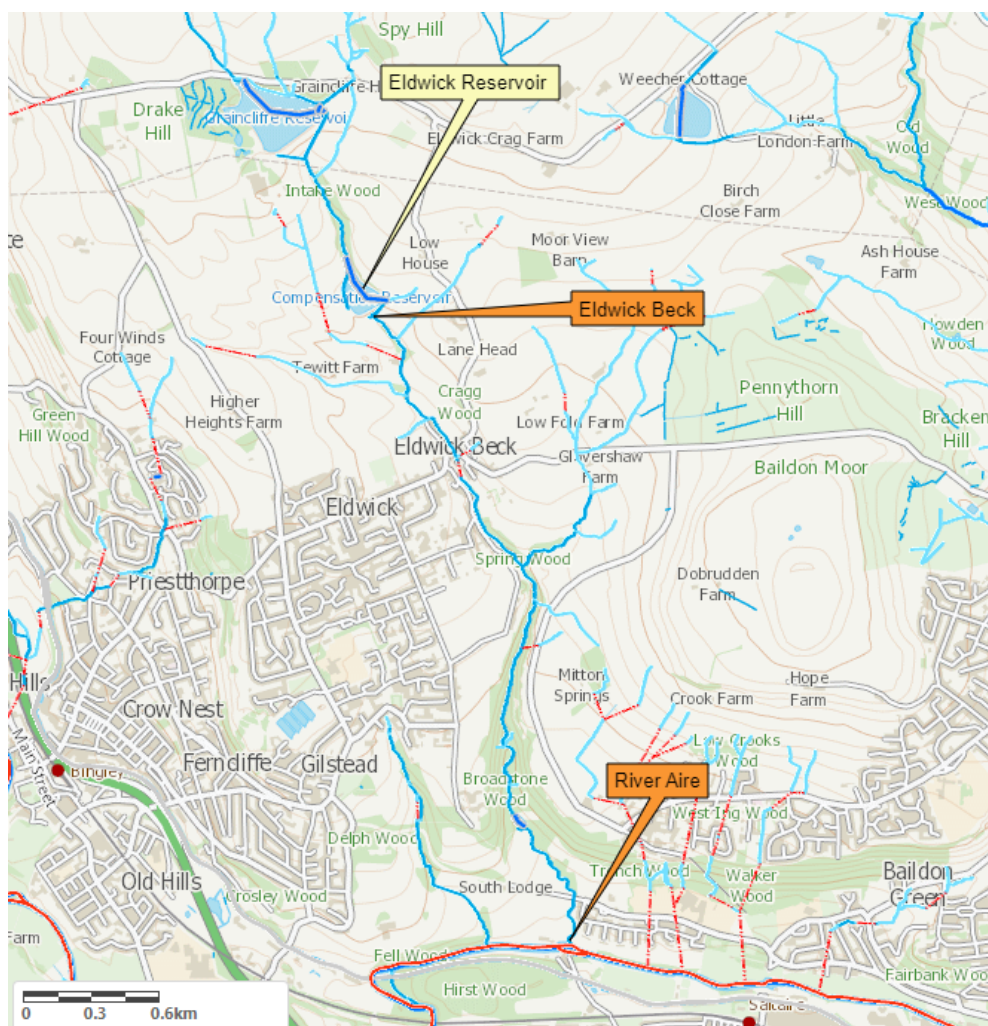


## Annexe 5 – Eldwick Reservoir, DP2022-NE0270016029

### A. Summary of the proposal

Yorkshire Water Services Limited (YW) is applying for drought powers under the Water Resources Act 1991 (as amended by Environment Act 1995) to replace the conditions under the Shipley Waterworks and Police Act 1854.

Under the Act, YW are required to provide a compensation release from Eldwick Reservoir to Eldwick Beck. They must discharge two-fifths of the average daily inflow to the reservoir between 05:00 and 20:00 every day (apart from Sundays, Christmas Day and Good Friday). The compensation discharge is currently operated under an agreement with the Environment Agency and YW must continuously discharge not less than 1,000 cubic metres per day. The drought permit application is to reduce the continuous compensation discharge to 500 cubic metres per day. YW have requested a further reduction of the compensation release to 330 cubic metres per day if regional reservoir levels are below the regional Drought Control Line for four consecutive weeks or more, as defined in the Yorkshire Water Drought Plan.



**Figure 1:** Eldwick Reservoir (Compensation Water Source) and Eldwick Beck with River Aire (Receiving Watercourses)

The Drought Permit has been applied for due to an exceptional shortage of rainfall in the area. The proposed reduction of the compensation release will help to conserve water levels in the Eldwick Reservoir to maintain public water supply during winter 2022 – 23 and increase the chance of returning to normal reservoir levels by April 2023.

The proposed reduction in compensation release has been requested until 31 March 2023.

## B. Details of proposal

Compensation release details	Existing details	Drought permit application changes
Location of discharge	Eldwick Reservoir and Eldwick Beck	No change
Duration of drought permit	N/A	Up to and including 31 March 2023
Point of discharge	SE 12227 41189	No change
Period of discharge	All year	No change
Rate of compensation release	1,000 cubic metres per day	500 cubic metres per day  <u>If reservoir levels below Drought Control Line:</u> 330 cubic metres per day

### Drought permit further conditions

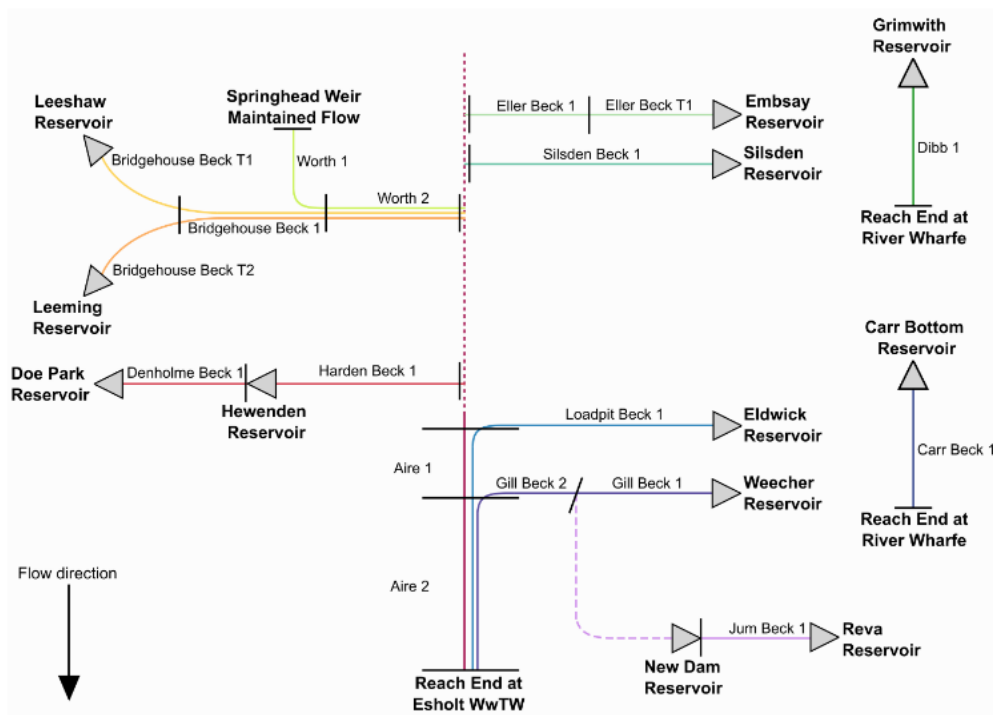
See section G for recommendations of the drought permit.

## C. Quantities

There are no abstraction quantities associated with this application for a drought permit. Please see sections A and B for details of the existing and proposed compensation release quantities.

## D. WFD

This application is outside the Abstraction Licensing Strategy process. This is because it relies on drought powers to address exceptional circumstances. However, the proposal still needs to be Water Framework Directive (WFD) compliant. The proposal will be assessed against the WFD statuses, including identifying the risk of any temporary deterioration of status.



**Figure 2:** North West Area reservoirs drought permits reach schematic

Eldwick Reservoir is hydrologically linked to the following reaches (as shown above in Figure 2):

- Loadpit Beck 1 - Aire (River Worth to Gill Beck), GB104027063034

The corresponding WFD waterbodies have therefore been assessed in relation to the Eldwick Reservoir drought option.

Although Aire 1 and Aire 2 have been assessed with some of the reservoirs, we have followed Table 4.2 in YW's EAR which states that this drought permit does not significantly influence flow in those reaches.

### **Aire (River Worth to Gill Beck) waterbody, GB104027063034**

The Aire (River Worth to Gill Beck) waterbody is classed as heavily modified. These are water bodies where there is a significant risk of failing to achieve a good ecological status because of modifications to their hydro-morphological characteristics. Therefore, they have a target of achieving Good Ecological Potential (GEP) rather than Good Ecological Status (GES). For heavily modified water bodies, flow is the first element assessed as part of the classification. If flow standards are passed, then potential is based on a combination of mitigation measures and 'non-sensitive' quality elements. For river water bodies, these consist of the physico-chemical, specific pollutants and phytobenthos elements. If flow standards fail, then potential is based on the worst result of either the mitigation measures assessment or any of the quality element assessments.

Consideration	Status		
	Baseline status (2015)	Cycle 2 current status (2019)	Cycle 2 Objective

Consideration	Status		
	Baseline status (2015)	Cycle 2 current status (2019)	Cycle 2 Objective
Overall WB status	Moderate (Very Certain)	Moderate	Moderate by 2015
Ecological potential	Moderate (Very Certain)	Moderate (Very Certain)	Moderate by 2015
Fish	Moderate (Very Certain)	Moderate (Very Certain)	Good by 2027
Invertebrates	Moderate (Quite Certain)	Good	Good by 2027
Macrophytes	No data	No data	Not set
Phytobenthos	No data	No data	Not set
Hydrological regime	No data	Not assessed	Not set
Mitigation measures	Moderate/Less	Moderate/Less (Uncertain)	Good by 2027
Physico-chemical	Moderate (Very Certain)	Moderate (Very Certain)	Moderate by 2015
Chemical	Good	Fail (Uncertain)	Good by 2015

**Table 1:** WFD information for Aire (River Worth to Gill Beck), GB104027063034 (Heavily modified)

**Reasons For Not Achieving Good:**

**Ecological Potential** – The ecological potential is at Moderate status and does not meet Good WFD status due to several contributing factors explained below.

**Fish** – The fish status is currently at ‘Moderate’ (very certain) due to morphology changes from urban development, sediment issues due to poor soil management from agriculture and organic point source pollution (sewage discharge) from the water industry. Nutrients/phosphates which can mostly likely be attributed to continuous discharge from the water industry.

**Macrophytes and Phytobenthos** – The Macrophytes/Phytobenthos statuses currently have no data. This is due to them not being suitable parameters for this waterbody to assess ecological potential.

**Hydrological regime** – The hydrological regime element is not assessed for this surface water body, and therefore classification follows the pathway of flow conditions fail. Certain heavily modified waterbodies are no longer classified for hydrological regime where the hydrological regime test is not sufficient due to the nature of the waterbody. In this instance, ecological potential is based on the worst result of either the mitigation measures assessment or any of the quality elements.

**Mitigation Measures Assessment** – Mitigation measures are Moderate/Less due to physical modification for public water supply and water regulation by the water industry and due to urbanisation by the urban and transport industry.

**Physico-chemical** -The physico-chemical status is Moderate (very certain) due to phosphate pollution. This is attributed to point source pollution from the water industry (sewage discharge) and diffuse pollution from poor soil management in the agriculture sector.

**Chemical** – The chemical status is Fail. This is due to levels of PFOS, Perfluorooctane sulphonate (PFOS) Polybrominated diphenyl ethers (PBDE), Mercury. No pressure has been defined for this in Cycle 2.

#### **WFD objectives assessment:**

- The objective for hydrology regime has not been set as the waterbody has not been assessed for flow.
- The objective for macrophytes and phytobenthos has not been set.
- The objectives of Good by 2027 indicates the long-term ambition for the waterbodies as it is technically feasible to fix the issues, but these were not funded in the Cycle 2 plan. In the Cycle 3 plan these objectives will be revised and if the required fixes are still not funded the deadline could be extended again.
- Where we have a baseline (2015) status of 'Good' then our objective has been set as Good by 2015. This is because the waterbody is already meeting its default objectives, and nothing less than good can be predicted as this would go against the directive.
- Where we have an objective of 'Moderate by 2015' this particular waterbody cannot reach good status, only moderate. As the objective is already at moderate for physico-chemical it has an objective of 'Moderate by 2015'. This means the Ecological Potential and Overall Waterbody objectives are 'Moderate by 2015' as, because of the physico-chemical status, they cannot achieve higher than moderate.

#### **Risk of deterioration of elements:**

##### **Loadpit Beck 1 - Aire (River Worth to Gill Beck), GB104027063034**

**Fish** – The combined physical environment changes (river flows, river habitat and water quality) as a result of the implementation of the drought option are predicted to present a **moderate** risk to the fish component of the WFD GB104027063034 River Aire (River Worth to Gill Beck) (associated with Loadpit Beck 1).

**Invertebrates** – The combined physical environment changes (river flows, river habitat and water quality) as a result of the implementation of the drought option are predicted to present a major risk to the macroinvertebrate component of the GB104027063034 River Aire (River Worth to Gill Beck) waterbody (associated with Loadpit Beck 1), although limitations in the available baseline data increase the uncertainty associated with this risk. The duration of impacts could be up to 6 months. However, the macroinvertebrate community recovery is expected to be

relatively quick due to effective re-colonisation strategies in macroinvertebrates. Therefore, the risk to deterioration of the WFD status of the waterbody is considered to be **moderate**.

**Macrophytes/phytobenthos** – This element is screened out of the impact assessment as neither are deemed to be impacted by changes in flow. Wetted width reduction would not result in a deterioration of status due to the way monitoring is carried out. Reduced dilution of phosphate caused by drought option implementation may have an impact if P deterioration is predicted but would be temporary and unlikely to impact on either status. We don't believe this drought option poses any risk to the deterioration of macrophyte or phytobenthos status.

**Hydrological Regime** – Not assessed.

**Mitigation Measures** – The drought permit will not exacerbate this particular classification as it will not result in changes to the physical modification structures.

**Physico-chemical** – There is one water quality monitoring point in Loadpit Beck 1, as such, Loadpit Beck at Confluence with River Aire (NE-49400555), has been used. It should be noted the data is highly limited for this reach. There are no significant continuous or intermittent discharges into Loadpit Beck 1. There is minor risk to total ammonia, dissolved oxygen and phosphates as a result of this drought option.

**Chemical** – The EAR has not assessed the specific chemical parameters that are the cause of failure in the EA's catchment planning system. However as there is a risk to physico-chemical parameters then it is reasonable to state there may be a risk to chemical parameters due to the same pathway. Although there is a risk of potential further deterioration to this element, it's considered that the mitigation measures will be sufficient to protect against this.

### **Risk of Deterioration: A summary for all Reaches**

Although YW EAR identifies that there is a possible moderate or major risk to certain WFD elements as a result of this drought option (Fish, Invertebrates, Physico-chemical, Chemical), we are satisfied that the monitoring and mitigation conditions included within the drought permit mitigates any possible risk of deterioration in the status of WFD elements (Fish, Invertebrates, Physico-chemical, Chemical). If the monitoring schedule identifies any impacts to the WFD elements as a result of this drought permit, then reactive mitigation will be carried out, dependent on the problems identified. Additionally, should any environmental problems be identified, YW will increase their compensation flows as laid out in the relevant permit.

## **E. Impact on ecology and conservation sites**

### **Conservation sites**

The sites, species and habitats listed in Table 2 below are within the 3.8 km reach from the point of the compensation release at Eldwick Reservoir to the confluence of the Eldwick Beck and the River Aire.

The River Aire downstream of that confluence has potential to be cumulatively affected by reservoirs in YW's North West area reservoir group. Please refer to the main determination report for this group of reservoirs for further details.



<b>Nearest conservation sites (distance searched – 3.8 km downstream)</b>			
<b>Designation types</b>	<b>Name of site</b>	<b>Distance downstream</b>	<b>Potential Impact</b>
Special Areas of Conservation (SACs)	None	N/A	N/A
Ramsar sites	None	N/A	N/A
Special Protection Areas (SPAs)	None	N/A	N/A
Sites of Special Scientific Interest (SSSIs)	Trench Meadows	2.8 km	An Appendix 4 has been completed and concluded no likely significant effect on this interest features of the SSSI.
Groundwater Dependent Terrestrial Ecosystems (GWDTEs) that are not designated as SSSIs	N/A	N/A	N/A
National Nature Reserves (NNRs)	None	N/A	N/A
Local Nature Reserves (LNRs)	None	N/A	N/A
Ancient Woodland	Walker/Midgeley Woods	1.3 km	Unlikely to be in hydrological connectivity with impacted reach or support aquatic receptors.
Scheduled Ancient Monuments (SAMs)	None	N/A	N/A
Local Wildlife Sites (LWSs)	Graincliffe and Compensation Reservoir; Shipleigh Glen	Within site;  1.3 km	Graincliffe LWS comprises species rich woodland and habitat mosaic. It includes the 2 reservoirs. The impacted reach is downstream of the LWS, therefore no impacts likely.  Shipleigh Glen LWS comprises acid grassland, ancient semi-natural woodland,

			species rich woodland, over mature trees, bluebell cover. These species features are unlikely to be impacted. Unlikely to be in connectivity with impacted reach or support aquatic receptors
National Parks	None	N/A	N/A
Areas of Outstanding Natural Beauty (AONBs)	None	N/A	N/A
Heritage Coast	None	N/A	N/A
Restoring Sustainable Abstraction (RSA) Programmes	None	N/A	N/A
Protected Species	Brown/sea trout	1.3 km	Impact on this species has been assessed in YW's Environmental Assessment Report (EAR) and appropriate monitoring and mitigation has been included in Appendix A.2.
	Bullhead	3.0 km	Impact on this species has been assessed in YW's EAR and appropriate monitoring and mitigation has been included in Appendix A.2.
	European Eel migratory route	3.8 km (within River Aire)	Impact on eel has been assessed in YW's EAR under reaches Aire 1 and 2 and appropriate monitoring and mitigation has been included in Appendix A.2.
Protected Habitats	Deciduous woodland	0.8 km	Unlikely to be in hydrological connectivity with impacted reach or support aquatic receptors.
	Lowland meadows	1.3 km	Unlikely to be in hydrological connectivity with impacted reach or support aquatic receptors.



Invasive Non-native Species	Himalayan balsam	At reservoir	The implementation of this drought option is not anticipated to increase the spread of Invasive non-native species.
	Northern River Crangonyctid	At reservoir	
	American Skunk-cabbage	1.2 km	

**Table 2:** Conservation screening results

Designated sites

An Appendix 4 has been completed for the Trench Meadows SSSI and concluded that the proposal is not likely to damage the site. The Appendix 4 was sent to Natural England for consultation on 15 September 2022. Natural England confirmed that they agree with our conclusions on 27 September 2022.

Protected fish species

There is a pathway for the drought permit to impact on fish species in the identified impacted reach. This has been assessed in YWs EAR and we agree with this assessment and the proposed monitoring and mitigation plan. Mitigation is set out in YW's EAR Appendix A.2 and this will be included on the drought permit.

Monitoring and mitigation

YW will be required to carry out the following monitoring and mitigation measures (which will be included in Appendix 1 and 2 of the Drought Permit):

Monitoring:

- IDMON\_1: Surveillance walkover surveys of habitat quality and ecological stress, recording signs of environmental problems at one site: 500m located within SE 12633 40449 to SE 12887 40077.
- Upon finding any signs of environmental problems the water company shall:
  - i) notify the Agency in writing and by telephone on 0800 80 70 60 and shall provide details of the signs of distress and the location;
  - ii) the water company shall undertake a remedial course of action to address the signs of environmental problems, as directed in writing by the Agency.

Mitigation:

- If, upon being notified of any signs of environmental problems, the Agency gives written notice that there is a disruption to the ecology, the water company shall increase compensation flow from Eldwick Reservoir to Eldwick Beck and the River Aire at National Grid Reference SE 12227 41189 to a rate of not less than 1,000 cubic metres per day, or a lesser quantity if agreed in writing by the Agency.
- The increase in compensation flow to Eldwick Beck and River Aire shall continue until the Agency serves a subsequent written notice stating that the reduction in compensation flow in accordance with conditions of this drought permit may be resumed.
- The changes to the compensation water specified in the conditions of this drought permit shall be made in a steady and controlled manner at a rate so as not to cause any flooding of land or disturbance to water users downstream or any adverse effects on the quality of water in the inland water or any adverse impacts on the ecology of the inland water or dependent ecosystems, as specified in measures IDMIT\_6 and IDMIT\_7 in the water company's "EMP North West Area Appendix".
- **Freshet flows condition:**

The water company shall make a release of compensation water for 24 continuous hours each week if the Agency notifies them in writing that additional flow is needed to support spawning for trout and salmon species. These releases of compensation water are referred to here as “freshet flows” IDMIT\_9 in the water company’s “EMP North West Area Appendix”. The freshet flows shall take place between 1 October 2022 and 27 March 2023 inclusive or shorter period if notified in writing by the Agency. The Agency may agree a lesser duration and frequency for each freshet flow. The freshet flow shall be not less than 1,000 cubic metres per day, from Eldwick Reservoir to Eldwick Beck and the River Aire at National Grid Reference SE 12227 41189.

**F. Measurement**

The discharge from Eldwick Reservoir is authorised under the Shipley Waterworks and Police Act 1854. There will be no change to the way the discharge is measured as part of this drought permit.

**G. Recommendations**

Based on the conclusions of the main determination report (section 14), the Agency has decided to grant a drought permit under section 79A of the Water Resources Act 1991 subject to conditions, as drafted and attached to this report. The drought permit will suspend the provisions of the Shipley Waterworks and Police Act 1854 during any period in which YW can abstract under the conditions of the drought permit.

The drought permit will be time limited to 31 March 2023 and will include the following conditions along with appendices detailing the monitoring and mitigation requirements.

<b>Condition</b>	<b>Source of the condition wording</b>
1.1 Compensation Flow	Compensation flow reduced. Condition has been legally approved.
1.2 Compensation Flow	Compensation flow when regional reservoir stocks are below the Drought Control Line (as defined in YW Drought Plan 2022) for more than four consecutive weeks. Condition has been legally approved.
The following conditions will be included for environmental monitoring and mitigation. They have all been legally approved.	
2.1	Condition requiring YW to follow the monitoring set out in Appendix 1 of drought permit.
2.2	Mitigation actions to be undertaken by YW if environmental problems identified.
2.2.1 (i)	YW must notify Agency of any environmental problems.
2.2.1 (ii)	YW must formulate remedial course of action to address problems.
2.2.2	YW must increase compensation flow.

2.3	All changes to compensation flow must be made in a steady and controlled manner.
2.4	Freshet flows condition.
3.1	Drought permit only relied upon if Temporary Use Ban restrictions imposed and in force.

**Table 3.** Recommendations of drought permit