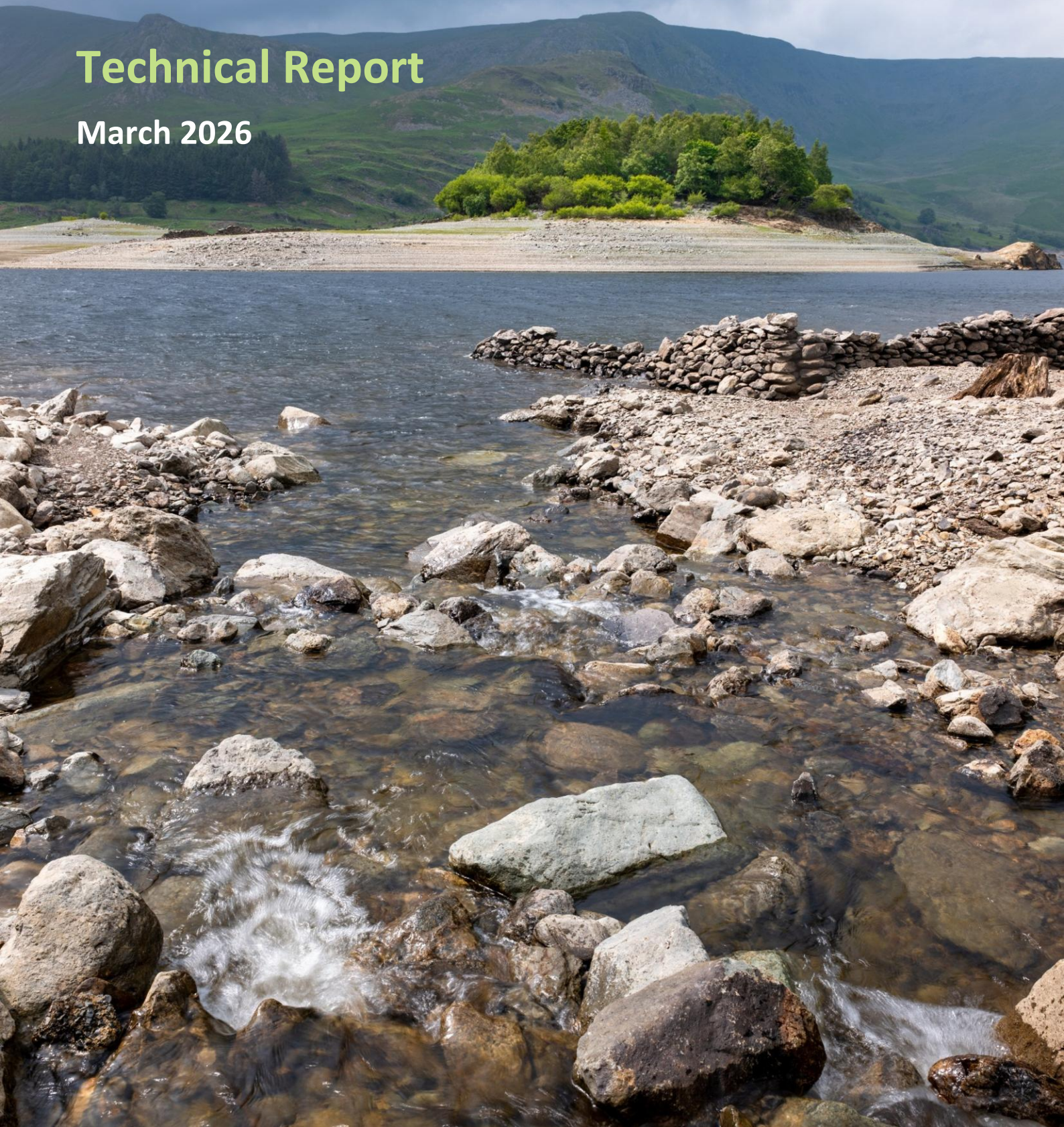


Draft Drought Plan 27

Compensation Only Reservoirs

Technical Report

March 2026



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1. Introduction

This technical report sets out our approach to managing compensation-only reservoirs during dry weather and drought conditions. We have 12 compensation-only reservoirs, which are not connected to the public water supply system. Their only purpose is to provide compensation flow releases to downstream rivers to support environmental protection and associated recreational uses. Water companies are responsible for monitoring compensation only reservoirs and preparing Drought Orders. The Environment Agency is responsible for submitting Drought Order applications to Defra.

This document sets out:

- The 12 reservoirs classified as compensation-only agreed with the Environment Agency;
- An updated assessment of reservoir resilience and associated drought risk classifications;
- Updated drought levels and associated actions for each reservoir; and,
- The approach to environmental monitoring, mitigation, and post-incident review.

Three compensation-only reservoirs, Belmont, Blackmoss, and Worthington, have been identified as requiring a 'shelf copy' Environmental Assessment Report (EAR). These reservoirs present a higher likelihood of requiring a drought order during prolonged dry conditions, based on historic performance and storage and inflow characteristics. The EARs are being prepared in consultation with the Environment Agency and Natural England to ensure that potential environmental effects of reduced compensation flows are fully understood and that appropriate mitigation and monitoring measures can be agreed in advance.

2. Compensation only reservoirs

We have agreed with the Environment Agency that we have 12 compensation-only reservoirs:

- Belmont
- Blackmoss Upper and Lower
- Borrans
- Crummock Water
- Dubbs
- Ennerdale Water
- Hoddlesden
- Hollingworth
- Meadley
- Rumworth
- Swineshaw (Glossop)
- Worthington system

All these reservoirs have no connection to other reservoirs within our water supply system and cannot be supported during a drought or provide water for public supply. Their only function is to support the environment by releasing compensation flows to downstream watercourses.

2.1 Resilience of compensation only reservoirs

We have reassessed the resilience of each compensation-only reservoir with the aim of determining their vulnerability to drought conditions and the capacity to maintain compensation flows. Our review considered updated hydrological information, historic performance during dry weather periods, and revised assumptions on inflow characteristics and storage behaviour. The findings of this assessment were used to inform the likelihood of a drought order being required at each site.

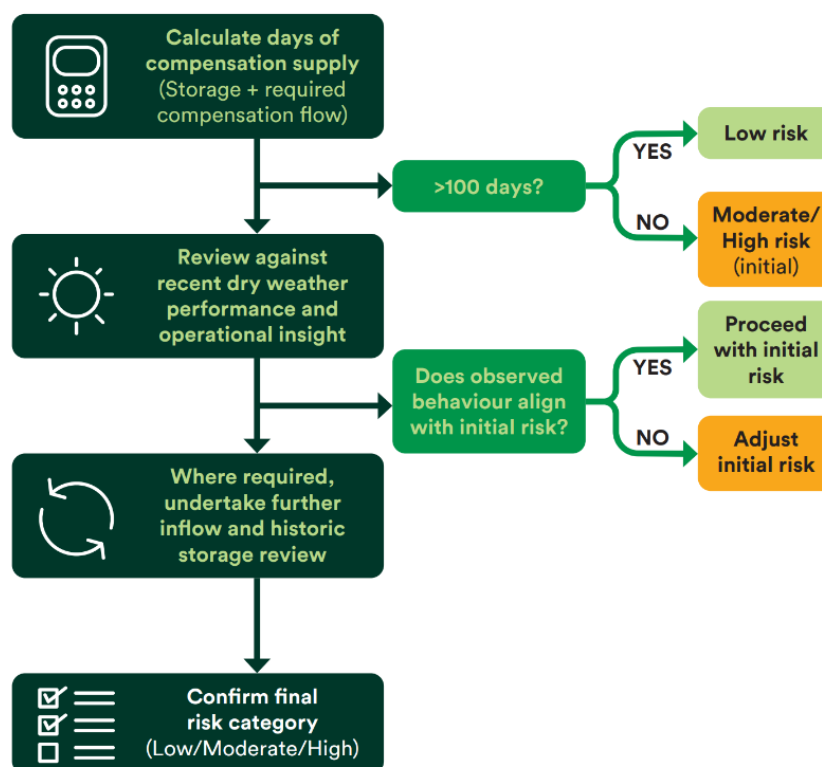
For each reservoir, available storage volume was divided by the required compensation flow, including any consistent over-releases, to calculate the number of days of compensation supply available (Figure 1). Reservoirs with more than 100 days of supply (equivalent to over three months) were considered resilient, as only a prolonged and severe drought would be likely to result in zero inflow. These sites were therefore classified as low risk in terms of requiring a drought order.

Reservoirs with fewer than 100 days of storage were subject to more detailed analysis. This included a review of inflow characteristics and historic storage behaviour to assess the risk of failing to maintain compensation flows. Where the calculated yield exceeded the required compensation flow, the reservoir was judged to have a reasonable level of resilience.

The assessment was further strengthened through the development of updated rainfall–runoff (GR6J) models for selected catchments. These models provided improved estimates of inflows under dry weather conditions, increasing confidence in the overall resilience assessment. Where these trends indicated a different level of risk from that suggested by the numerical analysis, local catchment controllers were consulted to provide operational insight into reservoir behaviour, constraints and resilience. Furthermore, analysis of historical drawdown patterns was undertaken to assess reservoir performance during recent dry periods during 2022 and 2025. This helped confirm whether reservoirs had behaved as expected or whether adjustments to risk classifications were warranted based on observed performance. Where risk classifications were amended because of this qualitative input, these changes are denoted by an asterisk (*) in Table 1.

Figure 1: Decision-making process for assigning level of risk to compensation only Reservoirs

Compensation only reservoirs



The previous drought order risk classification and updated risk assessment is shown in Table 1. This comparison highlights any changes in risk status arising from the revised assessments and provides context for understanding how drought vulnerability has evolved since the previous planning period.

Table 1: Drought order risk for compensation only reservoirs

Reservoirs	Number of days of compensation flow with no inflows ¹	Yield is higher than the compensation flow	Risk (Drought Plan 2022)	Updated risk (Drought Plan 2027)
Belmont	100+	Yes	Low	Medium*
Blackmoss Upper and Lower	100+	Yes	Medium*	Medium*
Borrans	75+	Yes	Low*	Low*
Crummock Water	75+	Not included	Low*	Low*
Dubbs	100+	Yes	Low	Low
Ennerdale Water	100+	Not included	Low	Low
Hoddlesden	50+	No	Low*	Low*
Hollingworth	100+	Yes	Low	Medium*
Meadley	50-	No	Medium/High*	High*
Rumworth	100+	Yes	Medium/High*	Medium/High*
Swineshaw	100+	Yes	Low	Low
Worthington system	100+	Yes	Low	Medium*

¹ This is based on net storage of the reservoir.

2.2 Low risk compensation only reservoirs

For reservoirs assessed as low risk, no 'shelf copy' environmental assessment report has been prepared, as the likelihood of requiring a drought order at these sites is considered low. For all low-risk reservoirs, if reservoir levels begin to cross drought levels in the future, the need for a drought order will be reassessed, and the application process initiated if necessary.

Crummock Water and Ennerdale Water remain classified as low risk in this plan. The public water supply abstraction licences at both sources have been revoked. The removal of abstraction-related infrastructure and the weirs at Crummock Water and Ennerdale Water is included in the Water Industry National Environment Programme (WINEP), scheduled for 2025-2030 (AMP8) at Crummock and 2030-2035 (AMP9) at Ennerdale Water. Once the weirs are removed, there will no longer be a requirement to provide compensation flows, and a drought order will not be required to vary compensation flows during periods of drought.

The drought levels for Dubbs Reservoir have been reviewed to reflect our improved understanding of its environmental sensitivities, including the presence of native white-clawed crayfish. As a result, the drought levels have been raised to provide greater environmental protection. Updated hydrological modelling indicates that Dubbs Reservoir remains hydrologically resilient, even with increased drought levels. Consequently, the overall drought risk for this source remains low and therefore operational measures and mitigation actions, should drought levels be crossed, remain unchanged.

Hoddlesden reservoir remains classified as low risk for this drought plan. Although its relatively small storage volume could indicate limited resilience, historical performance demonstrates robust operation, with the reservoir rarely falling below top water level and consistently maintaining compensation flows during recent dry years, including 2018, 2020, 2022, and 2025. During the driest periods in 2022 and 2025, storage levels only reduced to approximately 85% and 90% respectively, reflecting the benefits of a relatively large and responsive upstream catchment (5.3 km²) compared to the modest storage volume (110MI), which enables rapid replenishment following rainfall events.

The updated review of low risk reservoirs confirmed that all sites retain their existing low-risk classification, with the exception of Belmont, Hollingworth and Worthington reservoirs. As these classifications remain unchanged, no 'shelf copy' EARs will be produced for the retained low risk sites (Dubbs, Borrans, Hoddlesdon, Ennerdale and Crummock Water).

2.3 Medium risk compensation only reservoirs

Blackmoss Upper and Lower Reservoirs remain classified as medium risk for this plan, based on their historic performance during past drought events and a recent review of operational and hydrological data. To support preparedness for any future drought order application, a 'shelf copy' environmental assessment will be developed in consultation with the Environment Agency to assess potential environmental risks and identify appropriate monitoring and mitigation measures.

Belmont Reservoir was previously assessed as low risk. However, following the prolonged dry weather conditions in summer 2025, the reservoir's storage declined below Trigger 3, prompting a reassessment of its drought resilience. Based on this event and subsequent analysis, the risk classification has been revised to medium and a 'shelf copy' environmental assessment report will be prepared in consultation with the Environment Agency to support any potential future drought order application.

Hollingworth Reservoir was previously assessed as low risk. Following the prolonged dry weather in summer 2025, storage fell below Trigger 3, prompting a reassessment of its drought vulnerability. While the reservoir has a compensation flow, most of this flow is directed to the Rochdale Canal. It was agreed with the Environment Agency that a drought order was not required. Instead, compensation flow reductions would be coordinated with The Canal and River Trust, whereby an action upon crossing level 2 has therefore been put in place, stating: *"Liaise with the Canal and River Trust to reduce abstraction from Hollingworth Lake to the Rochdale Canal. Reduce to an agreed level with the Canal and River Trust that acts to protect storage within Hollingworth Lake to prolong the provision of flow to the canal which meets the needs of designated features of the SAC and SSSI of the canal in*

addition to the canal as an amenity feature". Because of dry weather in 2025, the risk for Hollingworth has been increased to medium.

Worthington Reservoir was previously classified as low risk. However, during the prolonged dry weather of summer 2025, reservoir storage dropped below Trigger 2 prompting a reassessment of its drought vulnerability. Based on this event and subsequent analysis, the risk classification has been increased to medium. Compensation is released into the River Douglas and indirectly supports the Leeds and Liverpool canal; therefore compensation flow reductions will be coordinated with The Canal and River Trust (to mitigate the risk of a drought order). An action upon crossing level 2 has therefore been put in place, stating *"Liaise with the Canal and River Trust to reduce abstraction from Worthington Reservoir to the River Douglas which is then in turn supplied the Leeds and Liverpool Canal. Reduce to an agreed level with CRT that acts to protect storage within Worthington Reservoir to prolong the provision of flow to the canal"*. A 'shelf copy' environmental assessment report will be developed in consultation with the Environment Agency to support any potential future drought order application

Rumworth remains categorised as medium to high risk based on its historic performance during past drought events and a recent review of operational and hydrological data. The introduction of updated drought levels has improved monitoring and now allows for earlier and more meaningful intervention, as such the level of risk could potentially be lowered in future.

The reduction of the compensation flow at Rumworth does not require a drought order nor an environmental assessment report as this action is permitted by the Act of Parliament of 1854 (varied in 1995²) and very recent improvements have been made to compensation releases from High Rid Reservoir. Where it is necessary to reduce compensation releases from Rumworth Reservoir to protect storage, equivalent flows will, where feasible, be released from High Rid Reservoir to maintain downstream watercourse obligations and minimise environmental impact. There may be a requirement to undertake an environmental assessment of the reduction in compensation flow from Rumworth, should the release from High Rid not be available, noting that a drought order is not required.

2.4 High risk compensation only reservoirs

Meadley Reservoir is the only reservoir categorised as high risk and its status remains unchanged from our previous plan, Drought Plan 2022. Initial assessment indicated that the reservoir has less than 50 days of compensation flow storage under no inflow conditions. A 2025 depth–storage survey confirmed available storage of 6Ml, compared to a previously estimated 9Ml, demonstrating that the compensation requirement exceeds the reservoir's yield. As a result, storage alone is insufficient to maintain statutory compensation flows, and natural inflows are too low to support the compensation flow under dry conditions.

In 2018, 2020, 2022, 2023 and 2025, reservoir storage declined rapidly during periods of dry weather. Storage levels fell to the point where the continued provision of statutory compensation flows could not be maintained within the timescales required to initiate and complete the drought order. This includes the preparation of supporting evidence. In these instances, rapid reservoir drawdown occurred before exceptional shortage of rainfall, an essential requirement for a drought order, could be demonstrated. Outflows were therefore limited to natural inflows due to insufficient available storage to release the full compensation flow.

We are reviewing the future of the reservoir together with the Environment Agency, with potential options including decommissioning within the next five to ten years. Considering these circumstances, no Environmental Assessment Report will be prepared.

² Compensation flow reduced from 5.21 MI/d to 2.8 MI/d in 1995; the Environment Agency authorised temporary reduction to 1.4 MI/d in 2003 with 1 MI/d from High Rid as mitigation; currently operated at 1.4 MI/d, reduced to 0.5 MI/d at Drought Trigger 2 with 1 MI/d from High Rid.

3. Drought levels for compensation only reservoirs

Drought levels were defined and agreed as part of our previous drought plan, Drought Plan 2022, using Environment Agency guidance. These levels, and associated actions, have been retained for this plan. Table 2 sets out the agreed drought levels together with the corresponding actions required when each level is reached.

Table 2: Drought level actions for compensation only reservoirs

Drought level	Action
1	Increase in monitoring of the reservoir level Confirm compensation release through gauging (if possible) and adjust if necessary Assess rate and reason for reduction in storage to understand developing drought risk
2	Review forecast conditions and assess potential need for a drought order (if applicable) Liaise with the Environment Agency and Natural England to review requirement for environmental monitoring
3	If forecasts indicate continued decline, begin preparation for a drought order application Undertake environmental monitoring and actions (e.g. fish rescue) if required Review contingency options, where such options are available
4	Implement drought order (there is no requirement for a TUB to be in place as it is a compensation only reservoir and has no impact on public water supply) Prepare to implement contingency options if available prior to reaching dead water
Dead water	Implement contingency options, where available

A drought order application would typically begin at level 3 based on the number of days of storage remaining before reaching dead water level for each reservoir. However, if local evidence suggests that an application may need to start earlier (for example between Levels 2 and 3), this will be discussed and agreed in consultation with the Environment Agency.

3.1 Compensation only reservoir drought levels

The compensation only reservoir drought levels were calculated to allow enough time between each level to allow actions to take effect or allow preparation for the next level and associated actions. The drought levels are defined as:

- Drought level 1 = Half way between full and Drought level 3
- Drought level 2 = Half way between Drought level 1 and drought level 3
- Drought level 3 = 68 days³ to dead water (maximum of 28 days for Defra to process a drought order plus 10 days to evidence and write an application)
- Drought level 4 = 30 days to dead water (implementation of drought order once granted)
- Dead water = currently defined as either ten per cent of gross volume or based on a physical limit of the compensation flow release structure
- Note for Dubbs reservoir, bespoke drought levels were determined based on ecological protection requirements.

³ Minimum number of days, as this has been calculated with no inflows, so in reality is likely to be longer. For the reservoirs with less than 100 days storage, the minimum factored inflows over two months were used to supplement the storage; however it is likely that actual inflows would be greater than those used in the build up to a drought.

Drought levels were estimated based on net storage, after subtracting compensation flows. These include updated assumptions about compensation over-release as outlined in our Water Resources Management Plan 2024.

All reservoirs were assumed to start at full capacity (100%), with 100% as the maximum storage limit. For reservoirs with less than 100 days of storage, we supplemented volumes using the lowest inflows recorded over a two-month period. Actual inflows before a drought would likely be higher than those used in this calculation.

Table 3: Compensation only reservoir drought levels

Reservoir	Trigger 1 (% net full)	Trigger 2 (% net full)	Trigger 3 (% net full)	Trigger 4 (% net full)
Belmont	68.95	53.43	37.90	16.72
Blackmoss U+L	74.29	61.43	48.57	21.43
Borrans	83.23	74.84	66.46	29.32
Crummock Water	61.28	41.93	22.57	9.96
Dubbs ⁴	89.70	80.60	74.10	66.04
Ennerdale Water	79.27	68.90	58.53	25.82
Hoddlesden	84.41	76.62	68.82	30.36
Hollingworth	64.87	47.31	29.74	13.12
Meadley ⁵	73.90	59.60	46.70	24.80
Rumworth ⁶	73.28	49.93	39.90	20.54
Swineshaw	66.31	49.47	32.63	14.39
Worthington system	67.46	51.19	34.92	15.40

⁴ The updated drought levels for Dubbs reservoir are based on the maximum drawdown allowable to protect the native White-clawed Crayfish population.

⁵ The drought levels have been calculated using the average per cent full of the other reservoirs. For DP27, decommissioning options are currently being progressed, and alternative short-term measures to allow reservoir outflows match inflows, potentially avoiding the need for a drought order, are being explored.

⁶ At 1.16m BTWL (Trigger 2) the Environment Agency give permission to reduce the compensation flow at Rumworth from 1.4 MI/d to 0.5 MI/d and put the 1 MI/d onto High Rid reservoir. Therefore Trigger 2 aligns with this level rather than being half way between Trigger 1 and 3.

4. Monitoring

The monitoring and close control of the compensation flow release is important for these compensation-only reservoirs. In line with the actions specified with the crossing of levels, monitoring will increase as levels are crossed to ensure the likelihood and risk of crossing further levels is reduced and understood.

During dry weather events, reservoir storage information for compensation-only reservoirs will be provided frequently to the Environment Agency (weekly). If a drought order is required, we will produce the appropriate documents and work closely with the Environment Agency.

If a drought order is granted by Defra to the Environment Agency, we will ensure that we operate our compensation only reservoirs in accordance with the conditions of the order and undertake any environmental monitoring specified.

Following a drought event, our joint lessons learned activity with the Environment Agency will ensure we capture and learn any lessons associated with compensation-only reservoirs. Drought levels will be reassessed as our understanding of the risk level of any compensation-only reservoirs changes and updated if required; for example from any updates to bathymetry surveys, and changes to modelled inflows and associated reservoir yields.

If we identify a new compensation only reservoir (due to changes to our public water supply network) then we will assess risk level to a potential future drought order.

We remain committed to reviewing all our compensation-only reservoirs, including monitoring performance during dry weather and drought events, periodically reviewing drought levels (and updating if circumstances change), and ensuring timely and proportionate action to maintain environmental protection during periods of drought.

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