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
WRBLAENAUGWENT1301

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?
Yes

Is the proposed abstraction going to be aggregated with another existing abstraction?
No

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.
Linked to Silent Valley abstraction licence WA/056/0064/0003.

Linked application numbers
WA/056/0064/0003 - - -

Are any applications, at the same site; being assessed by the Environment Agency?
No

Abstraction details

Abstraction location name/reference
Silent Valley

Abstraction point type
Single point

National Grid Reference
SO 18800 06830

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 be via an overshot screen (maximum 10mm aperture) fixed over a concrete sump with an inlet to a gravity-feed pipe. Compensation flow will be provided using a pipe cast into the intake, with the upstream end set below the screen weir crest to prioritise it over abstracted flow. Compensation flow rate will be set using a blanking plate incorporating an offset sharp edged orifice set to the appropriate height (rotated as required to calibrate the flow). See drawing HD03136DWC01 for dimensions

Please upload your drawings and calculations here. (Spreadsheet file formats need to be: .xls, .xlsx, or .ods)
• File: HD03136-CAL-06-B Silent Valley Hydrosize - Generation.pdf - Download • File: HD03136-CAL-06-B Silent Valley Hydrosize - Hydrology.pdf - Download • File: HD03136-MAP-44-B Silent Valley Hydro - Hydrology.pdf - Download • File: HD03136-DWC-01-B Revised Silent Valley Hydro Intake GA.pdf - Download

Abstraction quantities

Abstraction location name/reference
Silent Valley

What purpose will the water be used for?
micro hydropower

Period of abstraction Will it be all year?
Yes

Maximum quantities (cubic metres)	
Annual	756,864
Daily	2,074
Hourly	86.4

Peak abstraction rate (in litres per second)
0.024

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.

Flow rate is 24litres/sec = 0.024 m3/sec (cubic metres / second)

Assuming the scheme runs continuously at full flow i.e. abstraction will be 24hrs/day

- 0.024 x 3600sec = 86.4 cubic metres per hour (m3/h)

- 86.4m3 x 24hrs = 2,074 cubic metres per day (m3/d)

- 86.4m3 x 24hrs x 365days = 756,864 cubic metres per year (m3/y) if running for the full year

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

- File: HD03136-CAL-06-B Silent Valley Hydrosize - Hydrology.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)
	n/a due to artificial depleted reach (concrete drainage channel)	21	0.69km2	45m

	Turbine efficiency (%)	System efficiency (%)	Maximum power output (kilowatts)	Annual capacity (kilowatt hours)
	82	74	8	33MWh

State the length of depleted reach (in metres)

210m. The depleted reach is an artificial channel not a natural watercourse

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

Q95	0.004 m3/s
Q10	0.054 m3/s
Qmean	0.024 m3/s
What is the ratio of Q95:Qmean?	0.0167
What is the ratio of Q10:Qmean?	2.25

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)?

0.004m3/s

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.

Regular visual inspection of installation to identify any leakage and undertake remedial action where necessary.

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	400x400x400 mesh cage	400x400x400 mesh cage
Screen aperture size (mm)	10mm	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.

The intake structure involves the minor modification of an existing impoundment structure and as a consequence the construction impacts are relatively modest. The existing structure will already provide a barrier to any upstream migration of fish interests and the proposal will not have any impact on existing downstream migration. It is not, therefore proposed to include additional measures to safeguard fish and eels.

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)
	Discharge	SO 18655 06710	756,864	N/A
	-	-	-	-
	-	-	-	-
	-	-	-	-

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

Tail race pipe discharging into existing artificial channel at bottom of depleted reach.

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	S Williams
Print name	S WILLIAMS
position	Senior Physical Regeneration Officer

Date

* 10/02/2023

Would you like a copy of your submission?

No