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
WRDJONESANDSON2409

For hydropower abstractions, specify the capacity (in kilowatts) of your scheme.
25kW or less

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]
31/03/2036

If you require a shorter or longer duration licence, please provide details and your justification
The desired period matches the FiT period for the hydropower scheme commissioned with OFGEM at the site

Abstraction details

Abstraction location name/reference
Pan Y Factory, Mathrafal

Abstraction point type
Single point

National Grid Reference
312210311703

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.
Open leat alongside a weir impounding water on the river vyrnwy. Impoundment licence MD/054/0001/032/V003. Abstraction amount controlled by automatic gates ensuring hands off flow is always maintained down the fish pass/depleted reach

Abstraction quantities

Abstraction location name/reference
Pan Y Factory Mathrafal

What purpose will the water be used for?
Hydropower scheme

Period of abstraction Will it be all year?
Yes

Maximum quantities (cubic metres)	
Annual	32,487,452
Daily	155,520
Hourly	6,480

Peak abstraction rate (in litres per second)
1800

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.
No change from earlier licence (MD/054/0001/005/V003) in order to maintain operation of hydropower scheme as originally commissioned and as per licences granted in 2016. Actual quantum of water abstracted has been less due to operational difficulties which hopefully are now rectified. All water abstracted is returned to the river approximately 600metres downstream of the point of abstraction - all of which occurs within the boundary of my land

Additional document. (Spreadsheet file formats need to be: .xls, .xlsx, or .ods)
• File: 2016EAflowcalcs.xls - Download

Industry-specific requirements

Provide details of any additional requirements (washing / cleaning)
Not Applicable - hydropower scheme only

	% 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)
	45% above HOF of 600l/s	0.46%	110 (excluding Lake Vyrnwy)	2.2-2.5 (varies with river level)

	Turbine efficiency (%)	System efficiency (%)	Maximum power output (kilowatts)	Annual capacity (kilowatt hours)
	85	60	25 DNC	110000

State the length of depleted reach (in metres)
658

Provide the flow data (in cubic metres per second) & ratios specified below:	
Q95	0.162 (excluding Lake Vyrnwy HOF)
Q10	8.648 (excluding Lake Vyrnwy HOF)
Qmean	3.46 (excluding Lake Vyrnwy HOF)
What is the ratio of Q95:Qmean?	0.0468
What is the ratio of Q10:Qmean?	2.499

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 m3/s)?
0.60

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.
Water is only used for hydropower, so there is no consumption and water abstracted is fully discharged back into the river

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	Three screens ahead of turbine starting with coarse trash screen, then a screen box to prevent entry of fish into the leat and a further screen ahead of the turbine	physical screen across tailrace
Screen aperture size (mm)	coarse trash screen (100mm). Screen box screen and turbine screen 10mm 10	30

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.

Beyond the screens used ahead of the turbine and leat, there is a separate fish and eel pass within the weir. The HOF of the river is channelled through the fish pass. Fish species include trout, grayling and salmon.

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)
	Mathrafal Tailrace	312806311716	All abstracted	-
	-	-	-	-
	-	-	-	-
	-	-	-	-

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

Open tailrace connects to the river vyrnwy at the discharge point

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.

Water is abstracted and discharged back into the river vyrnwy within the boundary of land i own.

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 Marc Jones

Print name Marc Jones

position Partner

Date

* 24/09/2021

Would you like a copy of your submission?

Yes

Your email address

jonesmarcp@icloud.com