

# Form WRD: Application for a new abstraction licence or a technical variation to an abstraction licence

## Application type

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

WREgniMynydd1501

For hydropower abstractions, specify the capacity (in kilowatts) of your scheme.

>100kW

Are there any applications currently being assessed by us that are linked to this application?

No

Is the proposed abstraction going to be aggregated with another existing abstraction?

No

Are any applications, at the same site; being assessed by the Environment Agency?

No

Tell us when you want your abstraction licence to end: [DD/MM/YY]

31/03/2037

## Abstraction details

Abstraction location name/reference

Coanda intake screen

Abstraction point type

Single point

National Grid Reference

SH 60625 65514

Downstream National Grid Reference (If abstracting from a reach), or corners of the area.

SH 61477 66293

-  
-  
-

Do you have any further points of abstraction?

No

## Means of abstraction

Provide full details of the equipment you propose to use to abstract water, such as maximum pump capacity and any relevant dimensions, e.g. pipe diameter. For groundwater abstractions, include details about the borehole (depth and diameter) and details of screening and lining.

Small intake weir which creates a minor impoundment, but replaces existing step in bed level, therefore only very limited upstream ponding will be created (a few meters). Intake will be a concrete stone faced coanda screen intake, connected stilling chamber. Intake weir will be backfilled (using material excavated from the footprint of the intake structure) to ensure that it does not present a sediment trap, this means that during high flows sediment passes downstream unaffected by the intake weir.

Intake drawings are:

File: 4 Intake Plan 10 009 drg 101.pdf

File: 4a Intake Sections 10 009 drg 102.pdf

File: 4b Intake Sections 19 009 drg 103.pdf

Method statement for installation of weir and notch calculations are contained in file:

GLFHDOCMethodStatementA210317DM.pdf

Please upload your drawings and calculations here. (Spreadsheet file formats need to be: .xls, .xlsx, or .ods)

- File: GLFH-DOC-Method Statement-A-210317-DM.pdf - [Download](#)
- File: 4 Intake Plan 10 009 drg 101.pdf - [Download](#)
- File: 4a Intake Sections 10 009 drg 102.pdf - [Download](#)
- File: 4b Intake Sections 19 009 drg 103.pdf - [Download](#)
- File: Galedffrwd Hydro Geomorph Report and Assessment of Cumulative Impacts.pdf - [Download](#)

## Abstraction quantities

Abstraction location name/reference

Coanda Intake Screen

What purpose will the water be used for?

Hydropower

Period of abstraction Will it be all year?

Yes

Maximum quantities (cubic metres)

**Annual** 11195280

**Daily** 30672

**Hourly** 1278

Peak abstraction rate (in litres per second)

355

Number of hours of abstraction per day

24

Add quantities for another location?

No

## Calculations and supporting information

Use this section to show us how you have calculated the amount of water you require. This should include details of your operational regime (for example, number of hours and days you intend to abstract, number of units produced or area to be irrigated). We use this information to determine if the volumes you propose to abstract are appropriate for the purpose. Depending which industry you are in, you may need to provide additional information below.

If your proposal involves the provision of a residual flow via a notch or orifice, provide information on how this is being calculated. This should include details of the equation being used.

Q95 Hands off flow and 70% flow split. (As in existing license)  
Notch calculation provided in file: Notch Calcs RevB.xls

Additional document. (Spreadsheet file formats need to be: .xls, .xlsx, or .ods)

- File: Notch Calcs RevB.xls - [Download](#)

## Industry-specific requirements

	% abstraction and zone applied for	Average gradient of depleted reach (%)	Catchment size above abstraction point (kilometres squared)	Net head between abstraction and discharge points (metres)
	70% of abstraction, Zone 3 of the GPG (as in existing license)	8.33	5.772	86.95

	Turbine efficiency (%)	System efficiency (%)	Maximum power output (kilowatts)	Annual capacity (kilowatt hours)
	75	73	215 (limited to 200 by SPEN)	706000

State the length of depleted reach (in metres)

1300

Provide the flow data (in cubic metres per second) & ratios specified below:

**Q95** 0.03  
**Q10** 0.897  
**Qmean** 0.355  
**What is the ratio of Q95:Qmean?** 0.0845  
**What is the ratio of Q10:Qmean?** -

What low flow protection (Low flow protection is the flow rate above which abstraction can begin and is separate to the abstraction % take) do you propose to maintain in the depleted reach when the hydropower scheme is operating (in m<sup>3</sup>/s)?

Notch made into weir for hands off flow.

## Means of measurement

State how you intend to measure the quantity of water you abstract. You do not need to do this for a temporary or transfer licence.

Power Generated

## Water efficiency

Provide details of what measures you provide or intend to implement, to ensure efficient use of water. This could include water storage, re-use or recirculation, monitoring and checking for leaks, undertaking water audits or other industry specific good practice.

Galedffrwd is a high head hydro scheme, this allows a small amount of water to be used for the power output compared to a low head hydro scheme.

## Fish and eel considerations (surface water abstractions only)

Does your proposal include measures to safeguard fish and eels? Only provide details of outfall screening if abstracted water is to be discharged back into a watercourse. For further guidance on appropriate screening Intake screening for fish

	Intake	Outfall
Type of fish screen	Coanda screen	Square bar
Screen aperture size (mm)	2	25

Confirm the fish species present at your site. If you're not proposing any measures to protect fish and eels, you must justify this. For example, we may have confirmed in our pre-application response that the intake is inaccessible to fish or you undertook a fish survey to confirm.

Limited fish species present due to total fish blockers throughout depleted reach and fish blocker immediately downstream of outfall. Only fish present are isolated brown trout. Hands off flow notch includes an informal fish pool passage to ensure that fish movement is not restricted or changed by the intake weir.

Details of fish pass are included in intake drawings.

The Prefeasibility study prepared by Dulas in 2010 includes a summary of consultation with Environment Agency which included a sit visit on the 12th May 2010. The relevant section of the report notes: "EA consultation The EA carried out an initial assessment of the site on 12th May 2010. It was confirmed that the river is used by migratory fish but there is no substantial bryophyte colonisation or other ecological factors that may affect the abstraction levels. On inspection of the dam and weir, it was proposed that the permitted abstraction will be 50% of the available flow left after arranging for the permanent "Q95" residual flow in the river. This was mainly due to the assumption that the dam is the furthest point up river the migratory fish could get. It was also stated that an additional 1020% would be available for abstraction between January and March.

On further inspection the EA concluded that lower dam near the proposed powerhouse location is the furthest point that migratory fish could reach and if all discharge was at this dam then 60% abstraction above the Q95 residual flow would be permitted. This still includes the additional 10-20% between January and March and in a later email, Tecwyn Evans of the EA suggested that the increase might be extended until the end of April. This still includes the additional 10-20% between January and March and in a later email, Tecwyn Evans of the EA suggested that the increase might be extended until the end of April." The license was eventually issued to permit abstraction of 70% of flow all year. Our understanding is that alongside the lack of migratory fish this was to reflect the nature of the river as being in the main a steep, steppool boulder stream (as described by HydroMorph in 2018 which indicates an overall channel gradient of 0.065.

## Discharge details

If you intend to return any of the abstracted water to the environment, provide details below. Details of discharge location(s) should correspond with any maps submitted. Do not include discharges to a public sewage system.

	Discharge location name / reference	National Grid Reference of discharge point (12 digit)	Total volume to be discharged (cubic metres)	Environmental Permit for Water Discharge Activity number (if applicable)
	Outfall pipe	SH 61477 66293	0.355 m3/2	-
	-	-	-	-
	-	-	-	-
	-	-	-	-

Provide a description of the structure and equipment involved in discharge.

Tail race pipe will discharge water from the power house back into the watercourse. A 750mm by 750mm screen with 25mm bars will be mounted onto the front of the tail race; to prevent fish from trying to navigate up the tail race.

## Other abstractors / water users

Provide details of nearby abstractors or users of water who could be affected by your proposal. This should include deregulated users (exempt activities or abstractions < 20 cubic metres per day), anglers and canoeists. Your local authority's environmental health will hold details of exempt domestic abstractors.

There are three other abstractions in the catchment:

- Dwr Cymru abstraction of drinking water from Marchlyn Bach to the Mynydd WTW
- Welsh Slate abstraction from Llyn Owen y Ddol into the Penrhyn quarry
- First Hydro impoundment of water at Marchlyn Mawr for the Dinorwic pump storage station

These are all well upstream of the Galedffrwd intake and will not be affected by the proposal.

## Planning application

Have you sought advice on your planning application?

Yes

Submit a copy of the Planning Authority's response.

- File: Dyfarniad - Decision.pdf - [Download](#)

## 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** J Wong  
**Print name** Jennifer Wong  
**position** Chair / Director

If you need to submit additional signatures, please upload here in a separate document.

- File: Jenny sign small.jpg - [Download](#)

Date

\* 15/01/2025

Would you like a copy of your submission?

Yes

Your email address

jenny.wong@wildresources.co.uk