Hafren Dyfrdwy Impoundment License Application
Marchnant Intake
Construction Methodology

1. Introduction

1.1 The works involve the design and construction works for new infrastructure to provide environmental flow releases below to the Afon Cownwy Intake diverting from the supply to the Vyrnwy Reservoir. The scheme will amend the existing structure to enable a 25% : 75% proportional flow split between the downstream channel and the abstraction, including a Q99 hands-off flow (HoF). This will result in 25% of flow being released downstream into the river channel. The restoration of flow resulting from the proposed works is considered to be a significant benefit to the water environment.

1.2 The site lies in central Wales, to the east of Snowdonia National Park. The Vyrnwy reservoir lies between the upland area of Rhiwargor and the dam is located at the town of Llanwddyn, 7.2 km downstream. The River Marchnant is a northern tributary of the River Vyrnwy (also called Afon Efyrnwy) with its confluence located downstream of the Vyrnwy dam. The channel naturally flows from the north-east direction, through the town of Abertridwr where it would join the Vyrnwy 2.6 km downstream of the Vyrnwy dam. However, under its current abstraction, the majority of the flow is diverted into the reservoir.

1. Site Set Up

1.1 Access to the site will be via the access track of the B4396 highway. There are access tracks that run parallel with the B4396 one to the north of the River Marchnant and one to the south side. Minor improvements may be required to improve the access / egress along the track to allow construction plant to reach the site.

1.2 The compound location is to be confirmed. Ideally it will be just of the highway to the side of the existing track.

1.3 Access to the main working area will be from the track to the south side of the River. Surveys may be required to confirm exact alignment to minimise impact during shrub / vegetation clearance. Track way / navy matts and / or stone will be used to create a route for construction traffic.

1.4 The compound will include an office and welfare facilities with a toilet, cleaning facilities and a drying room.

2. Construction Works

2.1 All required licenses will be in place prior to any works commencing on site.

2.2 The working area to the channel will be established with heras fencing protection.

2.3 Trees will be pruned local to the working area to prevent any damage during the construction activities. There may be some trees and scrubland that will need to be removed along the route of the channel to provide a clear working area. Refer to the detailed drawings, when complete, for further details.

2.4 An ecology survey has been carried out at the site. There are no significant issue identified however a return visit will be required to extend the survey area that were inaccessible on the initial attendance.
2.5 Any recommendations following the surveys will be embedded into the detailed design and also the construction methodology, as appropriate.
2.6 The main construction activities can be constructed “off line” without any interference with the current operational channel.
2.7 Upon completion of the structure outside of the channel section, the works will commence in the channel. To create a safe working area, a floating dam / portadam, or similar, will be installed in the “pool” maintaining flow to the tunnel head and provided a dry area to allow the wall to be removed and the new weir installation to be tied into the existing structure. Full temporary works design and details for this activity will be confirmed in the permit application.
2.8 Silt fencing material will be placed downstream of the working area to reduce the risk of any sedimentation. A maintenance plan will be in place to ensure that any silt protection is inspected.
2.9 The works in the main channel can then be completed.
2.10 The Geomorphological report has identified that a ‘natural channel’ should be included in the permanent works. This will mean the excavation and forming of a downstream channel with the area being cleared of vegetation and contaminated sediment to enable a free-flowing channel upon reconnection. This will extend at least as far as the nearest incoming tributary, approximately 100m downstream. Exact details will be documented in the detailed design.
2.11 For the actual tie into the new structure and the forming of the new channel, imported rock armour will be used to retain the sediment and protect to the formation as it stabilises into a natural form.
2.12 Silt fences downstream will be maintained throughout this process.
2.13 Once works in the channel are completed the temporary works will we removed and the flow returned to the normal operation.
2.14 Consideration will be given to the phased introduction of the 25% flow to the “new” channel. This will be controlled using stop logs across the channel, with further details provided in the Commissioning Plan.

3. Water Quality Monitoring

3.1 Consideration will be given for the floating dam / portadam system employed and appropriate notices will be in place prior to implementation. The system will be designed to divert the flow to the tunnel head.
3.2 Groundwater within the working area will be collected and pumped into a silt busting system, or similar, with the outlet discharging to the channel downstream of the dam with silt fencing and hay bales installed as required. This will collect any sediment released from over pumping and will ensure that water quality and aquatic life are not adversely affected.
3.3 Consideration will be given to the opening of the scour valve at agreed flow level / times to prevent any breaching of the dam installation.

4. General

4.1 All re-fuelling of plant will be undertaken at least 15m away from any water course. The following measures will be taken to avoid potential contamination from fuel spillage. Separate detailed RAMS will be put in place for all activities that require control of fuel or oil.

4.2 Where possible, fuelling of vehicles should take place off site. Plant fuel to be provided and distributed by using either a mobile bunded fuel bowers or static bunded fuel storage tank with electric pump discharge.

4.3 Spill kits will be stored with the fuel bowser and replenished as necessary. Should spillage occur it should be cleaned up immediately using the kit provided. Spills will be reported to site manager.

4.4 Fuel nozzles must not be left unattended when fuelling. The fuelling nozzles should be fitted with automatic fuel cut off devices which are to be regularly inspected.

4.5 Re-fuelling to take place within site compound area on impermeable surface.

4.6 Site traffic will be inspected to prevent mud on roads and road sweepers will be employed as required.