (SMD)

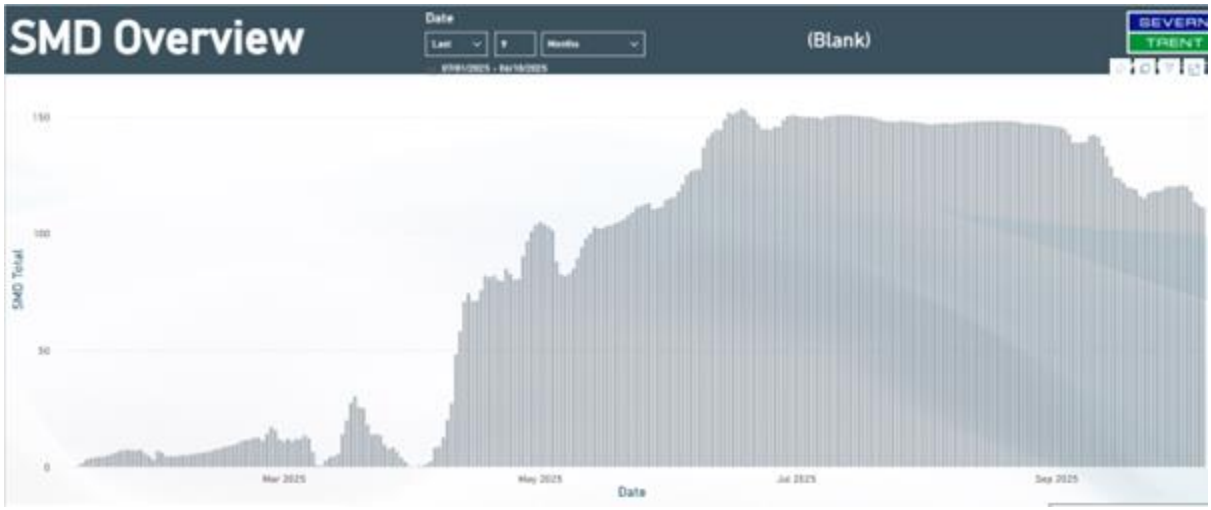
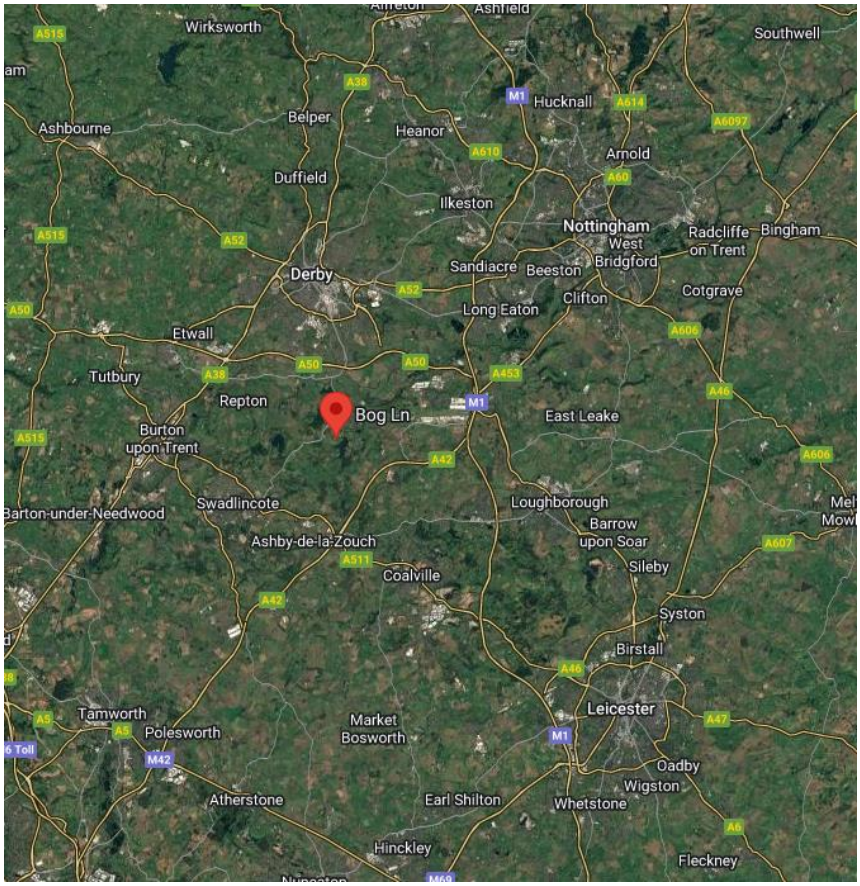


Figure 16: Map for location of Melbourne Bog Lane (SMD)



As of the end of August and into September 2025 the SMD for the area remains markedly greater than that of the prior 7 years which include the 2018 and 2022 drought years.

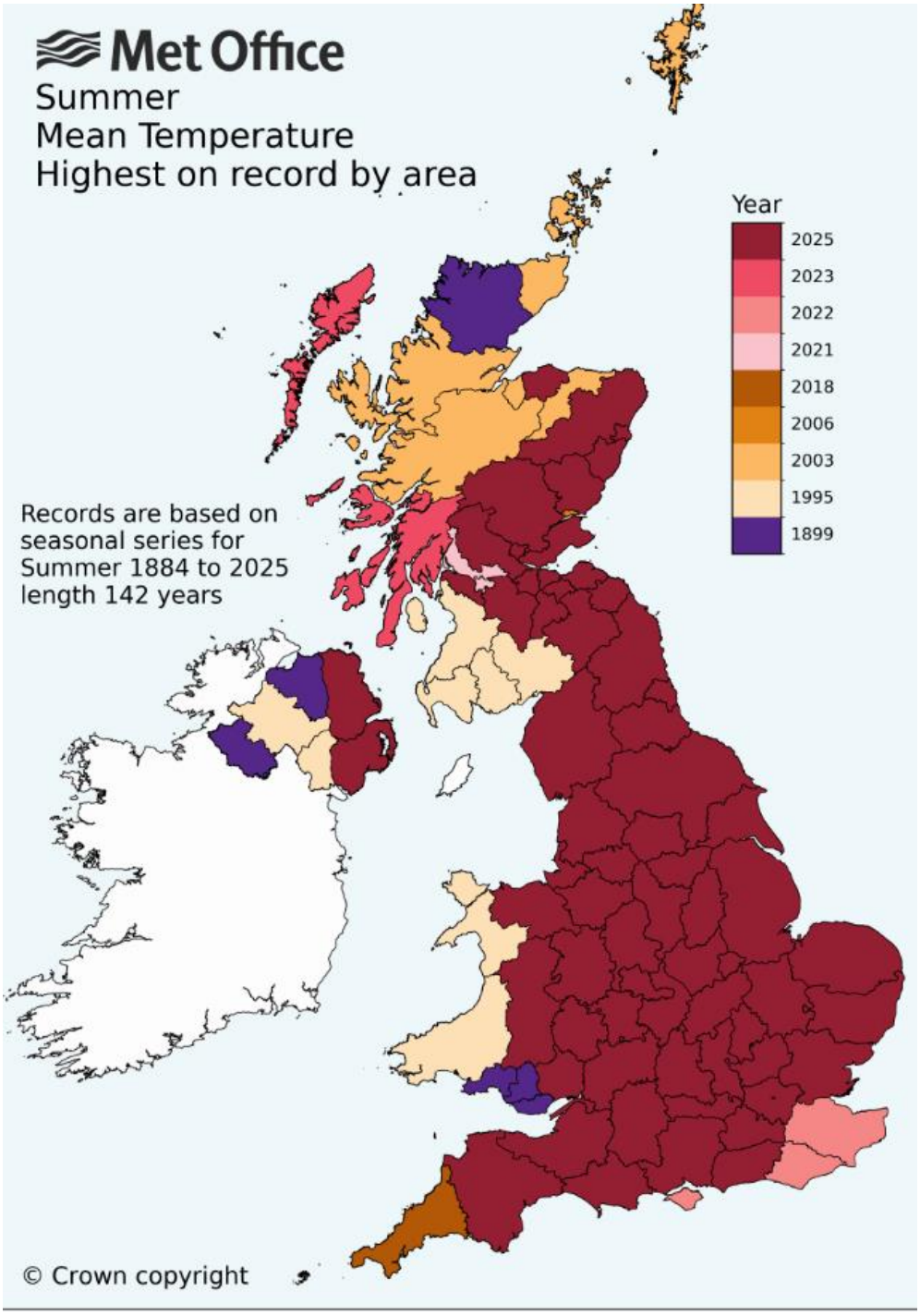
Table 12: Melbourne WTW Bog Lane soil moisture deficit (SMD) past 7 years

Year	January	February	March	April	May	June	July	August	September	Average
2018	4.97	4.73	4.14	4.05	42.81	91.15	116.51	115.75	105.60	54.82
2019	7.32	6.64	4.77	28.15	58.43	44.54	61.43	26.69	36.44	30.69
2020	7.33	4.89	12.25	83.93	108.16	100.74	97.33	83.80	53.39	61.53
2021	1.85	3.82	18.37	66.66	89.41	94.60	90.78	91.15	95.26	61.69
2022	6.18	5.42	6.45	52.00	85.29	100.24	107.56	117.16	109.21	65.92
2023	1.58	18.36	15.95	6.13	25.76	82.13	62.04	33.12	46.69	32.44
2024	9.45	7.02	4.91	4.97	45.36	75.45	88.71	100.52	93.99	48.00
2025	3.50	8.70	11.17	55.68	101.59	140.37	149.09	147.19	128.77	82.85
Total	**5.26**	**7.43**	**9.75**	**37.70**	**69.60**	**91.15**	**96.68**	**89.42**	**83.67**	**54.77**

6.2 Temperature

Across the UK, summer 2025 has been the warmest on record (based on using average daily temperature not max), according to the latest news release from the Met Office. On a county level all bar 10 counties of England and Wales (including all in the Severn Trent area) recorded summer 2025 as being the hottest (see Figure 17 below).

Figure 17: Met Office summer 2025 mean temperature map of highest mean temperature on record by area



6.3 October rainfall

As this application is submitted part way through the month we have not included October in our full analysis, below we provide a summary of the rainfall and forecast rainfall in October and analysis of how this compares to the long-term average.

Figure 18: Graph of Strategic Grid North daily rainfall totals

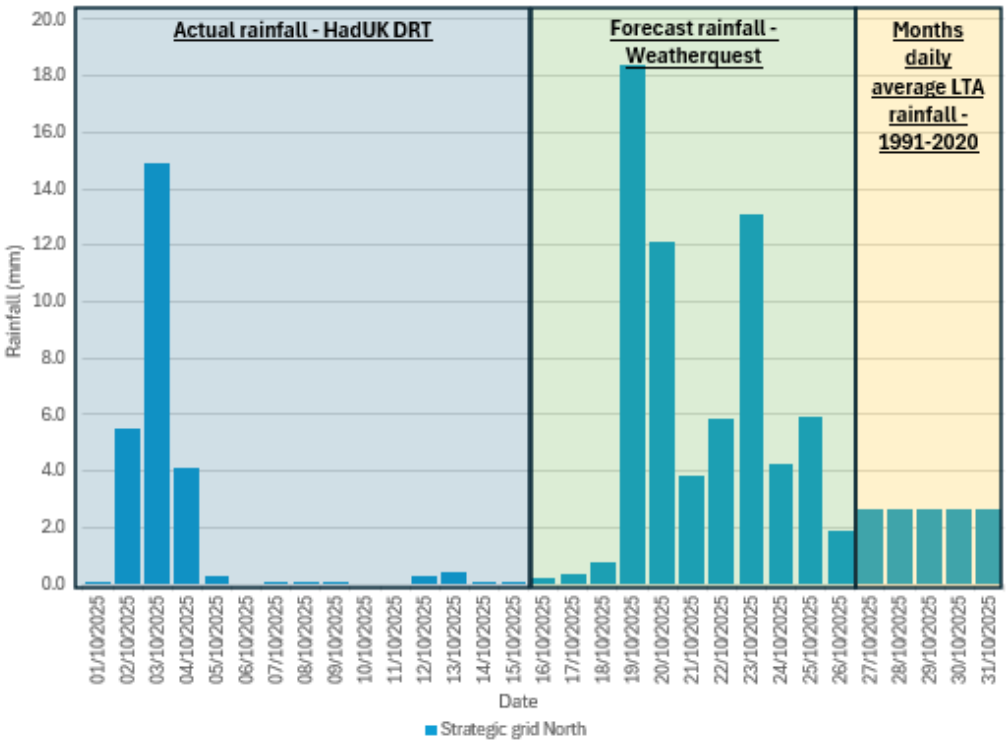
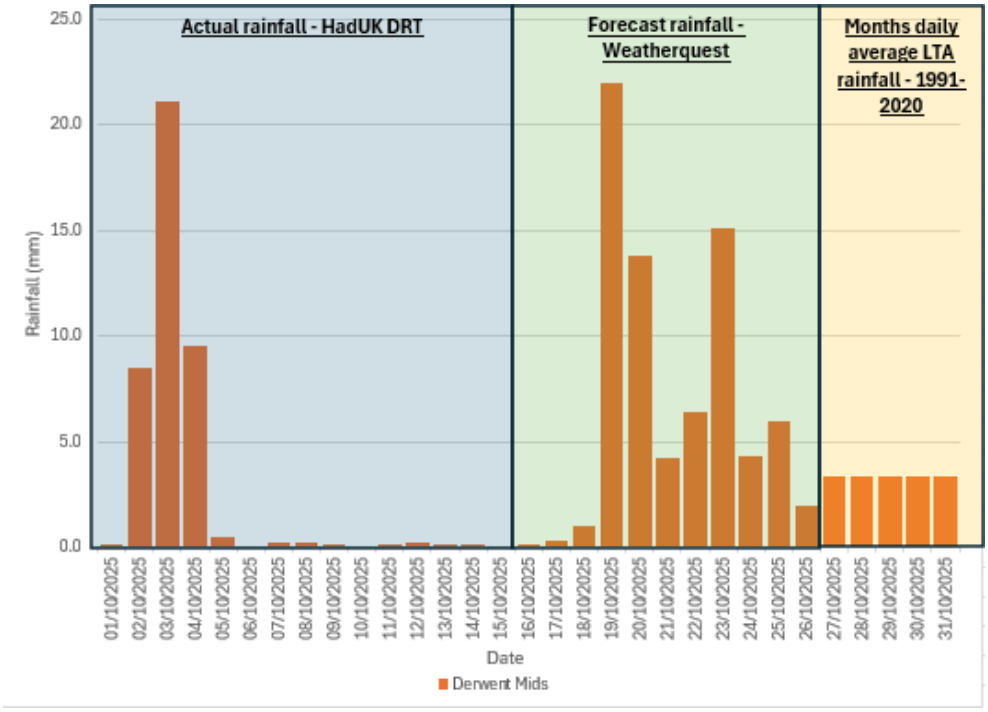


Figure 19: Graph of Derwent Mids daily rainfall totals



Figures 18 & 19 above show daily rainfall totals for Derwent Mids and the Strategic Grid North catchments respectively. As we have submitted the application part way through the month the data is a mix of different datasets. Actual recorded rainfall totals are used for the first 15 days of the month (highlighted blue), forecast rainfall for the following 11 days (highlighted green) with the last five days being populated with the daily average LTA for October.

The vast majority of actual recorded rainfall fell between the 2nd to the 4th October for both catchment areas, with far drier weather from then until the 15th. The forecast for the following 11 days starts dry for the first three days with consistent rainfall thereafter. As for LTA rainfall this is simply a flat daily average of the monthly total, to round out the period.

Figure 20 (left) shows the breakdown of the October 2025 data for the Derwent Mids catchment. For both figures 20 & 21, the first 15 days are the EA DRT data, and Days 16 to 26 are the forecast outputs of Weatherquest. The last 5 days have been presented as the proportion of the monthly LTA. Figure 20 (right) shows the October data compared to the same month in the period 1991-2020 and October data of the years 2022, 2018 and 1995 for the Derwent Mids catchment. This month is expected to be above the LTA (marked as x) with over 65mm expected during the period 16-26 October, however, it is still predicted to be lower than the October 2022 level.

Figure 20: October 2025 total rainfall breakdown (left). 1991-2020, Oct 2025, Oct 2022, Oct 2018, and Oct 1995 total rainfall (right) for Derwent Mids Catchment.

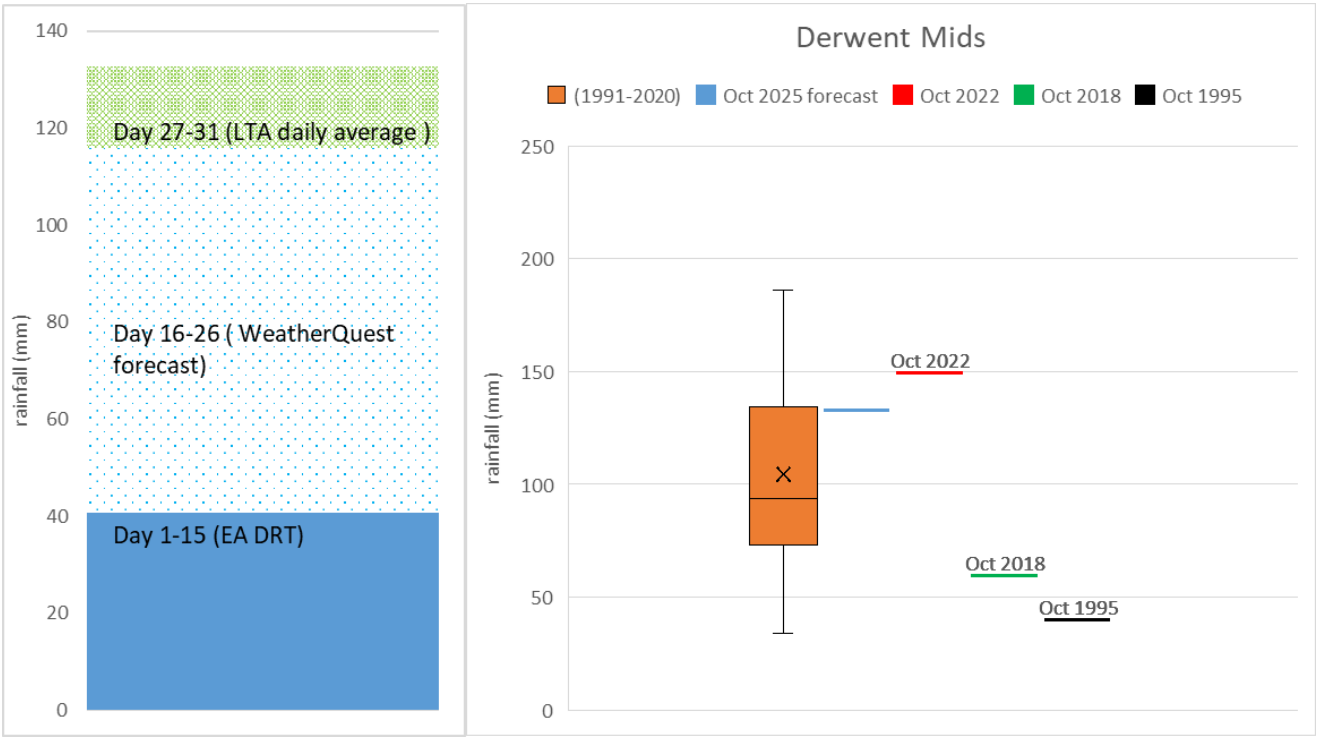
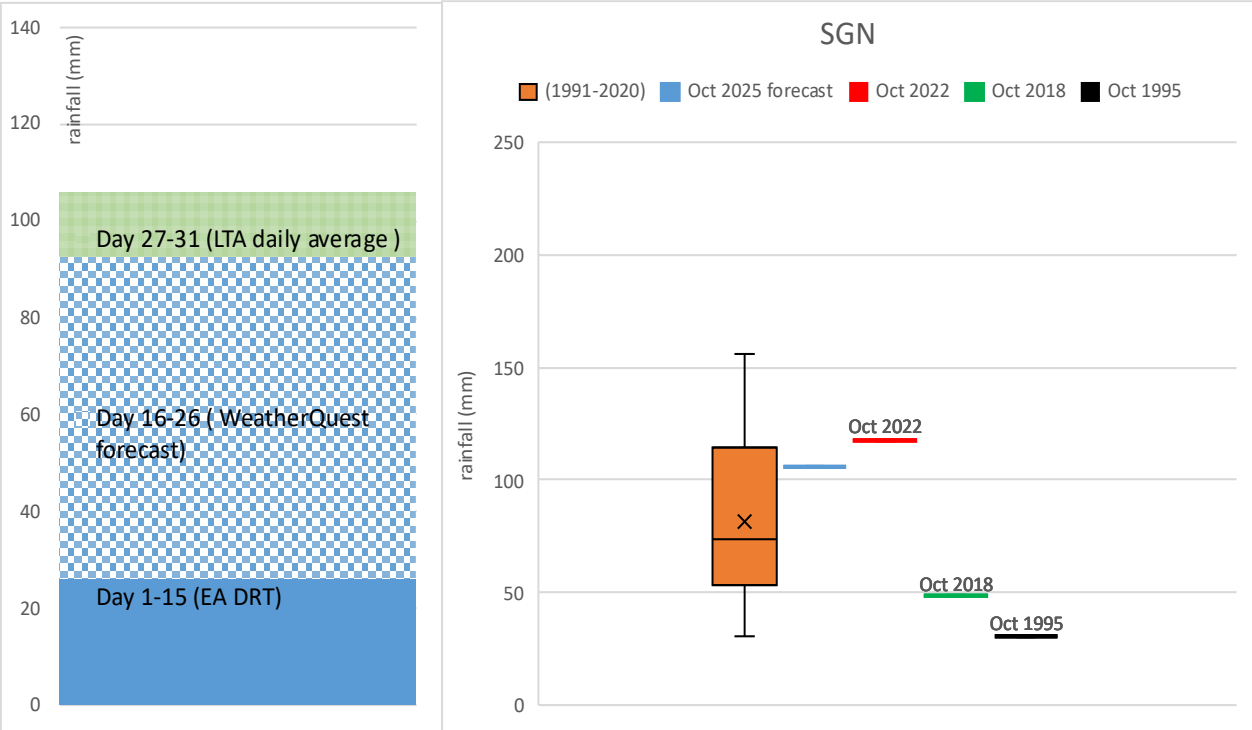


Figure 21 (left) shows the breakdown of the October 2025 data for the SGN WRZ. Figure 21 (right) shows the October data compared to the same month in the period 1991-2020 and October data of the years 2022, 2018 and 1995 for the SGN WRZ. This month is expected to be above the LTA (marked as x) with nearly 75mm expected during the period 16-26 October, however, it is still predicted to be lower than the October 2022 level.

Figure 21: October 2025 total rainfall breakdown (left). 1991-2020, Oct 2025, Oct 2022, Oct 2018, and Oct 1995 total rainfall (right) for SGN WRZ.



7. Summary and conclusions

We have conducted our ESOR Assessment in line with the Environment Agency's guidance - 'Hydrological guidance for the assessment of an Exceptional Shortage of Rain (ESoR), 2025'. Our assessment has focused on the Derwent (Mids) EA catchment and Strategic Grid North WRZ area, with rainfall data from HadUK (1871–2024) and EA daily rainfall tool (DRT) (January–September 2025).

Technical Analysis Methods

- SPI & SPEI indices used to assess drought severity.
- Rainfall ranking, probability bands, and return period analysis applied.
- Long duration rainfall frequency analysis confirms 2025 as one of the driest years.
- Supporting data includes: Soil Moisture Deficit (SMD), River flows, Effective rainfall, Temperature.

Period of Analysis

- February 2025 (first month of significantly below-normal rainfall) to September 2025. (October rainfall compared to LTA but not used in technical methods).

Evidence of an exceptional shortage of rain

- **Seven consecutive months** (February – August) of below average rainfall across the catchment areas. Even with heavy rainfall in September the February to September period was the 7th driest on record for the Derwent (Mids) catchment.
- Rainfall in Derwent (Mids) in April was just **24% of LTA** (based on the 1991-2020 LTA period).
- The SPI and SPEI values show "**Extremely Dry**" conditions across multiple periods from April to August. SPEI remained "Extremely Dry" for the 8-month period to September.
- Rainfall rankings showed multiple months have been ranked in the **top 5 driest in 155-year** record.
- The Derwent Mids Catchment and the Strategic Grid North area had a rainfall return period of **143 years** for February to August. For February to September the rainfall return period was **21 years and 31 years** for Derwent Mids and Strategic Grid North respectively.
- Probability band based on Cunnane plotting showed the majority of periods ranked as "Notably Low" or "Exceptionally Low".
- LTA comparison of rainfall showed **67% of LTA** for Derwent (Mids) and 64% for Strategic Grid North for the 8 months from February to September.

Impacts on river flows and reservoirs

- River Derwent flows dropped significantly from February onwards.
- Only sustained releases from Carsington reservoir helped maintain abstraction levels at our River Derwent abstractions across the summer.
- The use of these releases to support the river abstractions helped to prevent triggering of a summer drought permit at Derwent Valley reservoirs.

Conclusion

From the ESOR analysis undertaken, it is clear that across the spring and summer of 2025 there has been an exceptional shortage of rainfall at both the Derwent (Mids) catchment level and across the wider Strategic Grid North WRZ. This is the reason that we have the risk of a serious deficiency of supplies of water in this area should we see a further dry period across the Winter and Spring.