

Form WRE: Application for a new impoundment licence, technical variation to an impoundment licence or the removal of an existing impoundment

Reference number (The number you generated in form WRA). Example:
WRNATURALRESOURCESWALES1101

WRPORTMADOCHOLIDAYCAMP2903

Are you applying for a licence for a new impoundment or an existing impoundment

a new impoundment

Impoundment details

All information should correspond with any maps and drawings submitted with this application

	Impoundment location name/reference	Left bank National Grid Reference	Right bank National Grid Reference
	'Middle' (Un-named tributary 1)	SH 57999 42063	SH 58001 42063
	-	-	-
	-	-	-

Provide details about the type of impoundment you propose to construct at the points specified above and how the works will operate. This should include a description of any existing works and how your proposal will affect the flow of inland water.

Tell us the purpose of the works. If the water is to be impounded for more than one purpose, list both the primary and secondary purpose

The purpose of the works is to create an intake to abstract water for hydroelectric power generation.

The intake is quarter-height Coanda design, which has the dual benefits of providing ultra-fine screening of the water via apertures of 3mm and of enabling a low profile intake structure. The structure forms a weir which is divided in the proportion of the permitted percentage take and the flow to be left in situ. In addition, a minimum residual ("Hands off") flow notch ensures that no water is abstracted below the protected flow rate.

Full details are provided on the drawings:

- Intake Location Middle v1.3.pdf
 - Prefab intake concept 70 pc take v1.4.pdf
- and within the associated WRA and WRD applications.

Description of impoundment

Name of watercourse

Un-named tributary 1 of Afon Môr-gwenyn

Will your proposed impoundment result in a change to the submerged area (downstream) or new submerged areas behind (upstream of) the impounding works?
(If yes, ensure this is shown on any map or drawings submitted)

Yes

Will the ponded area created by the impoundment be lined?

No

Give the height of the impoundment structure, from the downstream toe to crest or top of spillway (in metres above Ordnance Datum). If the proposal involves an existing impoundment, state the change in height (in millimetres).

0.942 metres

What is the overflow or crest level of the impoundment (in metres above Ordnance Datum)?

126.0

Will the proposal create a raised reservoir?

(A raised reservoir is one where water is stored at a level above the natural level of the lowest level of the surrounding area.)

No

What is the proposed capacity of the impoundment when full to spillway level (in cubic metres)?

Anticipated impoundment volume 0.7m³ (before backfill is added: negligible thereafter).

Does the proposal involve the controlled release of water to safeguard downstream flows?

This could be the release of flood attenuation flows, reservoir compensation flows or a residual flow via a notch or orifice.

Yes

Tell us what the proposed flow at the outlet will be and how you intend to measure this. If the works involve monitoring of levels or flows, include details of this.

The intake will have the required parameters from the licence designed into the structure.

The Hands off Flow will be maintained at all times via a notch that is below the level of the weir crest. The dimensions of the notch are of 150mm wide by 50mm deep and it will have a variable plate to allow fine adjustment. The Hands off Flow notch will pass 100% of Q95 flow.
As flow in the river increases, the flow over the stepped fishway increases by 30% of the total river flow.

Is the impounded water to be used for a subsequent purpose?

Yes

Provide details of subsequent purpose (for abstractions, state the daily and annual quantities in cubic metres).

The purpose is for hydroelectric power generation.

As confirmed elsewhere in this application the aggregate maximum abstraction figures for the three intakes in the application are:

1513728 m³ annually

4147.2 m³ daily

100% of the water is returned to the river after a short time.

These figures are calculated based on the maximum peak design flow. In practice, the amount will be determined by availability of water and it is certainly not expected that the scheme could run 24/7 for the whole year.

How will the impounded area be filled initially, and subsequently refilled if applicable?

Example: by rainwater, overland flow or pumped from another source.

The weir is located at a natural fall in the watercourse. The impounded area is very small: Anticipated impoundment volume 0.7m³ before backfill is added, and negligible thereafter. It will fill within a very short time, and be maintained by, natural flow in the watercourse.

Fish and eel passage

Confirm the fish species present at your site.

We do not believe there to be fish present in any of the watercourses at the proposed intake locations, due to (1) the steep profiles of the watercourses both above and below the intake points, which include many waterfalls and chutes; (2) the small size of the watercourses, meaning that there is little water volume and limited connectivity during drier periods. Nonetheless we have adopted a conservative approach and in accordance with the preapplication guidance the intake structure design includes a plunge pool below the screen to accommodate downstream fish passage, and eel brushes for eel passage.

For further information please see Environmental Statement.

Please confirm type of fish screen

Intake Coanda overspill

Outfall Flat bar screen

Please confirm screen height and width - intake (millimetres)

Width 1000mm

Height 400mm

Please confirm screen height and width - outfall (millimetres)

Width 600mm

Height 600mm

Please confirm screen aperture size (millimetres)

Intake 3mm

Outfall 40mm

Please confirm type of upstream fish/eel passage intake

Eel brushes, stepped fish way to be part-filled with river stones

Please confirm type of downstream fish/eel passage

Eel brushes, stepped fish way to be part-filled with river stones, plunge pool at bottom of screen

Please confirm proposed flow for fish pass

100% of Q95 + 30% of flow above

Construction, maintenance and operation

Provide details of maintenance or activities relating to the operation of the impoundment. Include the extent and frequency of activities. This could include the operation of scour valves or maintenance of a fish pass.

Describe any sediment management plan associated with the impoundment.

The intake should require limited maintenance as there are no moving parts. There will be a monthly visual inspection and debris clearance as necessary to ensure there is no build up of river material that is obstructing the river flow.

Do you intend to divert the flow of the inland water while you are building, changing or removing the impounding works?

Yes

How do you intend to divert the flow of the inland water while you are building, changing or removing the impounding works. Give details.

The construction will take place during a dry period in the summer with low flows. A small temporary impoundment will be created upstream and the water piped a short distance (e.g. 10 metres) around the installation site.

Proposed Design of Structure

Upload design drawings and calculations here. (Spreadsheet file formats need to be: .xls, .xlsx, or .ods)

- File: Layout Plan v1_2.pdf - [Download](#)
- File: Intake Location middle v1.3.pdf - [Download](#)
- File: Prefab intake concept 70 pc take v1.4.pdf - [Download](#)
- File: Design Statement - Intake structure.pdf - [Download](#)

Please upload your stage 1 geomorphology photosurvey. Find out more on how to complete your survey on our Geomorphology Photosurveys for Hydropower developments page

- File: Aberdunant geomorphology photosurvey - final.pdf - [Download](#)

Other permissions

Planning permission advice received?

No

Is planning permission required?

Yes

What is the status of the planning permission?

Not Submitted

Have you applied for or do you hold a Flood Risk Activity Permit (FRAP) for the proposed works?

No

Commercial confidentiality and national security

Are you applying for Commercial Confidentiality?

No

Have you applied to the Welsh Ministers for national security for your application?

No

Declaration

By signing below, you are declaring that, to the best of your knowledge; the information given in this form, on any map and in any supporting or additional information; is true.

Signed Adam Dobson
Print name ADAM DOBSON
Position Company Director

Date

* 30/03/2023

Would you like a copy of your submission?

Yes

Your email address

tom.bartlett@derwent-hydro.co.uk