

Application number: NPS/WR/029581

Licence number: NE/027/0024/076

EA Area: Yorkshire

Date of Application: 21/09/2018

Applicant details: H2O Power Limited, Wellington House, 273-275 High Street, London Colney, St Albans, Hertfordshire, AL2 1HA.

Summary of the proposal:

This was a proposal for a new hydropower scheme at Naburn Weir in Yorkshire. Naburn Weir is located on the River Ouse approximately 8km downstream of York and is a notched V-shaped weir that spans the main river channel. It was constructed in the 1770s to maintain water levels for navigation.

Approximately 135m upstream of the weir, the channel splits to create a navigational channel along the left-hand side leading to two operational locks. The two channels are separated by a small island, where there is a visitor centre and several mooring points, which extends approximately 105m downstream of the weir.

The proposal comprises two Archimedes screw turbines, a turbine house building, hydraulic channels, trash screening, access improvements and an electrical substation. The hydropower channel, screw turbines and trash screening will be situated within the bank of the lock island, adjacent to Naburn Weir with no significant changes to the bank level. This is a >500Kw scheme.

Water will be discharged at SE 59350 44541 into the weir pool leaving a depleted reach of approximately 50m.

A new multi-species fish pass is being proposed to improve the likelihood of migratory salmonids, eel and lamprey successfully ascending the pass. This is in addition to a fish pass and eel and a lamprey pass already present at the site. Abstraction will not be able to take place until the fish pass(es) are approved by the Agency.

A full abstraction licence was required for the uptake of water through the intake structure. The licence contains conditions for maintaining flow through the fish pass(es) and over the weir, derogation agreements, and level sensors.

The abstraction licence will be time limited to 31/03/2029 in accordance with the Swale, Ure, Nidd and Upper Ouse Abstraction Licensing Strategy.

Source of Supply: River Ouse

Points of abstraction and quantities:

At National Grid Reference: SE 59327 44568

72,000 cubic metres per hour

1,728,000 cubic metres per day

630,720,000 cubic metres per year

At an instantaneous rate not exceeding 20,000 litres per second

Means of abstraction:

Gravity flow to a hydropower scheme via an intake channel controlled by 2 Archimedes Screw turbines and co-located fish pass and an existing weir.

Purpose of abstraction:

Power production: hydroelectric power generation

Abstraction period:

All Year.

Case history:

No pre-application was submitted for this proposal.

Formal application submitted on the 21/09/2018.

Extension request for the statutory determination date submitted to the applicant on the 04/02/2019 in order for an appropriate Hands off Flow condition to be set. Determination period extended to the 15/03/2019.

Extension request for the statutory determination date submitted to the applicant on the 02/03/2019 to allow for consultation with Natural England. Determination period extended to the 19/03/2019.

Justification of quantities:

The flow estimates submitted by the applicant have been assessed, and we accepted their methodology and estimated flow figures. The quantities applied for equate to flows that are in-line with our guidance and are therefore deemed acceptable.

The Q95/Qmean (baseflow) is $(8.24/52.94=0.16)$ within the med/low banding. The applicant has stated a maximum turbine take of 20 m³/s, which is lower than the Qmean (52.94 m³/s). Maximum abstraction at this rate will equate to the proposed hourly and daily figures of 72,000m³ and 1,728,000m³ respectively. The applicant has estimated their hourly and daily water requirements based on continuous operation.

The proposed annual abstraction of 630,720,000m³ will allow maximum abstraction over 365 days of the year.

Our guidance for run-of river hydropower development suggests that for a hydropower scheme at an existing weir the rated maximum flow (instantaneous rate) can be up to Qmean x 1.3 which in this instance would equate to 68.822m³/s. Although the applicant has applied for 365 days abstraction of the annual abstraction rate it is considered justified as the proposed instantaneous rate of 20m³/s is only 29.1% of the maximum quantity as authorised by the hydropower guidance.

The licence contains a three year self-destruct condition. This will mean that if the scheme could not proceed e.g. due to funding issues or an inability to secure planning consent within three years of the licence issue date, it would expire.

The Environment Agency considers the quantities of water applied for as justified and reasonable.

Resource assessment:

The abstraction point is within the Assessment Point 1 – Naburn (River Ouse) in the Swale, Ure, Nidd and Upper Ouse abstraction licensing strategy.

At Assessment Point 1 water is available for consumptive abstraction. This application is for hydro-electric power which is non consumptive and will return all water immediately downstream of the weir. The standard water availability restrictions therefore do not apply, with the Hands off Flow (HOF) requirement based on the local consideration of the site.

Impact assessment of proposal:

The River Ouse is a large river which forms at the confluences of the River Ure and Ouse Gill Beck.

The scheme will create a depleted reach of approximately 50m from the intake before the weir to the discharge point within the weir pool. The impact on flows in the depleted reach is dependent on the minimum residual flow set that must be left in the fish pass(es) and over the spillway before abstraction can commence and the maximum flows that can be taken. We set guidelines as to what we consider to be appropriate minimum and maximum abstraction rates in our Run-of-river guidance.

The Abstraction Sensitivity Band (ASB) for the River Ouse is medium, ASB2. The applicant stated a maximum turbine take of 20 m³/s ($Q_{\text{mean}} = 52.94\text{m}^3/\text{s}$). They have applied for 100% take above a HOF of Q95 which is a higher level of abstraction than that set out in Table A in the Flow and Abstraction Management section of the Agency's *'Guidance for run-of-river hydropower'*.

We have confirmed that the Naburn scheme is an 'around weir' scheme that deviates from Table A. Dependant on the environmental assessment of a scheme and any mitigation measures proposed, we may allow abstraction as shown in Table B, which requires a Hands off Flow (HOF) of Q95, maximum abstraction of $1.3 \times Q_{\text{mean}}$ and allows a 100% take above HOF.

The applicants also proposed to deviate from Table B in that they are proposing a HOF of 0.92m³/s and a fish pass flow of 0.93m³/s which was considerably less than the agreed Q95 value of 8.24m³/s (naturalised). This application was therefore a double departure from our guidance.

It was considered that the application met the tests for a departure to the flows set out in Table A of the guidance but not enough to depart beyond Table B. Table B sets a minimum HOF of Q95. The reason we couldn't grant a departure beyond Table B is that the application contains insufficient evidence to show whether the scheme would maintain or improve fisheries and fish passage (including lamprey): currently, it is believed that 0.93m³/s is not enough water for the existing fish passes and the proposed new fish pass(es); the HOF set out in Table B of our guidance, Q95 (naturalised at 8.24m³/s) would provide sufficient flow for all the fish passes and the flow over the weir. Abstraction will not be able to take place until the fish pass(es) are approved by the Agency.

Maintaining the prescribed flow

A level sensor will be located on the channel wall just upstream of the hydropower scheme and the scheme's control system will be programmed to ensure that the turbines only abstract when the flow of water is above the level equivalent to the hands off flow.

There is a level gauge near where the scheme will be located on the island. The gauge is used for flood monitoring and it has been agreed that this will be relocated at the applicant's expense.

Statutory Consultation:

Statutory Notification was served to the Internal Drainage Board, Navigation Authority and Statutory Water Undertaker on the 08/11/2018. They returned no comments.

External Representations:

A total of 11 representations were received.

The following points were raised:

- Concerns regarding the upstream and downstream movement of fish (mainly salmonids and lamprey); possibility of proposed flow eliminating attraction flows to the current fish pass; possibility of flow over weir stopping during low flows impacting on fish migration
- Concerns that oxygen levels below the weir will reduce, detrimentally effecting the migration of salmonids
- Concern that there has not been enough consideration of adjacent SSSIs

Please see 'Impact assessment of proposal' and 'Conservation Issues' for the addressing of these issues.

Protected Rights:

No protected rights have been identified that could be impacted by this scheme.

Conservation Issues:

This abstraction is not considered likely to cause deterioration to the WFD overall water body status, which is currently at moderate, as this abstraction is non-consumptive, with all water returned to the River Ouse after 50m.

Threatened bryophyte, European Water Vole and threatened lichen are all present downstream no closer than 6km. As the depleted reach is only 50m with all water abstracted returned to the river at that point, these species should not be impacted.

Hydropower schemes have the potential to impact dissolved oxygen (DO) levels on a local level. This is because turbines generally aerate water less than weirs. However, any impact on dissolved oxygen levels is expected to be minor, outweighed by tidal influence. Problems with DO in the past were due to water companies and water treatment plants in the area but these are largely now gone. In recent years, dissolved oxygen levels upstream of Naburn Weir have been consistently high, and have not dropped to or below 60% for more than 10 years.

The abstraction and discharge associated with the scheme is an inert operation which does not introduce any chemicals into the watercourse, therefore the water chemistry will remain unaffected.

Stage 1 and 2 Assessment undertaken for Habitats Regulations site Humber Estuary SAC submitted to Natural England for consultation.

The abstraction is unlikely to have any significant effect on the Humber Estuary SAC/SPA/Ramsar or damage the features of the SSSI. It is considered that this proposal will not contribute towards any significant cumulative effect on the Humber Estuary due to the short depleted reach (the estuary is approximately 42km downstream and the depleted reach is approximately 50m) as well as conditions on the licence requiring a HOF and a multi-species fish pass that is suitable for salmonids and also lamprey and eel. Licence conditions will ensure that abstraction cannot start without suitable protections for these species in place.

Conclusion and recommendation:

It has been concluded that this application is justified and, with appropriate conditions, does not pose any risk to the environment or protected users.

It is therefore recommended that the application is approved as modified and licence number NE/027/0024/076 should be issued with the conditions as drafted.

- HEP scheme to be built as per submitted drawings.
- Prescribed flow apportioned between fish pass(es), eel and lamprey pass, and weir crest.
- Fish pass and eel passes to be approved prior to construction.
- Level measuring devices to be installed to ensure prescribed flows are met before abstraction is authorised.

Contact the Environment Agency team responsible for this decision: PSC-WaterResources@environment-agency.gov.uk