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
WRHYDROCK1010

For hydropower abstractions, specify the capacity (in kilowatts) of your scheme.
>25 to 50kW

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

Is the proposed abstraction going to be aggregated with another existing abstraction?
Yes (Please let us know the licence it will be aggregated with) Abstraction and impoundment license details match with existing applications (WA/057/0023/003 & WA/057/0023/006)

Linked applications

Please confirm how this application is linked to the other application(s) Example: this application could be one of multiple abstractions and/or impoundment licence applications at the same site. The proposal could involve water rights trading, or this application could be linked to another application for a previously exempt activity.
Abstraction and impoundment license details match with existing applications (WA/057/0023/003 & WA/057/0023/006)

Linked application numbers
WA/057/0023/003 WA/057/0023/006 - -

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]
01/03/2044

If you require a shorter or longer duration licence, please provide details and your justification
Anticipated abstraction start date 01/03/2026. 18-year license from this date.

Abstraction details

Abstraction location name/reference
Dare Valley Upper Lake

Abstraction point type
Single point

National Grid Reference
SN 97752 02790

Downstream National Grid Reference (If abstracting from a reach), or corners of the area.
SN 98120 02848 - - -

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.
Abstraction will take place by a modification to the existing weir. The depth of the abstraction notch is dictated by the design flow limits (up to 5% percentile flow). Beyond the design flow limits, the weir behaves the same as before.

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

- File: 34564-HYD-XX-XX-DR-C-1610 - Weir Sections & Details.pdf - Download
- File: 34564-HYD-XX-XX-DR-C-1010 - Weir General Arrangement Plan.pdf - Download
- File: Dare Valley Hydro - Supporting Info NRW Rev2 0.pdf - Download

Abstraction quantities

Abstraction location name/reference

Dare Valley Upper Lake

What purpose will the water be used for?

Hydropower

Period of abstraction Will it be all year?

Yes

Maximum quantities (cubic metres)

Annual 3,550,008

Daily 20,304

Hourly 846

Peak abstraction rate (in litres per second)

235

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.

Please find attached an overview of the operating regime, abstraction rate, and flow rates. The provision of a hands-off flow is set at 50l/s, as per the previous correspondence with NRW.

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

- File: Dare Valley Hydro - Supporting Info NRW Rev2 0.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)
	60	7	3.59	31.9

	Turbine efficiency (%)	System efficiency (%)	Maximum power output (kilowatts)	Annual capacity (kilowatt hours)
	Ranges from 82% at highest flow to 69% at lowest flow	Ranges from 72% at highest flow to 35% at lowest flow	50	195,000

State the length of depleted reach (in metres)

423

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

Q95	0.045
Q10	0.826
Qmean	0.235
What is the ratio of Q95:Qmean?	0.191
What is the ratio of Q10:Qmean?	3.51

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)?

0.05

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.

Ensure ongoing monitoring of the pipework to detect any leakage as soon as it may arise. Controlled monitoring of the intake chamber level, flow over the weir, and power output of the scheme will detect any abnormalities remotely as soon as they may occur.

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 at the intake	Screen with bar spacing
Screen aperture size (mm)	2mm	10mm

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.

Within the last five years the local data search has returned records of brown trout in the vicinity of the site. No fish will be effected due to the use of the coanda screen, therefore no fish can be captured by the proposed scheme. The weir is existing and will not be significantly modified in form, therefore there is no change to migratory fish as a result fo proposals.

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)
	Dare Valley Lower Lake	SN 98120 02848	3,550,008	-
	-	-	-	-
	-	-	-	-
	-	-	-	-

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

A standard reinforced concrete weir structure, with coanda screen designed for proportional abstraction in accordance with the abstraction profile submitted, captures water which moves under gravity through a chamber and via a gate valve into an HDPE penstock. The penstock of 500mm diameter and approximately 389m length channels the water to the powerhouse. The powerhouse inlet has a gate valve isolation before passing through a Crossflow turbine, dropping into a tail race outlet which feeds water into the watercourse (Lower Lake) via a screen.

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.

N/A

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 George Trigg

Print name George Trigg

position Consultant at Hydrock Consultants Ltd

If an agent is to sign on behalf of the Licence Holder, a letter of authorisation from the Licence Holder is required.

- File: Hydrock - LoA Dare Valley Abstraction License Authorisation.pdf - Download

Date

* 10/10/2024

Would you like a copy of your submission?

Yes

Your email address

Georgetrigg@hydrock.com