

Annexe 10 – Grimwith Reservoir, DP2022-NE0270019001

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 on licence NE/027/0019/011. The licence permits the impoundment of water at Grimwith Reservoir and requires YW to make a compensation release to the River Dibb.

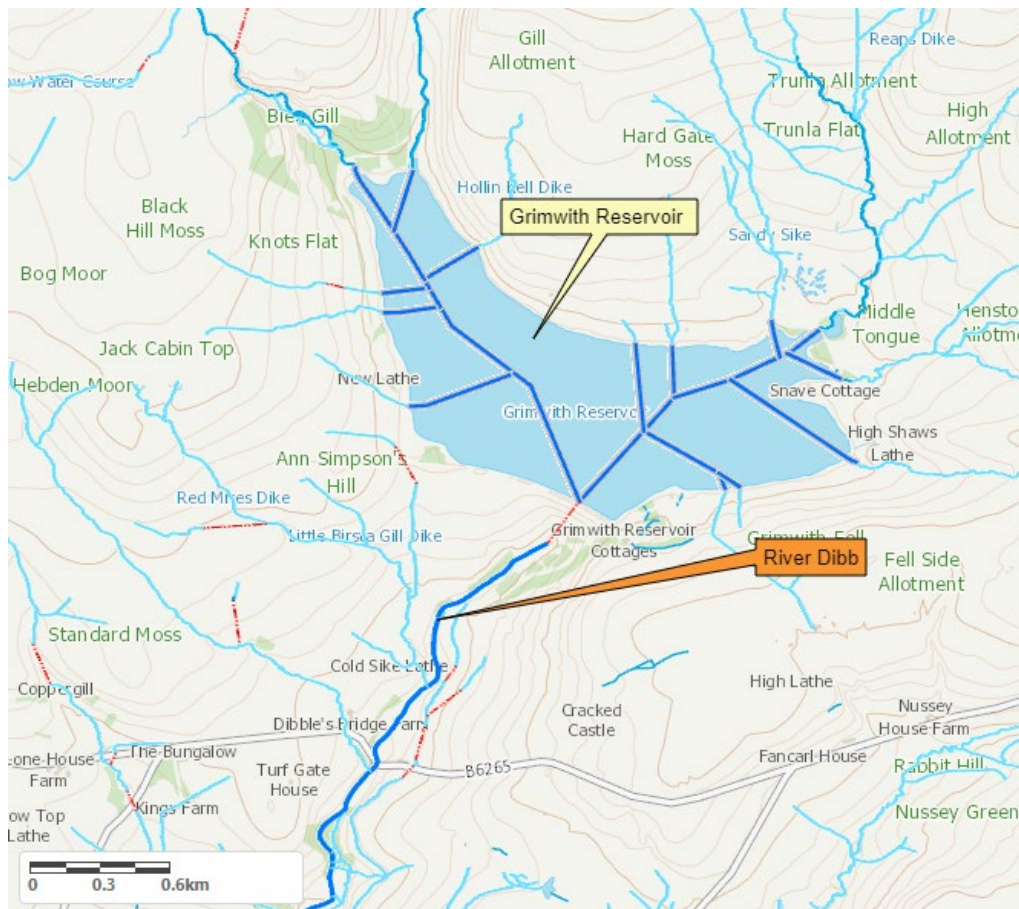


Figure 1: Grimwith Reservoir (Compensation Water Source) and the River Dibb (Receiving Watercourse)

Under licence NE/027/0019/011, YW must discharge water from the Grimwith Reservoir to the River Dibb, a tributary of the River Wharfe. The compensation release quantities are detailed in Table 1 below. YW are applying to reduce the compensation discharges as listed in the table, with a further reduction if regional reservoir stocks were below the regional Drought Control Line (DCL) for four consecutive weeks or more, as defined in the Yorkshire Water Drought Plan.

Period	Quantity – Normal	Quantity - Drought	Quantity – regional reservoir stocks below DCL
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1 November – 19 April	15.1 MI/day	7.55 MI/day	5.03 MI/day
20 April – 10 May	7.8 MI/day	3.90 MI/day	2.60 MI/day
11 May – 11 October	3.8 MI/day	1.90 MI/day	1.27 MI/day
12 – 31 October	7.8 MI/day	3.90 MI/day	2.60 MI/day

Table 1: Compensation release quantities

This reservoir is part of a flow trial agreement between YW and the Agency. A drought permit is not currently required for the above drought action however a permit will be required if the flow trial conditions are formalised.

YW are also required to release a regulating flow from Grimwith Reservoir to support abstractions from the River Wharfe at low flows. YW are able to abstract from two abstraction points on the River Wharfe at Lobwood (under licence 2/27/19/129/R01) and Arthington (under licence 2/27/20/196/R01). There is a drought option to temporarily suspend the regulatory flow and a further option to increase the annual quantity abstracted from the River Wharfe at Lobwood. Both options require a drought permit and details will be provided in the River Wharfe supporting documents when that permit application is submitted.

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 Reva 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

A summary of licence NE/027/0019/011 has been included here.

Abstraction details	Existing impoundment licence	Drought permit application changes
Location of impoundment	River Dibb at Skipton, Yorkshire	No change
Duration of drought permit	N/A	Up to and including 31 March 2023
Point of discharge	SE 05770 63936	No change
Rate of compensation release	See table 1 above.	See table 1 above.

Existing further conditions

The existing impoundment licence is subject to the following further conditions:

4. FURTHER CONDITIONS

4.1 The Licence Holder shall release water from Grimwith Reservoir created by the works so as to maintain a flow as per the table below in the River Dibb immediately downstream of the works. This flow shall be known as the Compensation Flow.

Date Range	Compensation Flow (Megalitres per day)
1 st January – 19 th April	15.1
20 th April – 10 th May	7.8
11 th May – 11 th October	3.8
12 th October – 31 October	7.8
1 st November – 31 st December	15.1

4.2 The Licence Holder shall use flow measurement device to measure the rate of Compensation Flow at the weir at National Grid reference SE 05770 63936 shown on the map marked 'Weir'.

4.3 (i) The Licence Holder shall monitor and maintain the flow measurement device so that at all times it measures the compensation flow accurately, and promptly replace it if it ceases to be fit for purpose.

(ii) The Licence Holder shall maintain such weir to prevent leakage and to be free from obstruction at all times and remain effective at all times.

4.4 (i) The Licence Holder shall use the monitoring device specified in condition 4.3 to record the Compensation Flow at the same time each day or as otherwise approved in writing by the Agency.

(ii) The Licence Holder shall keep a record required by condition 4.4(i) and make it available during all reasonable hours for inspection by the Agency for at least 6 years.

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.

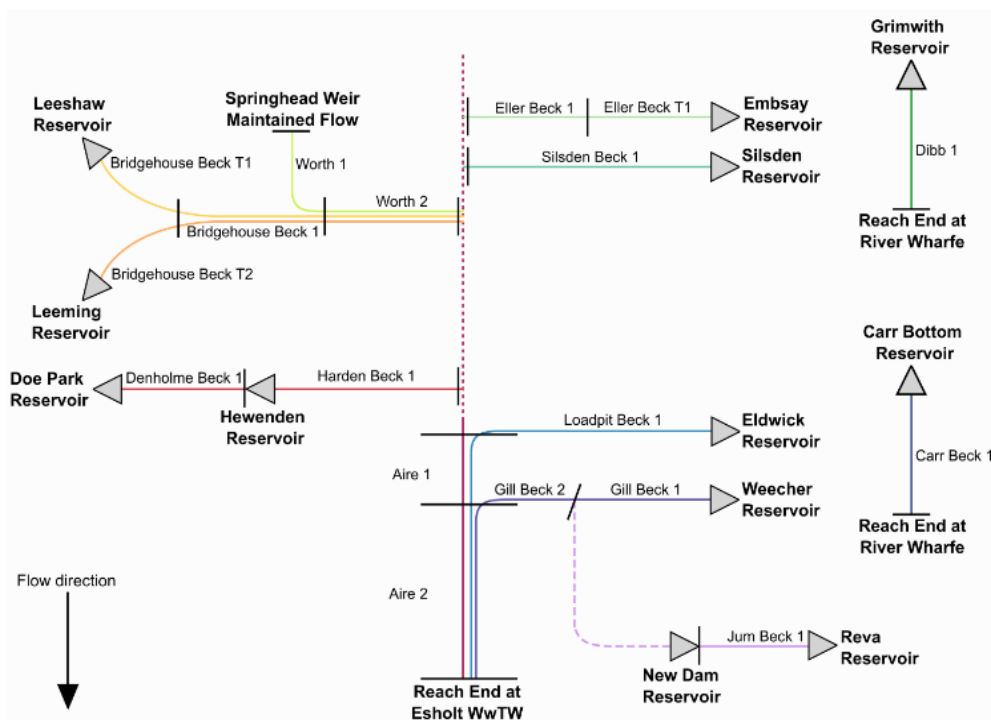


Figure 2: North West Area reservoirs drought permits reach schematic

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

- Dribb 1 - Barben Beck/River Dribb Catchment (trib of Wharfe), GB104027064120

The corresponding WFD waterbody has therefore been assessed in relation to the Grimwith Reservoir drought option.

Barben Beck/River Dribb Catchment (trib of Wharfe), GB104027064120

The Barben Beck/River Dribb Catchment (trib of Wharfe) 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
Overall WB status	Moderate	Moderate	Good by 2027

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

Table 2: WFD information for Barben Beck/River Dibb Catchment (trib of Wharfe), GB104027064120 (Heavily Modified)

Reasons For Not Achieving Good:

Ecological Potential – The Ecological Potential WFD status is moderate due to a few contributing factors explained below.

Fish – The WFD status for fish is moderate (quite certain). This is considered to probably due to changes in flows as a result of surface water abstractions by the water industry.

Mitigation measures – The WFD status for mitigation measures is moderate/ less (uncertain). This is due to physical modifications of the channel and impoundments for the water industry resulting in ecological discontinuity.

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.

Chemical – The WFD chemical status is Fail (uncertain). This is due to levels of mercury and its compounds and levels of Polybrominated diphenyl ethers (PBDE), which have both failed WFD status. Measures have been delivered to address the reasons for failure, which are as yet unknown.

WFD objectives assessment:

- The objective for hydrology regime has not been set as the waterbody has not been assessed for flow.
- 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.

Risk of deterioration of elements:

Invertebrates – There are multiple risks to invertebrates as a result of this drought option. YW's EAR states that potential changes to river flows is likely to result in major reduction in flow and will lead to a major reduction in wetted width and depth which will directly reduce the overall habitat availability within the reach. The macroinvertebrate community shows a good level of diversity, and consequently, loss of habitat may reduce the diversity of the community as a result of habitat loss for certain species. Furthermore, the increased friction between flow and channel bed may reduce flow velocity, as the macroinvertebrate community is sensitive to flow velocity reductions, as indicated by high LIFE scores. This may reduce the suitability of the reaches to species which require high flow velocities. The community is considered to be sensitive to water quality pressures, however the water quality changes as a result of the implementation of the drought option are predicted to present a minor risk. Furthermore, there are no significant flow pressures, either abstractions or discharges, influencing flow in Dibb 1. 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 GB104027064120 Barben Beck/River Dibb Catchment (trib of Wharfe) waterbody (associated with Dibb 1). 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**.

Fish – Considering the hydrological impacts and the major risk of water quality deterioration in the reach, the risk to the WFD status of the fish elements of waterbody WFD GB104027064120 Barben Beck/River Dibb Catchment (trib of Wharfe) (associated with Dibb 1) is considered to be **major**.

Macrophytes and 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 – The EAR states that there are two sampling locations in Dobb 1, however the most upstream location, River Dobb at Dibbles Bridge (NE-49700222), has limited data, as such, the next sample downstream, River Dobb at Hartlington Bridge (NE-49400676), has been used. The average pH between 2010-2020 was 7.8 with a maximum temperature of 17.3oC for the same period. There are no significant continuous or intermittent discharges into Dobb 1. There is minor risk to total ammonia, 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 the table below are within the 4.4 km reach from the point of the compensation release at Grimwith Reservoir to the cumulative reach of the River Wharfe.

Nearest conservation sites (distance searched – 4.4 km downstream)			
Designation types	Name of site	Distance downstream	Potential Impact
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)	None	N/A	N/A

Groundwater Dependent Terrestrial Ecosystems (GWDTEs) that are not designated as SSSIs – GW only	None	N/A	N/A
National Nature Reserves (NNRs)	None	N/A	N/A
Local Nature Reserves (LNRs)	None	N/A	N/A
Ancient Woodland	Rookcroft/Springside Woods	1.6 km	The woodland is unlikely to be in connectivity with the impacted reach or support aquatic receptors.
Scheduled Ancient Monuments (SAMs)	None	N/A	N/A
Local Wildlife Sites (LWSs)	None	N/A	N/A
National Parks	Yorkshire Dales	In site	The permit is unlikely to impact on the protected landscape of the National Park.
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	Arctic Charr*	Within site	No impact due to absence of arctic charr in recent fish and eDNA surveys on the reservoir. No record of charr in any survey sites on the beck either.
	Brown/Sea Trout*	0.1 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.
	European Eel migratory route	0.66 km	Negligible/no impact. Only one eel has been recorded in fish surveys on the system during last 20 years.
	Bullhead*	1 km	Impact on this species has been assessed in YW's EAR and appropriate monitoring and mitigation has been included in Appendix 2.
	White-clawed Freshwater Crayfish*	3.9 km	Impact on this species has been assessed in YW's EAR and appropriate monitoring and mitigation has been included in Appendix A.2.
Protected Habitats	Deciduous Woodland*	0.2 km	The woodland is unlikely to be in connectivity with the impacted reach or support aquatic receptors.
Invasive Non-native Species	Northern River Crangonyctid	4.2 km	The implementation of this drought option is not anticipated to increase the spread of Invasive non-native species.
	Signal Crayfish	4.2 km	
	Himalayan Balsam	4.2 km	

Table 3: Conservation screening results

* There are several records of this feature within the screening distance, but only the closest record to the discharge point has been included in this table.

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 YW's 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 permit):

Monitoring:

- IDMON_1: Surveillance walkover surveys of habitat quality and ecological stress, recording signs of environmental problems at:
 - River Dibb between SE 05289 63263 to SE 04947 62629.
- If the monitoring identifies signs of environmental distress, the following actions shall be undertaken by the water company:

- upon finding any signs of environmental problems the water company shall 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;
- 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 the compensation flow from Grimwith Reservoir to the River Dibb measured at the weir at National Grid Reference SE 05770 63936 as per the table below, or a lesser quantity if agreed in writing by the Agency.

Period	Compensation flow MI/d
1 January to 19 April	15.10
20 April to 10 May	7.80
11 May to 11 October	3.80
12 October-31 October	7.80
1 November to 31 December	15.10

- The increase in compensation flow to the River Dibb shall continue until the Agency serves a subsequent written notice stating that the reduction in compensation flow in accordance with conditions 1.1 and 1.2 of this drought permit may be resumed.
- The changes to the compensation water specified in conditions 1.1, 1.2 and 2.2.2 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.
- **Freshet flows condition:**
If, upon being notified by the Agency, or upon discovering through environmental monitoring or other evidence that an increase in compensation flow is needed to support riverine ecology and trout and salmon species, as identified in the Water Company Environmental Monitoring Plan North West Area Appendix termed IDMIT_9 and IDMIT_17, the Water Company shall increase compensation flow at a time, to a rate and for a duration as agreed in writing by the Agency, and release from Grimwith Reservoir to the River Dibb at National Grid Reference SE 05770 63936 (or other location as agreed in writing by the Agency).

F. Measurement

The discharge from Grimwith Reservoir is authorised under licence NE/027/0019/011. 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 2019 impoundment licence 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.

Condition	Source of the condition wording
1.1 (i) Compensation Flows	Compensation flows reduced. Condition has been legally approved.
1.1 (ii) Compensation Flows	Compensation flows 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 flows.
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 4. Recommendations of drought permit conditions