

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

WRSWANSEACOUNCIL0205

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

>50 to 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]

31/07/2032

Abstraction details

Abstraction location name/reference

Tawe Barrage HEP

Abstraction point type

Single point

National Grid Reference

SS 66521 92652

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.

This application relates to the renewal of abstraction licence no 22/59/1/106 and the associated rehabilitation of the Tawe Barrage Hydro Electric Power Station.

The HEP scheme incorporated in the Tawe Barrage only ran for a few years after construction in the late 1980's / early 1990's. The scheme was mothballed due to the fact the running and maintenance costs were not being offset by the revenue from electricity generation.

A number of attempts have been made to rehabilitate the scheme with the most recent being in 2012 when Swansea Council commissioned a feasibility study which was carried out by Atkins Global. Swansea Council is currently in the process of assessing if there is a business case to rehabilitate the HEP scheme built into the Tawe Barrage with the goal of installing new screening arrangements, a new turbine, new control gear and a new grid connection into the existing infrastructure. Part of this process will involve refreshing the 2012 Atkins study to take into account modern electricity market conditions, the hydrology of the site including any new screening requirements, modern turbine technology and control gear with improved efficiency and the terms of our abstraction licence.

Energy generated from renewable sources is everybody's interests and a rehabilitated HEP scheme at Tawe Barrage would go a long way in terms of reducing the Marina and wider Council's carbon footprint. It is believed that the outcome of a new study will likely be positive and that it will be possible to present a viable business case in order to secure finances to rehabilitate the scheme to modern standards.

The means of abstraction is likely to be a Kaplan Turbine housed within the existing infrastructure but it's size and associated hydrology calculations will need to be fully determined once a turbine unit has been selected.

It is envisaged that the existing penstock will be used to control water flow. Indicative calculations can be found in the 2012 Atkins feasibility study that is attached to this application. Also attached are drawings of the existing barrage weirs, turbine pit, penstock and screening arrangements. The existing screening arrangements will of course be updated to comply with current standards as part of any rehabilitation project.

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

- File: WRSWANSEACOUNCIL0205 Atkins Feasability Study 2012.pdf - [Download](#)
- File: WRSWANSEACOUNCIL0205 W1678.011-SW-6 -- Barrage general layout.png - [Download](#)
- File: WRSWANSEACOUNCIL0205 W1678.011-SW-52 -- East abutment turbine works (1).png - [Download](#)
- File: WRSWANSEACOUNCIL0205 W1678.100-SW-55 -- Turbine inlet screens.png - [Download](#)

Abstraction quantities

Abstraction location name/reference
Tawe Barrage HEP
What purpose will the water be used for?
Electricity Generation
Period of abstraction Will it be all year?
No
Start Date: [DD/MM/YY]
01/08/22
End Date: [DD/MM/YY]
31/07/32
Maximum quantities (cubic metres)
Annual 34000000 Daily 133000 Hourly 8300
Peak abstraction rate (in litres per second)
To be determined upon turbine selection
Number of hours of abstraction per day
12
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.

See indicative hydraulic calculations in attached pdf.

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

- File: WRSWANSEACOUNCIL0205 Atkins Feasability Study 2012.pdf - [Download](#)

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.

Other (please specify):
Flow Rate x Hours Run

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.

The turbine discharge point is located down stream of the approach to the fish pass incorporated into the Tawe Barrage structure. Our understanding of the discharge positioning is to increase water flow in the vicinity of the fish pass in order to encourage migratory fish towards the fish pass.

Fish and eel considerations (surface water abstractions only)

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.

A fish survey will be carried out if there is a business case to rehabilitate the HEP scheme. Intake and outfall screening requirements will then be determined by the results of the survey, subsequent discussions with NRW and any legal requirements.

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.

EH have advised none.

Planning application

Have you sought advice on your planning 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 Mike Bond

Print name Michael Bond

position Assistant Marina Manager

Date

* 12/05/2022

Would you like a copy of your submission?

Yes

Your email address

michael.bond@swansea.gov.uk