

# Final Drought Plan

## 2022

### Appendix F: Operation of strategic pumping



# 1 Background

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As outlined in the drought plan we routinely monitor a range of water resources indicators to determine operational actions and ensure that we can protect water resources should there be a dry year or drought. In doing so, we seek to balance and manage risk across the resource zone using hydrological data and modelling tools. This process is continual, and reviewed each week, so while any individual decision in perfect hindsight may prove to be suboptimal, the process is designed to limit the extent of any resulting risk through close monitoring.

Haweswater reservoir is one of the sources in the Strategic Resource Zone that has drought levels. Ullswater and Windermere provide support by offsetting abstraction from Haweswater to retain storage to reduce the risk of needing to implement drought powers. Storage in Haweswater can also be protected directly by reducing abstraction. Additionally the West East Link main, commissioned in 2012, enables us to transfer more water from the south of the Strategic Resource Zone towards Manchester. These actions, and others, reduce demand on Haweswater, and risk is balanced across the resource zone as a whole as part of operational management

## 1.1 Operational decision-making process

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To support Haweswater and balance the risk across the Strategic Resource Zone, when Haweswater storage is below resource state curve<sup>1</sup> strategic pumping from Ullswater and Windermere will be optimised. However, there are some factors which will be taken into account when determining whether strategic pumping should occur:

- If there is a risk to water quality or the water treatment process at the receiving water treatment works then pumping will not take place.
- If rainfall is forecast in the next five days<sup>2</sup> which could result in storage in Haweswater recovering to above resource state, then the decision to pump may be deferred until the impact of the rainfall has been observed.
- When the downstream river flow is close to the hands-off flow, abstraction will not take place to avoid breaching the conditions.
- Abstraction licence limits may result in pumping being curtailed if there is a risk of approaching the 365 day rolling licence volume limit. Based on modelled and historic abstraction from Ullswater and Windermere, we do not expect this to be a limitation.
- In addition, maintenance activities and outages may mean that pumping is sometimes unavailable<sup>3</sup>.

The process is split into two phases as shown in Figure 1:

1. Assess whether strategic pumping is required – based on Haweswater storage relative to resource state and consideration of the factors highlighted

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<sup>1</sup> The resource state curve is unchanged from the 2018 Final Drought Plan

<sup>2</sup> Weather forecasts from the Met Office will be regularly reviewed with emphasis on the near term forecast as there is greater certainty

<sup>3</sup> We will seek to plan and complete maintenance and repair work to minimise periods of unavailability

- Record and implement – this is where we record the decision, the actual abstraction rate achieved and explanations for any variance

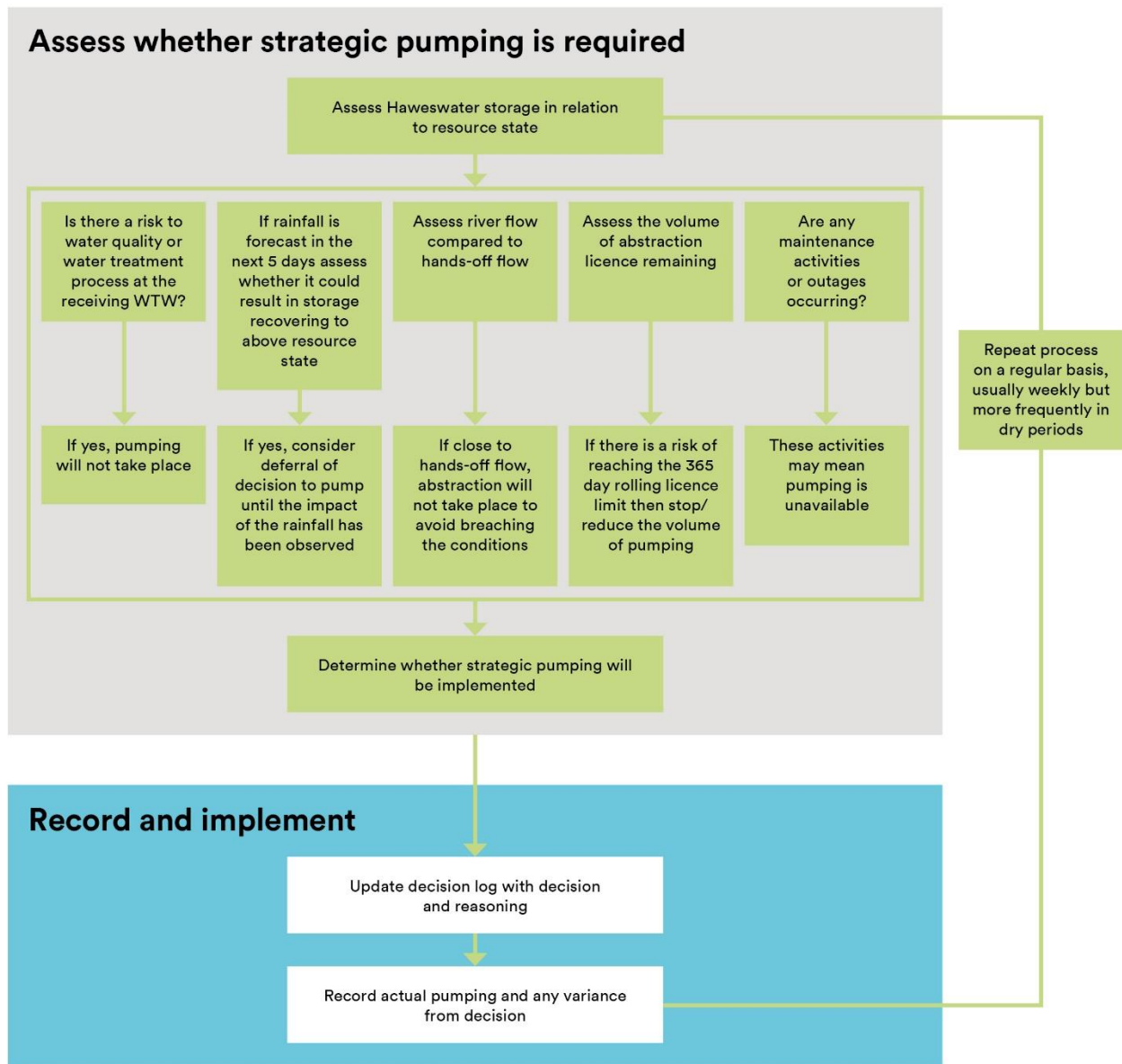


Figure 1: Operational process governing the use of strategic pumped sources