River Test Stage 0.1 Drought Order Application

1.2 Reasons for the Order

14th July 2025

from Southern Water

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1 Background

1.1 Context

Southern Water are applying for a Stage 0.1 Drought Order to make temporary amendments to the abstraction licence 11/42/18.16/546 to abstract water from the River Test. The purpose of this Stage 0.1 Drought Order application is to secure supplies for Southern Water's customers primarily within the Hampshire Southampton West (HSW) supply area, but also the need to maintain a minimum transfer of 12 Ml/d from that area to the Isle of Wight (IOW) to ensure supplies can be maintained on the island.

2 Summary of Southern Water's Supply Area

2.1 Western supply area

This Stage 0.1 Drought Order application relates to Southern Water's western area, which is made up of seven water resource zones (WRZs) in Hampshire and the IOW (see Figure 1). WRZs are supply areas within which water is shared via Southern Water's supply networks to customers. Each zone is subject to a similar level of risk, for example, from drought or loss of supplies[1]. The following WRZs are located within Southern Water's Western supply area:

- Hampshire Andover (HA).
- Hampshire Kingsclere (HK).
- Hampshire Winchester (HW).
- Hampshire Rural (HR).
- Hampshire Southampton East (HSE).
- Hampshire Southampton West (HSW), and;
- Isle of Wight (IOW).

Water resources in Hampshire are dominated by surface water abstractions from the River Test and the River Itchen, as well as groundwater abstractions throughout the Test and Itchen catchments. There are no large reservoirs available for long-term storage of supplies.

[1] See Environment Agency (2021) for more information.

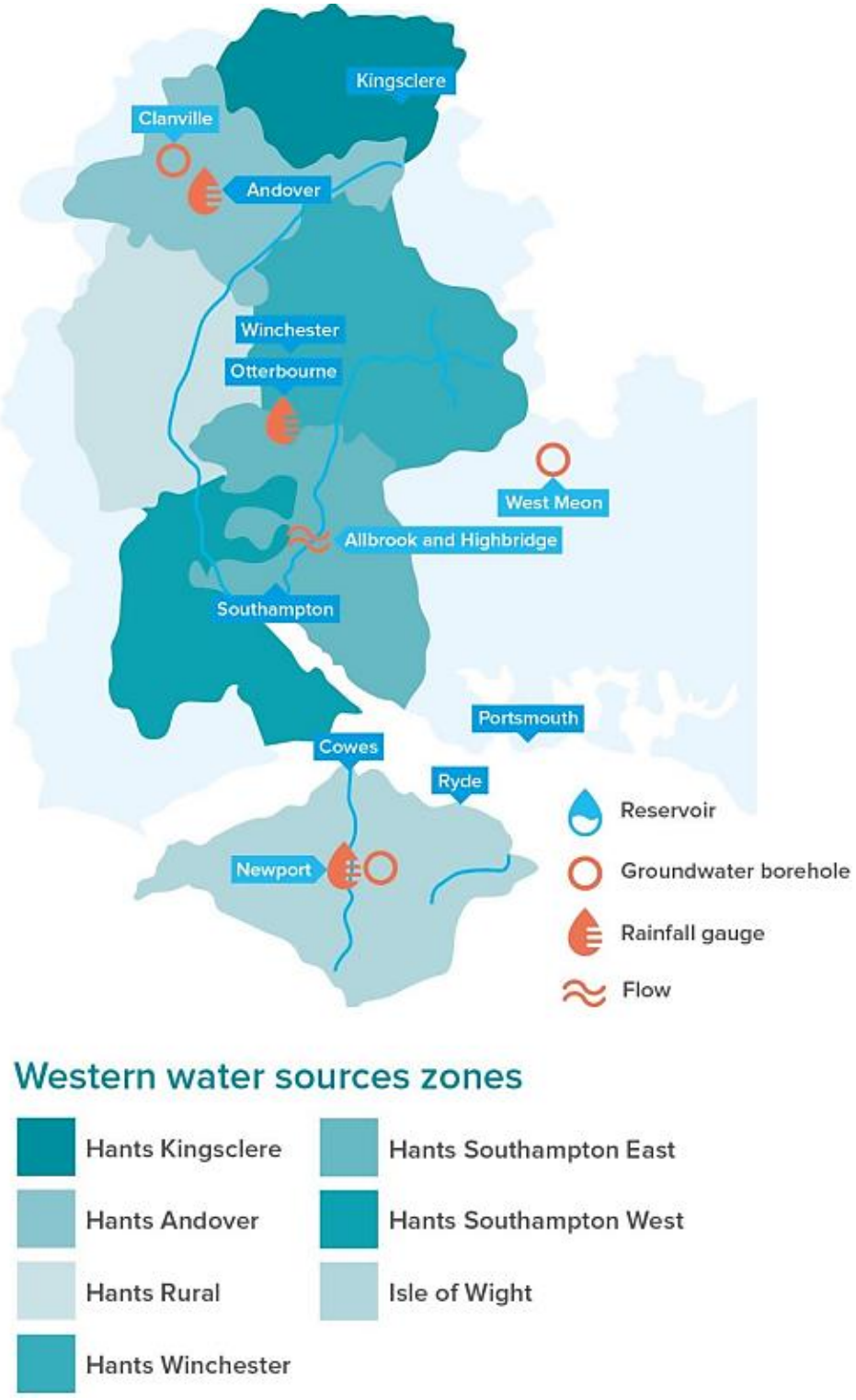

Figure 1: Schematic of Southern Water supply zones in Hampshire and the IOW.

2.2 Southampton West water resource zone

This Stage 0.1 Drought Order application applies to Southern Water's surface water abstraction from the River Test at Testwood, which is within the HSW WRZ.

The Testwood abstraction is a key strategic resource as it is the only source of supply within HSW. It supplies a population of approximately 165,000 people in HSW and is also used to support neighbouring supply zones in HSE, IOW, and HR through inter-zonal transfers – see Section 2.3 below.

The details of Southern Water's abstraction licence at Testwood, flow conditions, flow monitoring, and the intended order are described in Sections 2.2 and 2.3 of document ***1.1 Description of the proposal***.

2.3 Bulk supplies and inter-zonal transfers

Transfers into and out of a WRZ are known as bulk supplies (when made between Southern Water and a third party) or inter-zonal transfers when water is transferred between Southern Water's WRZs via the trunk main network.

Figure 2 shows a schematic of the bulk supply routes within the WRZs in Hampshire. The inter-zonal transfers between WRZs are marked as grey arrows. There is a bulk transfer to a major industrial user from the HSW WRZ. The resource area of Portsmouth Water is also shown on Figure 2. Portsmouth Water have an abstraction on the Lower River Itchen at Gaters Mill (marked in green), which is used as a bulk supply to Southern Water in the HSE WRZ. The HK WRZ, to the north of Andover, does not have any inter-zonal transfers or bulk supplies.

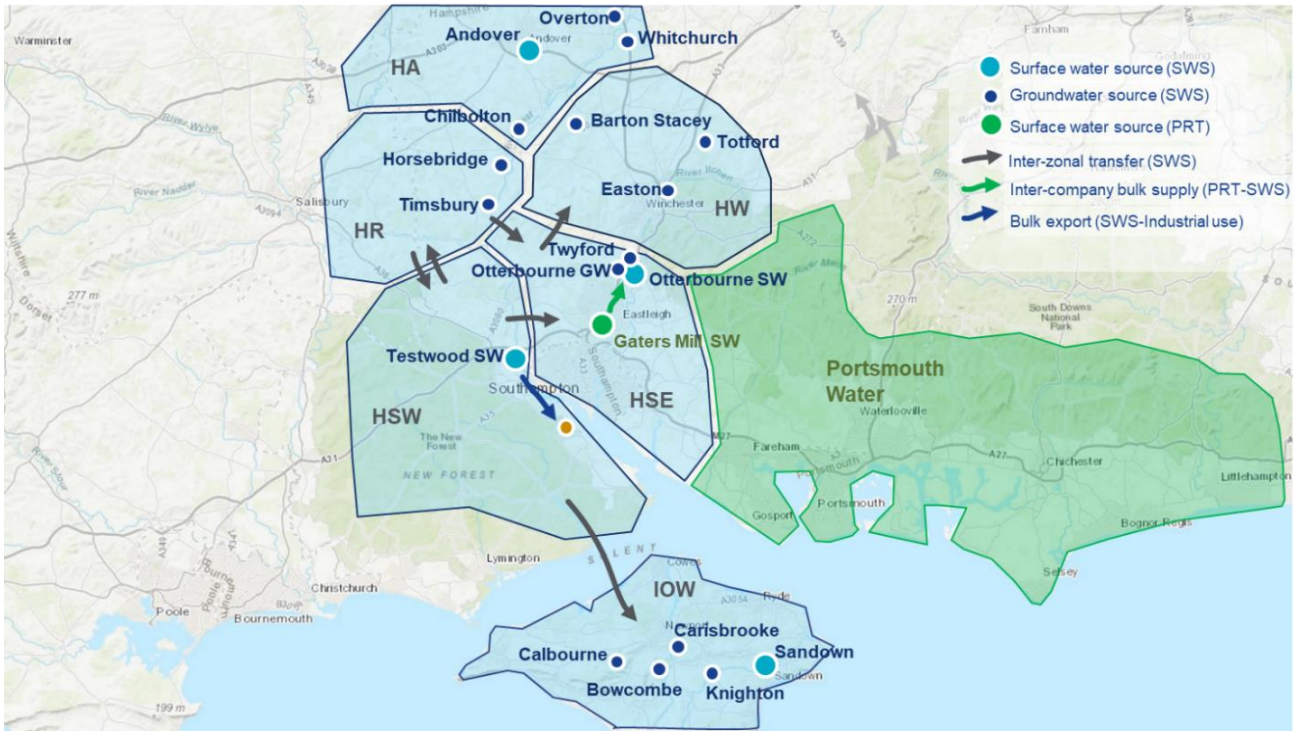

Figure 2: Bulk supplies within the western supply area.

2.3.1 Inter-zonal transfers

The maximum capacities of the inter-zonal transfers from HSW are:

- HSW to HR - up to 1.7 Ml/d.
- HSW to IOW - up to 18 Ml/d.
- HSW to HSE - The three trunk main lines between HSW and HSE – Woodside transfer 16Ml/D, Gover road transfer (non-operational) 0Ml/D and Rownhams Booster totalling 28.5Ml/D.
- HSE to HSW - A new connection (known as “woodside reversal”), which has two options capable of delivering 4 Ml/d or 8 Ml/d.

2.3.2 Bulk imports from other water supply companies

Southern Water has one bulk import available from Portsmouth Water at Gaters Mill to the HSE zone, which is adjacent to the HSW zone. This bulk supply can provide up to 20Ml/d. It does not provide any direct support to the HSW supply area, but it can reduce the support that might otherwise be needed to HSE from HSW.

Southern Water provides a small supply (0.5 Ml/d) to Wessex Water from the HA supply area. This has no bearing on the case for this 0.1 Drought Order and is not discussed further.

2.3.3 Large commercial customer

Southern Water has one large commercial customer supplied within the HSW area, which is of national strategic importance and requires a supply of up to 10 Ml/d.

3 Drought Progression

3.1 Drought monitoring - indicators and forecasts

3.1.1 Drought monitoring sites

Southern Water's current drought plan (DP19) (Southern Water, 2019) sets out how the climatic indicators will be monitored that signal the onset of drought and its severity. The plan sets out several key monitoring sites in Hampshire, as follows:

Rainfall monitoring:

- The **Andover rain gauge,** located in the upper catchment of the River Test which provides rainfall measurement for the River Test catchment and underlying chalk aquifer.
- The **Otterbourne rain gauge,** located in the lower River Itchen catchment, provides measurements of rainfall for the River Itchen catchment and the East Hampshire chalk aquifer.

Groundwater monitoring:

- **Clanville Lodge observation borehole** located north-west of Andover in the upper River Test (Anton).
- **West Meon observation borehole**, located south-east of Winchester in the East Hampshire chalk aquifer.

River flow monitoring:

- **River Test Total Flow (TTF)** sequence is used for monitoring flows in the River Test. This flow sequence is a summation of flows as measured for the River Test at Testwood, Conagar Bridge and the River Blackwater at Ower, together with inputs from the Test Back Carrier (which are not continuously monitored due to low/no flows) and the Broadlands Fish Carrier monitored at M27 TV1. The flow splits and monitoring of the Test Total Flow are described in more detail in document ***1.1 Description of the proposal***.
- Gauged flows as measured at **Allbrook and Highbridge** on the River Itchen are used for monitoring flows in the River Itchen.

3.2 Drought risks

Southern Water's most recent resource risk assessment of the risks of drought permits, drought orders, and water user restrictions is presented in Figure 3. The most immediate resource risks relate to this Stage 0.1 Drought Order application for the River Test.

Current water resources situation and drought risk – up to 16/07/2025

Reservoirs (% full)	17/7/25
Bewl	68
Darwell	52
Powdermill	71
Weirwood	87

SMD (mm)	month LTA	Actual 16/07/25
Kent	113	148
Sussex	86	140
Hants	85	146
I.o.W.	94	142
Average	95	144

Rainfall (% LTA)	Summer 1/4/24 - 30/9/24	Winter 1/10/24 - 31/3/25	Summer 1/4/25 - 16/07/25
Kent	131	96	57
Sussex	139	81	42
Hants	126	89	43
I.o.W.	124	88	52
Average	137	92	43

Groundwater	16/7/25
Carisbrooke (IoW)	Exceptionally Low
Clanville Lodge (Hants)	Normal
West Meon (E.Hants)	Normal
Chilgrove (N.W.Sussex)	Below Normal
Houndean Bottom (Brighton)	Below Normal
Little Bucket (Thanet)	Normal

River base flows (cf. to 2024)	15/7/25
River Test	Lower
River Itchen	Lower
W. Rother (Hardham)	Lower
Medway	Lower
Eastern Yare (I.o.W)	Lower

Current position.

Late summer / autumn forward look.

Resource risk:- normal | concern | drought

Commentary

- Overall water resource position good.
  - Groundwater levels are average for the time of year, with **only Carisbrooke showing as lower** (known flashy borehole).
  - Overall surface reservoir storage good; **Darwell low** but supportable from above average Bewl.
  - **River flows concerning, specifically the River Test** and increasingly the River Rother. The River Itchen will also be a risk as we move further into the summer.
  - Mixed weather is forecast over the coming 10 days, but the long-term seasonal forecast is indicating a likely drier and warmer summer than average.
- We continue drought readiness preparation
  - River Test **draft drought permit is being completed**. Pro-active engagement with the EA**. 60 Day Trigger is currently forecast as 30th June** (draft permit submission).
  - Table of mitigation options have been sent to the EA as part of the drought permit process.
  - Likely that an IROPI will need to be completed – WSP (Consultancy) supporting on this.
- River Rother is increasing in risk.
- River Itchen will be a risk after the summer.

Figure 3: The water resources overview update from 16th July 2025.

3.3 Rainfall

The exceptional shortage of rain (ESOR) case for this Stage 0.1 Drought Order application is presented in document ref: ***1.3 ESOR case***. This assessment proposed that, based on the monitoring data within the River Test catchment, an ESOR occurred at a critical period from March 2025 to June 2025 from a water resource perspective.

March 2025 recorded exceptionally low rainfall, totalling just 7.8 mm for the River Test hydrological area. April and May were also classified as having Notably Low rainfall. Based on historical rankings, the 3-month cumulative rainfall for 2025 ranks as the seventh driest in a 155-year record for the River Test area, with a recent SPI score under a 3-month accumulation period indicative of extreme drought conditions. In the present case, the river flow is forecast to fall below the license condition flow (355 Ml/d) at the end of August 2025 under a 'very dry' (5th percentile) scenario without sufficient rainfall to complement the groundwater supply from the underlying chalk aquifer.

Southern Water believes the analyses provide sufficient evidence that customers within the HSW and IOW supply areas are threatened by water supply issues due to an ESOR.

If required, further analysis will be undertaken in advance of a hearing as set out in the S20 agreement.

3.4 River flows

3.4.1 Flow measurement on the River Test

Under the S20 agreement, the TTF is defined as the combined flows of the Little Test at Conagar Bridge, the Test Back Carrier and the Great Test as measured downstream of the confluence with the Blackwater at Testwood Bridge. However, there is no continuous flow monitoring gauge at Testwood Bridge, and so flows are measured as periodic manual spot flow measurements. Therefore, to derive a continuous record which is representative of the TTF record, the flows measured at the Testwood gauge on the Great Test immediately upstream of the confluence with the Blackwater are added together with the record of the Blackwater gauge at Ower and the Broadlands fish carrier at the M27 TV1 gauge (UKCEH, 2023) to estimate the total flow on the Great Test at Testwood Bridge. The contributions of each of these gauges within the TTF sequence are shown in Table 1.

Table 1: Gauging stations used to estimate the TTF sequence.

Gauging stations used to calculate TTF	Example contribution to TTF under low flow conditions
Great Test at Testwood	62%
Blackwater at Ower	3%
Broadlands fish carrier at M27 TV1	4%
Little Test at Conagar Bridge	31%
Test Back Carrier (spot flow gaugings)	0%

The EA is responsible for operating these flow gauges. Southern Water have automated access to the EA telemetry data at Testwood and Ower, whilst the data for M27 TV1 and Conagar Bridge may be downloaded from the EA API Hydrology Explorer site.

The Test Back Carrier does not have a continuous monitoring station, and flow data for this reach are only available when spot flow gaugings are undertaken. However, under low flow conditions, flows in this reach have been negligible (<1% of TTF).

Southern Water regularly extract the flow data for the gauging stations at Testwood, Ower, M27 TV1 and Conagar Bridge to monitor the TTF against the flow triggers and undertake hydrological forecasts. In addition, the EA send through a weekly update of flow data via a spreadsheet.

3.4.2 River Test flow triggers

In accordance with agreed actions and stakeholder engagement under the S20 Agreement, Southern Water has developed a set of flow triggers for the monitoring and management of low flows and drought in relation to the River Test.

Flow triggers were originally developed for the DP19. The triggers have subsequently been updated as part of the revised draft drought plan (dDP22) (Southern Water, 2022), which is currently awaiting feedback from the regulators. The changes to the triggers are the only material changes in the drought plan in relation to a Drought Permit on the River Test. The new 2022 triggers are presented in Table 2.

These include several time-based triggers which are designed to provide a lead-in time in advance of flows falling to the HOF condition and for Southern Water to need a Drought Permit. The triggers include:

- The '60-day' trigger for initiating the pre-consultation of the Drought Permit and provision of draft application documents.
- The '35-day' trigger for submission of the application for the Drought Permit.
- Also, a '90-day' trigger which is an internal trigger for Southern Water to start preparing for the pre-application phase.

The new dDP22 triggers are higher than the triggers developed for the DP19 and are, therefore, more precautionary. They are designed to ensure that there is sufficient time to take action in advance of the licence condition being breached as set out in the S20 Agreement. Therefore, the new triggers have been used to guide Southern Water's actions for the preparation of this Stage 0.1 Drought Order application.

For the purposes of this Stage 0.1 Drought Order application, River Test flow triggers will be based on the Drought Permit triggers as set out in dDP22, rather than Drought Order triggers from the dDP22, as the Order triggers were created for a full Stage 2 Drought Order application.

The derivation of the triggers is described in more detail in Annex 4 of the dDP22.

Table 2: Triggers for River Test Drought Permit (from the draft Drought Plan 2022) that are being used as part of this Stage 0.1 Drought Order application.

Month	dDP22 90-day trigger	dDP22 60-day trigger	dDP22 35-day trigger	HOF
Jan	660	589	509	355
Feb	728	589	497	355
Mar	728	589	486	355
Apr	728	589	486	355
May	738	589	486	355
Jun	738	589	486	355

Month	dDP22 90-day trigger	dDP22 60-day trigger	dDP22 35-day trigger	HOF
Jul	738	589	481	355
Aug	738	589	476	355
Sep	738	589	472	355
Oct	738	589	467	355
Nov	715	589	467	355
Dec	677	589	485	355

3.4.3 River Test observed flows

Flows in the River Test during 2025 are presented in Figure 4 and Figure 5. At the start of June, flows were fluctuating near the internal '90-day' trigger, and it was at this time that Southern Water started making preparations for a Stage 0.1 Drought Order application.

The most recent data available indicate that flows dropped below the 60-day trigger on the 29th June 2025 and are still below this trigger threshold at the time of the Stage 0.1 Drought Order application.

The low rainfall in spring 2025 has meant that the flow recession on the River Test has occurred earlier this year than in previous years, and flows are dropping towards the HOF sooner. Further information on flows can be found in document ***1.3 ESOR Case***.

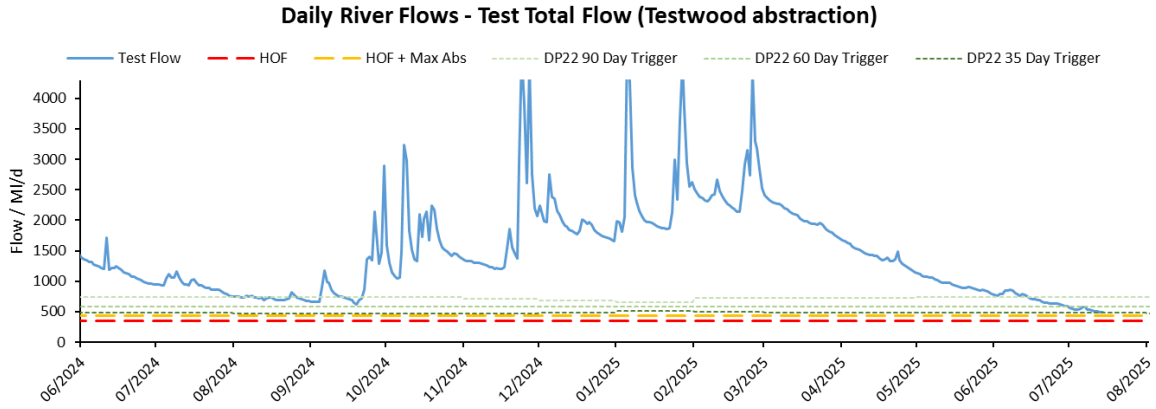

Figure 4: Observed flows (TTF) on the River Test between June 2024 and July 2025 against the dDP22 drought triggers.

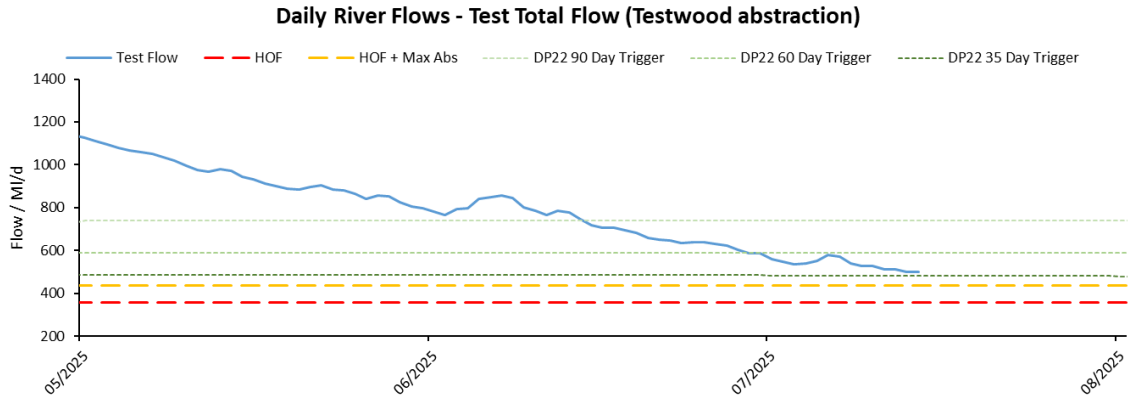

Figure 5: Observed flows (TTF) on the River Test within the last two months against the dDP22 drought triggers.

3.4.4 River Test forecast flows

Southern Water has developed a set of tools for forecasting flows in the River Test to help understand the risks of the drought progressing. The forecasts use a combination of actual weather forecasts of potential rainfall for the next 15 days, together with climatic ensemble data to understand the longer-term risks. The combined rainfall datasets are run through a *Catchmod* rainfall-runoff model of the River Test to generate prospective river flows (the TTF sequence) for a range of rainfall scenarios.

The short-term 15-day forecast is derived from outputs from KISTERS *HydroMaster tool* (2025). This provides summary data of the average 10th percentile and 90th percentile outcomes from weather forecast ensembles. These weather forecasts are combined with the 18,400-year dataset of climatic ensembles, which have been developed for Water Resources in the South East and used for the development of the Water Resources South East (WRSE) Regional Resilience Plan.

The *Catchmod* rainfall-runoff model is initiated for the last day when there is observed flow data available, and the model is set up so that initial flows match observed flows. The model runs through multiple iterations of potential rainfall to generate outputs as shown in Figure 6.

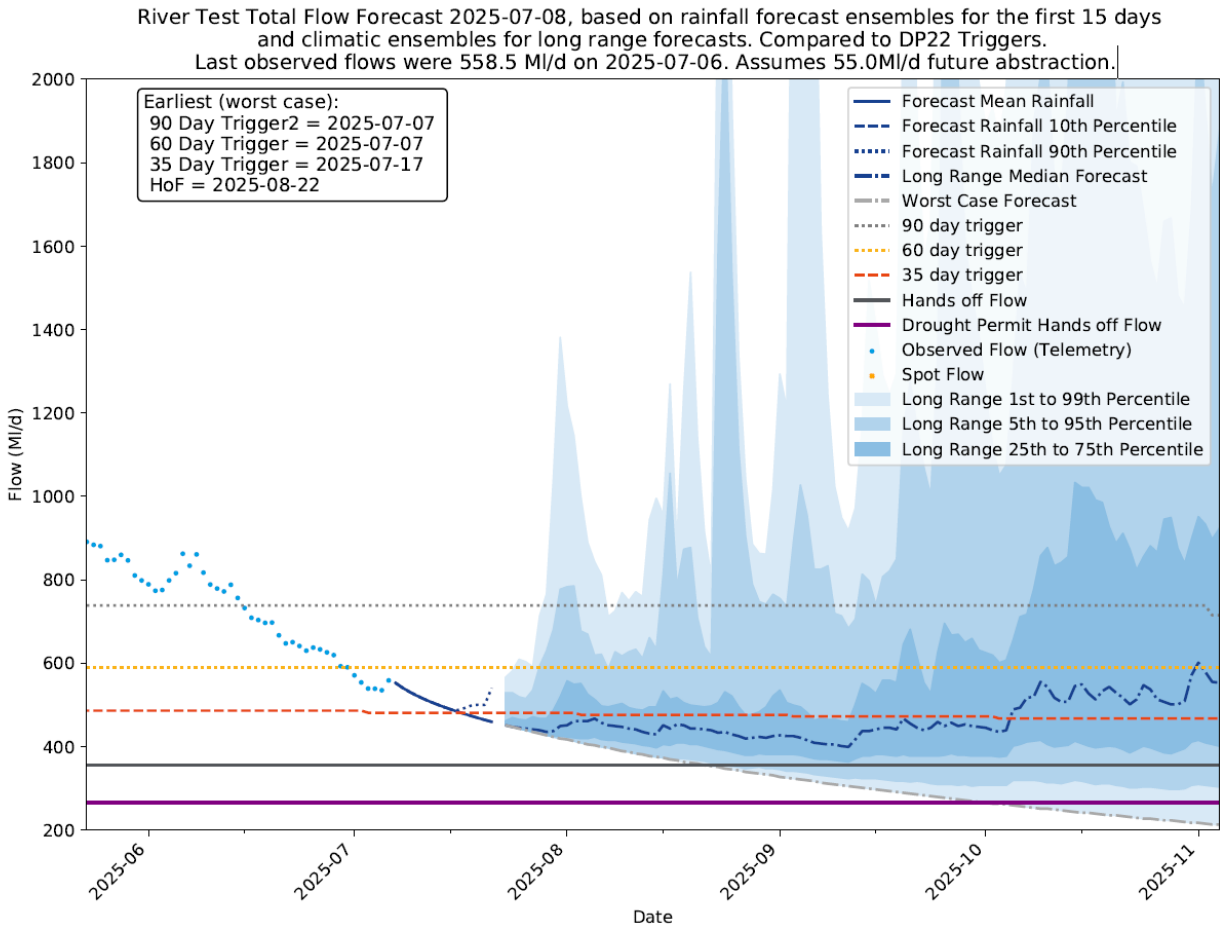

Figure 6: Forecast flows on the River Test based on an ensemble of 18,400 years of synthetic data.

The data underlying the flow forecasts in Figure 6 is presented in Table 3 to show how flows could progress below the different flow triggers in the months ahead under average (50th percentile), dry (25th percentile) and very dry (5th percentile) scenarios. The likelihood of each scenario is directly related to the percentile through time (i.e., there is a 5% chance of the very dry scenario occurring in each of the months ahead).

Table 3 shows that under both an average and dry scenario, flows will fall below the 35-day trigger but not below the HOF condition, meaning a Drought Order application would be made, but the Order would not be needed. However, under the very dry scenario, flows would drop below the HOF within August 2025, and the Drought Order would be required for several months.

Table 3: Forecasts of drought breaches within the River Test under alternative rainfall/flow scenarios.

		Scenarios					
		Average (50th percentile)		Dry (25th percentile)		Very dry (5th percentile)	
		Flow	Trigger breached	Flow	Trigger breached	Flow	Trigger breached
08/07/2025	Now	541	DP22 60 day trigger	541	DP22 60 day trigger	541	DP22 60 day trigger
08/08/2025	1 month	471	DP22 35 day trigger	432	DP22 35 day trigger	396	DP22 35 day trigger
08/09/2025	2 months	423	DP22 35 day trigger	382	DP22 35 day trigger	335	HOF

		Scenarios					
		Average (50th percentile)		Dry (25th percentile)		Very dry (5th percentile)	
		Flow	Trigger breached	Flow	Trigger breached	Flow	Trigger breached
08/10/2025	3 months	539	DP22 60 day trigger	426	DP22 35 day trigger	329	HOF
08/11/2025	4 months	774	No trigger breached	472	DP22 60 day trigger	319	HOF
08/12/2025	5 months	1121	No trigger breached	626	DP22 90 day trigger	323	HOF
08/01/2026	6 months	1311	No trigger breached	848	No trigger breached	384	DP22 35 day trigger

3.4.5 River Itchen forecast flows

Whilst this Stage 0.1 Drought Order application relates to Southern Water's abstraction on the River Test, it is important to understand the potential pressures on resources in neighbouring supply areas. The neighbouring supply zone to the east is the HSE WRZ, which includes a number of abstractions directly or indirectly supported by flows in the River Itchen (all with the same HOF condition).

The HSE WRZ is also supported by inter-zonal transfers from the HSW WRZ and the Testwood source (see Appendix 1 of this document for the inter-zonal transfer data). Therefore, flows on the River Itchen and the water resource situation in the HSE WRZ have a bearing on the demands on the interzonal transfer from HSW to HSE, and the amount of demand on the Testwood abstraction for this purpose.

A *Catchmod* model of the River Itchen has been used to generate forecasts for the River Itchen in the same way as described for the River Test, above.

The 90-day, 60-day and 35-day triggers shown on Figure 7 are the draft triggers prepared for dDP22. However, a review has subsequently been conducted for these triggers using a Pywr system simulation model. This review has indicated that these triggers are too high and too precautionary, and further work and review are required to finalise the triggers. In the interim, Southern Water have decided to take the '60-day trigger' on the chart as an informal '90-day' trigger, and to take the '35-day trigger' as the '60-day' pre-application trigger.

Southern Water will closely monitor flows and the forecasts for the River Itchen and maintain dialogue with the EA about the best way forward.

The S20 agreement indicates that a discussion would be necessary with the EA, Natural England and other stakeholders in respect of prioritisation for further abstraction from the Itchen and Test in the most environmentally acceptable way relative to the need to implement one or more of these Drought Permits or Orders.

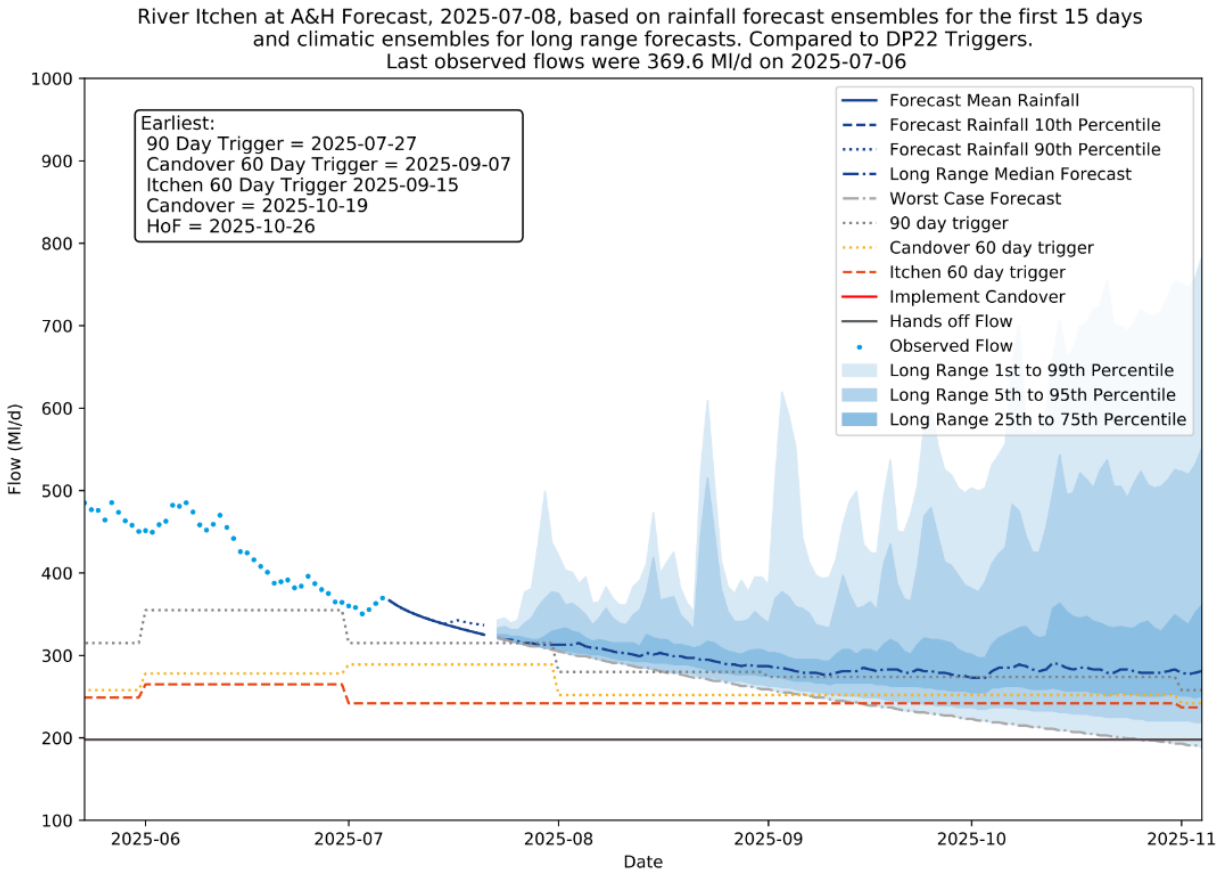

Figure 7: Forecast flows on the River Itchen based on ensemble of 18,400 years of synthetic data.

4 Abstraction, Distribution Input, and Bulk Supplies

4.1 Distribution input and bulk supplies

4.1.1 Testwood abstraction vs. total distribution input including transfers

Southern Water's abstraction at Testwood since April 2015 is shown in Figure 8, with 2025 data shown in Figure 9. The dark blue line shows the average daily abstraction per month, with the light blue lines indicating the monthly maximum and minimum abstraction.

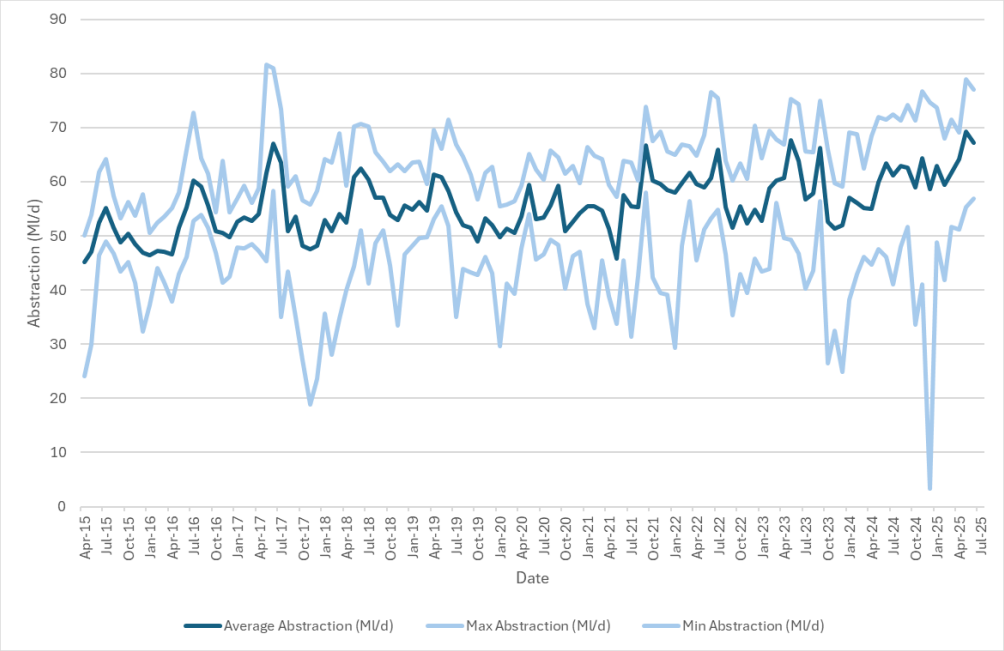

Figure 8: Testwood monthly Max, Average and Min daily abstraction 2015 to 2025.

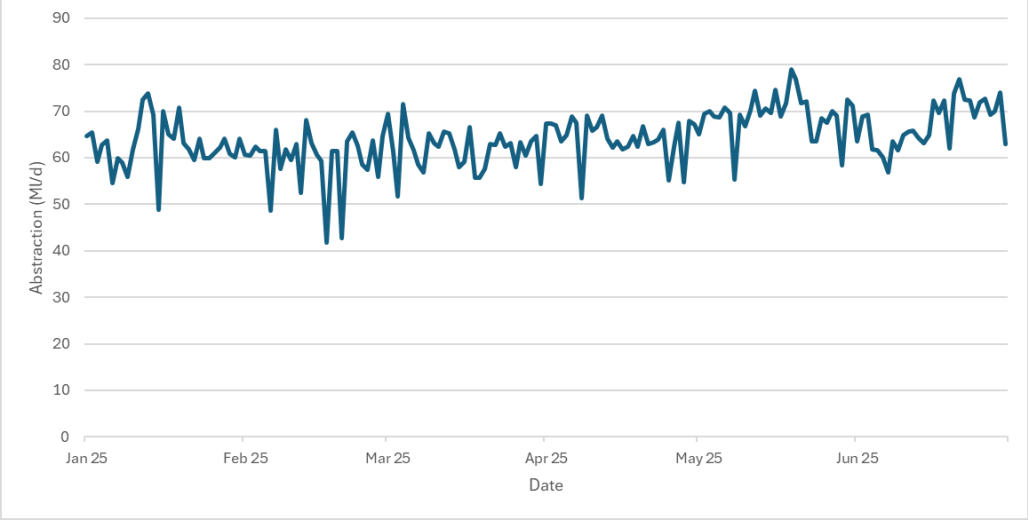

Figure 9: Testwood Daily Abstraction in 2025.

4.1.2 Distribution input and bulk supplies for Hampshire Southampton West in 2021

The figures showing abstraction, distribution input (DI) and transfers for HSW, HSE, and IOW WRZ's are shown in document ref: ***1.2 App 1 Abstractions DI and Transfer Data***.

Within the document ref: ***1.2 App 1 Abstractions DI and Transfer Data***, Figures 1, 3 and 5 show the daily abstraction and DI for each of the three zones since June 2022. Figures 2, 4 and 6 show the daily abstraction and DI for these zones in 2025.

Figures 7 and 9 show the daily transfers in and out of HSW and HSE WRZ's since 2022. Transfers into the zone are shown with a dashed line and transfers out are shown with a solid line. Figures 8 and 10 show the daily transfers during 2025.

5 Demand and the Supply-Demand Balance

5.1 Effect of the universal metering programme

Southern Water implemented a 'Universal Metering Programme' between 2010 and 2015. This programme installed nearly 450,000 meters in customer properties across Kent, Sussex and Hampshire, and resulted in Southern Water's household metering level reaching 87%. A four-year study by the University of Southampton (Ornaghi and Tonin, 2015) examined the impact of the metering programme on water consumption and concluded that it achieved an overall reduction in consumption of around 16.5%. Figure 10 shows the increase in meter penetration and reduction in per capita consumption (PCC) since 2001 for Southern Water.

COVID-19 led to an increase in household demand between 2020 and 2022 as customers worked from home and made changes to their hand washing and personal hygiene routines. Southern Water are continuing to track the demand and PCC levels to ensure the downward trend continues.

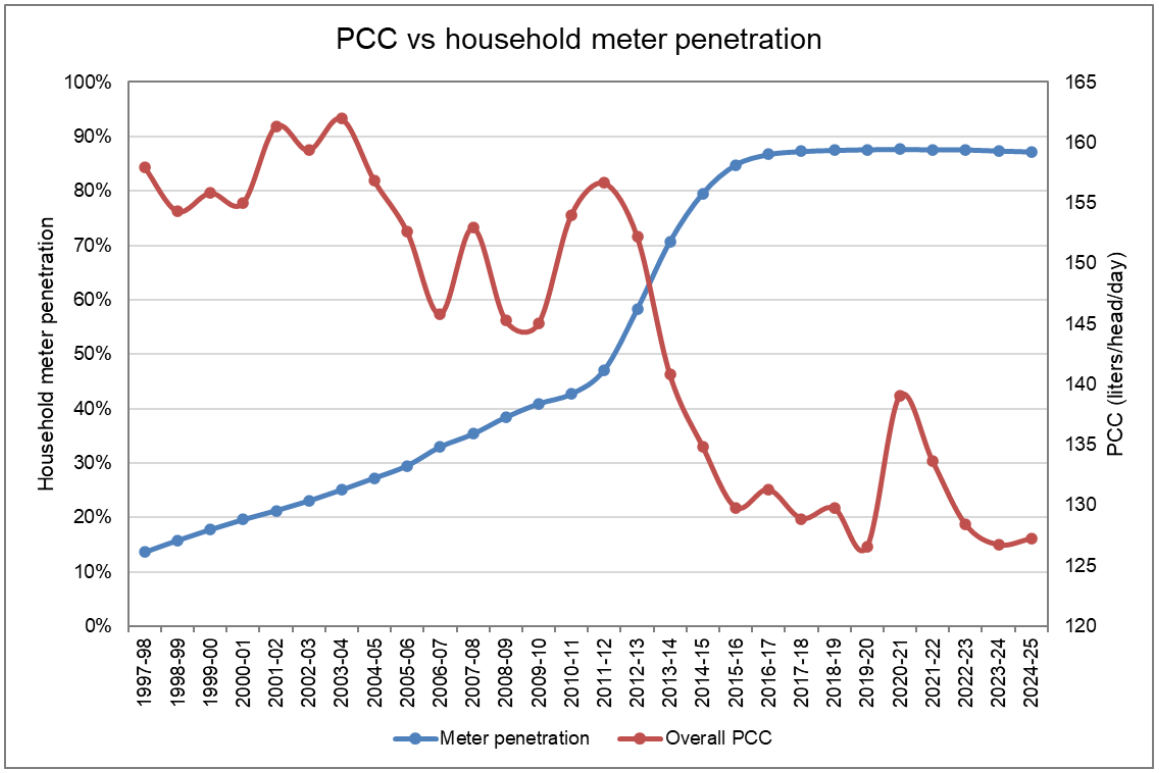

Figure 10: Per capita consumption versus meter penetration.

The Universal Metering campaign was an important intervention carried out across Southern Water's region. With an average of 89% of Southern Water's household customer base now on a meter, and some 60% of these financially better off than compared with the rateable value charging system, an important first step has been reached in establishing metered supply as the normal, accepted approach.

Southern Water has further promoted water efficiency following the metering programme by implementing a number of other projects across the supply area with the aim of further reducing water consumption and improving customer engagement.

5.2 Demand in Hampshire

Table 4 and Table 5 provide a summary of population, property, demand, per capita consumption (PCC) and metering level figures for each WRZ within the western supply area. These figures are taken from Southern Water's latest calculations for 2024/25.

Across its western supply area, Southern Water serves a population of approximately 960,000 and 390,000 household properties, with a current average of 89% of households on metered supplies and up to 95% in HSW. Average daily demands in a dry year are approximately 214 Ml/d, which can increase to around 243 Ml/d in the critical periods of a dry year.

The threat to supplies identified in this report is most direct upon the 165,000 population in the HSW supply zone but will also indirectly increase supply risk across the wider western area population, particularly the 146,000 population of the IOW and the 443,000 population of the HSE supply area.

Table 4: Summary of demand in the Western area by zone (2024-25).

WRZ	Total population (000s)	No. household properties (000s)	No. non-household properties (000s)	Proportion of metered households	2024-2025 Normal Year outturn demand (Ml/d)	Dry year annual average distribution input (Ml/d)	Dry year critical period distribution input (Ml/d)	Dry year MDO distribution input (Ml/d)
HA	77.37	33.61	1.81	89%	16.68	17.08	20.01	16.64
HK	16.78	6.40	0.43	78%	5.40	5.90	6.79	5.83
HW	82.68	30.18	1.86	89%	20.05	21.51	23.60	21.25
HR	28.93	12.48	0.97	89%	7.23	7.88	8.72	7.78
HSE	443.98	171.56	7.67	89%	87.24	94.90	106.55	93.43
HSW	165.67	66.25	2.67	95%	33.38	34.70	38.96	34.16
IOW	146.21	69.96	4.47	94%	31.69	32.69	38.72	31.51
Total	961.62	390.63	19.89	89%	201.68	214.65	243.35	210.60

Table 5: Summary of per capita consumption (PCC) in the Western area by zone for 2024/25.

WRZ	2024/2025 Normal year annual average PCC (l/h/d)	Dry year annual average PCC (l/h/d)	Dry year critical period PCC (l/h/d)	Dry Year MDO PCC (l/h/d)
HA	129.04	132.50	170.87	126.71
HK	140.68	156.57	206.89	152.73
HW	121.79	132.64	158.01	129.44
HR	133.87	150.28	179.54	146.66
HSE	122.02	141.55	168.62	138.14
HSW	118.58	130.47	155.43	127.33
IOW	119.92	134.98	176.36	126.90
Average	126.56	139.86	173.67	135.42

5.3 The supply-demand balance

The threat to supply necessitating this Stage 0.1 Drought Order relates primarily to Southern Water's HSW WRZ supply area but with consequent risk to neighbouring areas, especially the IOW WRZ, and to some extent, the HSE WRZ.

Southern Water's draft Water Resource Management Plan 2024 (dWRMP24) (Southern Water, 2024) sets out dry year supply-demand balance planning scenarios. The plan considers three supply-demand balance scenarios: the dry year annual average, the dry year peak demand output (PDO) and the minimum deployable output (MDO). The latter is a measure of available supplies when groundwater levels are at their seasonally lowest and so is pertinent to the autumn and winter situation before groundwater recharge has occurred. For the HSW supply area and the western area overall, the PDO and the MDO scenarios are the most critical; supply-demand deficits occur in these scenarios before they occur in the annual average scenario.

This Stage 0.1 Drought Order application is being made during the PDO period (summer) and is expected to continue to the MDO period (September to November), and therefore, it is both the PDO and MDO supply-demand balance scenarios which are of relevance. The variation in the Deployable Output (DO) under different drought severities is driven by the amount by which flows in the River Test are expected to fall below the licenced HOF on the Test.

Table 6 shows that DO is lowest in dry or drought years (1:500-year or 1:200-year) compared to normal years (1:2-year), aligned with the severity of the drought. For the HSW supply zone, a deficit of 73.54 Ml/d can be expected under a 1:500-year event compared to a normal year under the dry year annual average/MDO scenario. This increases up to 78.8Ml/d during the PDO, indicating a substantial demand deficit compared to normal year conditions for the HSW supply area over summer and winter. HSE is also significantly affected by a deficit during the summer and winter periods.

Southern Water's estimates of DO have been calculated through the development and application of a number of advanced mathematical models to estimate hydrological yield. A synthetic time series of weather that is stochastically generated, but historically plausible, has been used to consider water resource availability under very severe droughts. Climate data is used with computer models of Southern Water's aquifers, rivers, reservoirs and supply networks to determine the DO of each WRZ under different drought conditions. The baseline DO estimates for each WRZ are described in more detail in Annex 8 of the dWRMP24.

This Stage 0.1 Drought Order application is required to address the potential supply deficits expected in the HSW, and potential impacts to the IOW should the dry weather conditions continue.

Table 6: Supply demand balances for the Western supply area under MDO and PDO scenarios.

	DO by return period (DYAA/MDO) – Ml/d				DO by return period (PDO) - Ml/d			
WRZ	1:500-year	1:200-year	1:100 year	1:2 year	1:500-year	1:200-year	1:100 year	1:2 year
HK	8.75	8.75	8.75	8.75	9.28	9.28	9.28	9.28
HA	22.86	22.86	22.86	22.86	24.80	24.80	24.80	24.80
HR	10.35	10.35	10.35	10.35	10.35	10.35	10.35	10.35
HW	22.52	22.52	22.52	22.52	24.40	24.40	24.40	24.40
HSE	20.49	32.46	45.65	77.97	41.00	58.38	78.36	108.42
HSW	0	0	0	73.54	0	0	11.85	78.8
IOW	23.96	25.89	26.07	26.58	30.54	34.09	34.33	34.65

6 Threat to supplies and case for the Order

6.1 Forecast effects of continued dry weather on supplies

As described in Section 3.4.4, Southern Water have used climatic ensemble data to forecast potential flow recession on the River Test under a range of climatic scenarios over the next 6 months. This analysis indicates that if average or dry rainfall conditions are recorded, then this may negate the need to implement the Stage 0.1 Drought Order. However, under a very dry scenario (5% chance of occurring), flows are liable to cross the licence HOF condition in August 2025 if abstraction were to continue at the normal rate.

Figure 11 shows the forecast flows under a very dry scenario (5%). The forecast model assumes a continuous abstraction rate of 55 Ml/d, which is the normal abstraction rate.

The pink dotted line shows how flows would fall below the HOF if this abstraction rate were maintained. The blue line shows how flows would drop to the HOF and then stay at the HOF if abstraction were managed to the licence condition and the full amount available was abstracted precisely. In reality, a conservative approach would be chosen to abstract less than the full amount, so flows would be higher than the HOF.

The lower grey line shows how the available abstraction would be constrained compared to the normal requirement of about 55 Ml/d. If there was a need to increase the full daily amount to 80 Ml/d, then abstraction would be more constrained for a greater period of time than as shown on the chart.

Figure 11: Forecast flows and potential impacts on abstraction under the 'very dry' scenario.

6.2 Case for the Order

This section provides the case of the threat to supplies for this Stage 0.1 Drought Order application.

This 0.1 Order application is made primarily for the threat to supplies for the HSW WRZ, but also the need to maintain a minimum transfer of 12 Ml/d from the HSW WRZ to the IOW to ensure supplies can be maintained on the island.

The threat to supplies can be viewed in the context of the supply-demand balance scenarios considered in the dWRMP24. The main supply-demand components and resultant balance are summarised in Section 5.3.

In simple terms, the threat to supply equates to the degree to which the River Test river flow may fall to and below the TTF HOF condition of 355 Ml/d, thereby curtailing (according to the abstraction licence) the abstraction that is the sole source of supply to the HSW supply area and for the transfer to the IOW.

Scenario forecasts of rainfall and related river flow suggest that there is a small but still significant risk that the licence flow condition (HOF) could be breached at the end of August 2025 under a very dry (5^{th} percentile) scenario, which means essential abstraction must be curtailed. These forecasts will be kept under review and shared with the EA whilst progressing the Stage 0.1 Drought Order application from draft to final and through the subsequent EA determination period.

The scale of the threat to supplies relates directly to the forecast rate of hydrological recession. Once the flow of 355 Ml/d has been reached, without the Drought Order to reduce the HOF condition down to 265 Ml/d, every megalitre of further hydrological flow reduction causes an equivalent megalitre of reduction of water available for abstraction and so, a shortfall for supply (a growing supply-demand deficit).

In the forecast scenarios, without the Drought Order, every degree of reduction of the desired abstraction will equate to difficulty maintaining supply to customers. The approximate 165,000 population of the HSW supply area could soon, within two weeks of initial curtailment of abstraction, be significantly affected by restricted water supply.

In making this assessment, Southern Water has already reduced the abstraction requirement at Testwood to the minimum possible but necessary to maintain supplies to customers. Any transfers of supply that Southern Water might normally make from the HSW supply area to neighbouring supply areas have been reduced to zero, except for an essential 12 Ml/d transfer to the IOW.

Should the Stage 0.1 Drought Order need to be operationally implemented (assuming granted), Southern Water intends to apply Temporary Use Bans (TUBs) at the point of application for, rather than implementation of, the Stage 0.1 Drought Order. Further information on this decision can be found in document ***1.4 Evidence That Southern Water Has Followed Its Drought Plan.***

Furthermore, owing to an extremely dry 2025 to date, current soil moisture deficits in the River Test catchment are above the long-term average. When coupled with potential forecasts of a drier than average autumn and/or winter in 2025, substantial delay to the onset of groundwater recharge and base flow recovery is likely. Therefore, there is a risk of the situation worsening, with significant implications for 2026.

Overall, Southern Water perceives a serious threat to supplies, with a Stage 0.1 Drought Order an essential requirement to maintain supplies in the case of continued dry weather conditions.

The threat to supply case pertinent to this Stage 0.1 Drought Order application results from the following critical circumstances:

i. The River Test abstraction is the only source of water that Southern Water supplies to the HSW supply area. Southern Water has no current material means to support this supply area from neighbouring supply areas and their sources.

ii. The Test Surface Water abstraction licence stipulates a river flow condition such that abstraction must cease if the flow falls to or below it (355 M/d). In this sense, the abstraction licence flow condition is HOF.

iii. There is a credible possibility that the river flow could recede to 355 Ml/d and below.

iv. Medium and longer–term weather and rainfall forecast scenarios suggest a sufficient likelihood of further river flow recession, and so the risk to supplies might continue to develop over this projected period.

v. Southern Water needs to continue sufficient abstraction at Testwood to maintain supplies to meet customer demand expected over the projected period. That is, the demand of the HSW supply area and the minimum bulk transfer required to support the IOW. This means continuing abstraction at approximately the levels expected to be ongoing at the time of expecting the Order to be in operation.

vi. An abstraction of up to typically 55 Ml/d is considered necessary. But, reserving the need to take up to 80 Ml/d (as allowed on the normal abstraction licence).

vii. On occasions when an abstraction of up to 80 Ml/d is required, the abstraction deficits quantified above relative to an assumed base abstraction of 55 Ml/d will be increased by the required additional abstraction over and above the 55 Ml/d assumption.

viii. Without the Drought Order, reduction of the desired abstraction will equate directly to the degree to which the river flow falls to and falls below 355 Ml/d. This will translate directly to difficulty maintaining supply to customers. Initially, this will be noticed only marginally; service reservoir drawdown may cover it for a day or two, but gradually, service pressure and water quality problems will grow, and parts of the network will experience direct problems maintaining supply to local customers. The approximate 165,000 population of the HSW supply area could soon be significantly affected by restricted water supply.

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