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
WRHYDROMATCH0504

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]
18 years

Abstraction details

Abstraction location name/reference
Maerdy Mill Leat Sluice

Abstraction point type
Single point

National Grid Reference
SJ 01735 44410

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.

Overshot waterwheel using flows avaliable to existing leat at site entrance
Hands - Off Flows are maintained at all times to the main river channel via the porous stone weir.
Leat flows become untennable for power generation at river flow of approximately Q75 and below
At this point they are less than 40 litres per second in the leat which is the minimum flow required for operation. This pattern was observed historically when the wheel was operated by Environment Agency Wales when site was used as a salmon hatchery.
Once the waterwheel stops, the flow is diverted beneath the wheel via a trap door sliuce in the wheel flume and then continues to flow via the tailrace channel before rejoining the river approximately 45 metre downstream of this point.

If necessary, continue on a separate sheet and upload below.

- File: Maerdy Mill Overview Plan with Abstraction and Discharge points.pdf - Download
- File: HM020 Maerdy HEP Site Photos.pdf - Download
- File: HM020 Maerdy HEP Design, operation and abstraction data.pdf - Download
- File: HM020 A Maerdy Hydropower PLAN .pdf - Download
- File: HM020 A Maerdy Hydropower A_A.pdf - Download

Abstraction quantities

Abstraction location name/reference

Maerdy Mill Leat Sluice

What purpose will the water be used for?

Hydropower

Period of abstraction Will it be all year?

Yes

Maximum quantities (cubic metres)

Annual 4958721

Daily 17280

Hourly 720

Peak abstraction rate (in litres per second)
200

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.

The abstraction quantities are base on the instantanous maixmum design flow for the overshot waterwheel and flume of 200 litres per second. This also corrseponds to the maximum capacity of the leat and culvert which is supply the mill. The sliuce gate at the leat culvert entrance is partially closed to ensure that this limit is maintained and to avoid the leat wall from being breached under high river flows. An opening of 255 mm will give a flow rate of 200 litres per second.

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

- File: HM020 Maerdy HEP Design, operation and abstraction data.pdf - Download
- File: HM020 Maerdy Mill Leat sluice flow rate and depleted length.pdf - 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)
	7.5%	1	82.47	3

	Turbine efficiency (%)	System efficiency (%)	Maximum power output (kilowatts)	Annual capacity (kilowatt hours)
	80	68	3.6	25000

State the length of depleted reach (in metres)

400

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

Q95	0.177
Q10	6.114
Qmean	2.635
What is the ratio of Q95:Qmean?	0.067
What is the ratio of Q10:Qmean?	2.32

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)?

0.561 (Q75)

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.

Use of an efficient hydropower generation system

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	No	Yes
Screen aperture size (mm)	75mm	20mm

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.

Salmonoids
Overshot waterwheel with large buckets not considered to be a danger to fish or eels

Discharge details

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

20mm screen at leat / river confluence

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.

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 Danieleckman

Print name Daniel Eckman

position Owner

Date

* 26/05/2023

GDPR, National Security, and Commercial Confidentiality

Only tick the box below if you wish to claim confidentiality for your application.

Please treat the information in my application as confidential

Would you like a copy of your submission?

Yes

Your email address

Danieleckman80@gmail.com