

Hydropower abstractors: A guide to completing your paper water abstraction return

Request for two years of data

The returns notification letter you have received is a request for two years' worth of data to cover 2016-17 and 2017-18. You should have one form for each return year, per licence per purpose/abstraction point, depending on your licence. You will need to complete a form for 2016-17 and for 2017-18. Check the 'Return Period' on the top of the form to work out which form relates to which year.

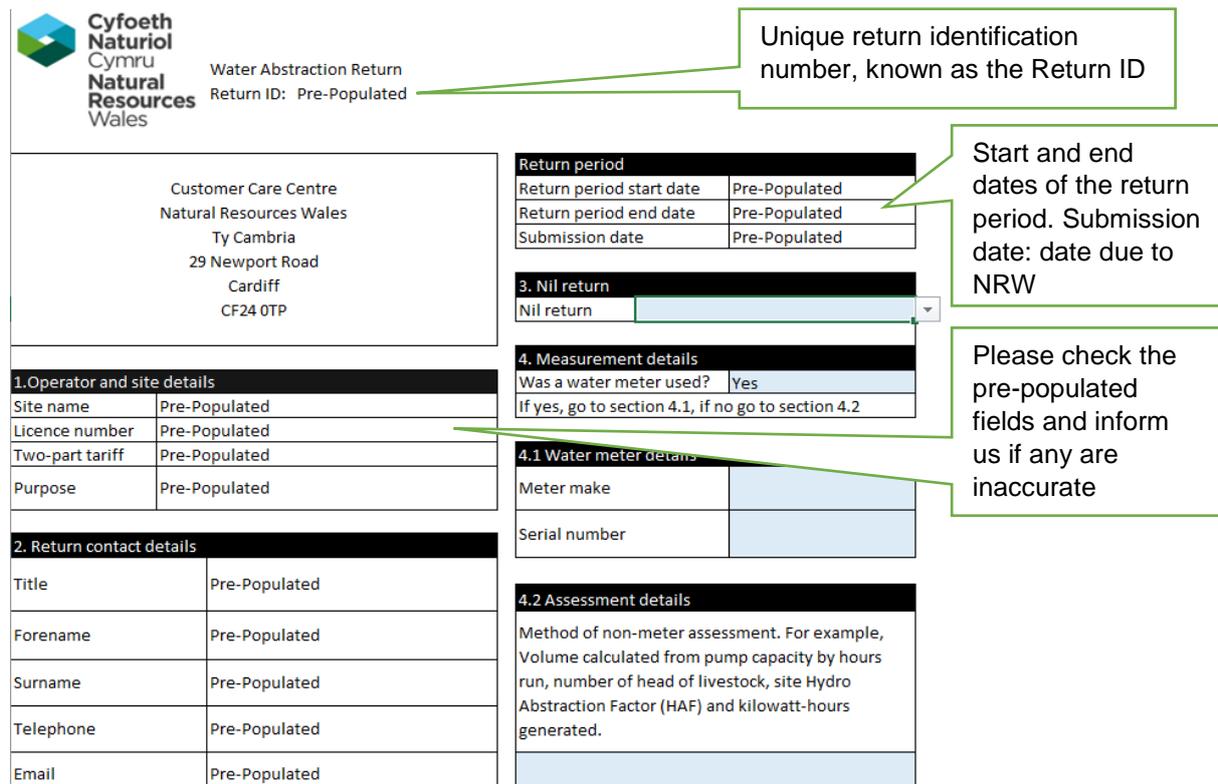
Which parts of the form do I need to fill in?

You must complete all relevant blue sections of the form.

Please note: We can only accept the return form provided, if you send us a different form we will have to return it to you.

Guidance to help you complete your return

Many of the boxes are pre-populated. A summary of the information required is shown in the screen shots below, a detailed description of what each box means is available in Appendix at the end of the document.



Cyfoeth Naturiol Cymru Natural Resources Wales

Water Abstraction Return
Return ID: Pre-Populated

Customer Care Centre
Natural Resources Wales
Ty Cambria
29 Newport Road
Cardiff
CF24 0TP

Return period

Return period start date	Pre-Populated
Return period end date	Pre-Populated
Submission date	Pre-Populated

3. Nil return

Nil return

4. Measurement details

Was a water meter used?	Yes
If yes, go to section 4.1, if no go to section 4.2	

4.1 Water meter details

Meter make	
Serial number	

4.2 Assessment details

Method of non-meter assessment. For example, Volume calculated from pump capacity by hours run, number of head of livestock, site Hydro Abstraction Factor (HAF) and kilowatt-hours generated.

1. Operator and site details

Site name	Pre-Populated
Licence number	Pre-Populated
Two-part tariff	Pre-Populated
Purpose	Pre-Populated

2. Return contact details

Title	Pre-Populated
Forename	Pre-Populated
Surname	Pre-Populated
Telephone	Pre-Populated
Email	Pre-Populated

Unique return identification number, known as the Return ID

Start and end dates of the return period. Submission date: date due to NRW

Please check the pre-populated fields and inform us if any are inaccurate

Please complete all relevant blue blank boxes.

Customer Care Centre Natural Resources Wales Ty Cambria 29 Newport Road Cardiff CF24 0TP		<table border="1"> <tr><th colspan="2">Return period</th></tr> <tr><td>Return period start date</td><td>Pre-Populated</td></tr> <tr><td>Return period end date</td><td>Pre-Populated</td></tr> <tr><td>Submission date</td><td>Pre-Populated</td></tr> </table>	Return period		Return period start date	Pre-Populated	Return period end date	Pre-Populated	Submission date	Pre-Populated										
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<p>5. Please enter Yes/No to indicate whether you are providing further information. If 'Yes', include the licence number and Return ID on any additional sheets that you include</p>		<table border="1"> <tr><th colspan="2">4.2 Assessment details</th></tr> <tr><td colspan="2">Method of non-meter assessment. For example, Volume calculated from pump capacity by hours run, number of head of livestock, site Hydro Abstraction Factor (HAF) and kilowatt-hours generated.</td></tr> <tr><td colspan="2"></td></tr> </table>	4.2 Assessment details		Method of non-meter assessment. For example, Volume calculated from pump capacity by hours run, number of head of livestock, site Hydro Abstraction Factor (HAF) and kilowatt-hours generated.															
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		<p>4.1 Provide details of the water meter. If more than 1 meter was used provide details in Section 5. Further information</p>																		
		<p>4.2 If you did not use a water meter, specify the method of assessment. Provide any further information if required as a separate sheet(s) and send back to NRW with the form</p>																		

Completing the returns sheet 'HydroDailyReturn / HydroWeeklyReturn / HydroMonthlyReturn'

You only need to complete this section of the form if your return is for an abstraction where **abstraction quantities are calculated from electricity generated**. A more detailed breakdown of the information required is in Table 3 in Appendix 1. If you use a water meter then please continue to Page 4.

	A	B	C	D	E	F	G
1	6. Start electricity meter reading						
2	Date						
3	Reading						
4							
5		Net operating head in metres		Turbine/water wheel efficiency			
6							
7							
8		Generator efficiency		Transmission system efficiency			
9							
10							
11				Calculated HAF			
12							

6. You must enter the date and the electricity meter reading for the start of the abstraction return period. Format dd-mm-yy or dd/mm/yyyy

Net operating head in metres	Please enter the net operating head of the system at maximum power output in meters. This figure should have
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8. Enter the date and meter reading for the last abstraction during this return period	8. End meter reading		Completion Checklist <table border="1"> <tr><td>3. Nil return complete?</td><td>No</td></tr> <tr><td>4. Measurement details complete?</td><td>No</td></tr> <tr><td>5. Further information complete?</td><td>No</td></tr> <tr><td>6. Start meter reading complete?</td><td>No</td></tr> <tr><td>7. Readings/ volumes complete?</td><td>No</td></tr> <tr><td>7. At least one month's meter reading complete a</td><td></td></tr> <tr><td>8. End mete</td><td></td></tr> <tr><td>9. Total wat</td><td></td></tr> </table>	3. Nil return complete?	No	4. Measurement details complete?	No	5. Further information complete?	No	6. Start meter reading complete?	No	7. Readings/ volumes complete?	No	7. At least one month's meter reading complete a		8. End mete		9. Total wat	
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7. At least one month's meter reading complete a																			
8. End mete																			
9. Total wat																			
Date																			
Reading																			
9. Please calculate the total amount of water abstracted during the return period (using the same units as selected in Section 7)	9. Total water abstracted																		
	Amount abstracted																		
10. Declaration	10. Declaration																		
	Signature (paper return)																		
Please return the completed form to: Customer Care Centre Natural Resources Wales Ty Cambria 29 Newport Road Cardiff CF24 0TP																			
10. Please sign to confirm accurate data has been provided																			

Please review the 'Completion Checklist' to ensure that all entries are either 'Yes' or 'N/A'. The numbers relate to the sections that need completing on the sheets.

Submitting your return form

Please use the 'Completion Checklist' at the bottom of the return form you completed to check that all required information has been provided.

When your form is complete, please send it to:
Customer Care Centre
Natural Resources Wales
Tŷ Cambria
29 Newport Road
Cardiff
CF24 0TP

You are strongly advised to retain a copy of the return for future reference, or in case there is a query with your return. Before sending your return please ensure you have enclosed any further information following the guidance provided in Section 5 of the form.

We do not send acknowledgements of receipt but will be in touch as soon as possible if there is a query with your return.

Queries

If you do not agree with any of the return pre-populated information it is important that you let us know. If any of these details are incorrect or you have a query regarding your return form, please contact our Customer Care Centre by telephone on 0300 065 3000 or by email at

waterresources.returns@naturalresourceswales.gov.uk

Appendix 1

Table 1: Summary of pre-populated boxes

Section	Box	Information
Top of return form (next to the logo)	Return ID	<p>This is the return identification number, which we refer to as the Return ID. Each return will have its own Return ID created by NRW. The combination of abstraction licence number and the Return ID makes the return unique.</p> <p>If you are required to submit more than one return per licence you will receive multiple returns forms with different Return ID numbers. It is important that you provide data in the correct form. The 'Operator and site details' Section (see below) will help you identify the correct form to use.</p>
Return period	Return period start date	The start and end dates of the period for which the return information is being requested.
	Return period end date	
	Submission date	This is the latest date we can accept the completed return from you.
1. Operator and site details	Site name	A summary of the abstraction(s) covered by the return.
	Licence number	The abstraction licence number to which return relates.
	Two-part tariff	Indicates whether a two-part tariff agreement applies to the return (this only applies to irrigation licences).
	Purpose	The licensed purpose(s) authorised by the abstraction licence and covered by the return.
2. Return contact details	Title	Contact details held by NRW for returns and related queries. Please note: This may be different to licence holder details.
	Forename	
	Surname	
	Telephone	
	Email	It is important that these details are accurate so if there is anything wrong please let us know immediately.

Table 2: Summary of blank boxes to complete

Section	Box	Required Information
3. Nil return	Nil return	Please respond 'Yes' or 'No' to specify if you are submitting a 'nil' return. A 'nil' return indicates that no water has been abstracted during the abstraction return period.

		<p>If you are not submitting a nil return, please continue to Section 4.</p> <p>If you are submitting a nil return and you calculate abstraction quantities from electricity generated please complete Section 9 (declaration) of the 'Hydro return sheet(s)' – all other abstractors complete Section 10 (declaration) of the 'Return sheet(s)'.</p>
4. Measurement details	Was a water meter used?	Please respond 'Yes' or 'No' to indicate whether a water meter was used to measure water abstracted.
4.1 Water meter details	Meter make	<p>If 'No' please provide details of alternative assessment method in Section 4.2.</p> <p>If 'Yes' please provide water meter details in Section 4.1. If you have used more than one meter during the abstraction return period, please provide the make and serial number of only one meter and provide further information to explain changes in meter usage as a separate sheet(s) submitted with your return (see Section 5).</p>
	Serial number	
4.2 Assessment details		If you did not use a water meter , please clearly specify the method of assessment of abstracted quantities. If necessary, please provide any further information required as a separate sheet(s) submitted with your return (see Section 5).
5. Further information	Are you attaching further information?	Please respond 'Yes' or 'No' to indicate whether you are providing any further information. If 'Yes', please follow the notes within this section which detail how this information should be provided.

Table 3: Summary of blank boxes for hydropower returns with **electricity meter**

Section	Box	Required Information
6. Start electricity meter reading	Date	Please provide the date you took the first electricity meter reading for this abstraction return period.
	Reading	Please provide the first electricity meter reading of this abstraction return period.
	Net operating head in metres**	Please provide the net operating head of the system at maximum power output in metres.
	Turbine / water wheel efficiency**	Please provide the turbine/water wheel efficiency at maximum power output.

	Generator efficiency**	Please provide the generator efficiency at maximum power output.
	Transmission system efficiency**	Please provide the transmission system efficiency at maximum power output.
	Calculated HAF**	If you do not already know the Hydro Abstraction Factor (HAF), please calculate it using the example in the calculation sheet attached to your abstraction licence (also provided in Appendix 2 of this guide).
	<p>** In accordance with your licence conditions, you should have recorded the above performance data and 'Calculated HAF' value on the calculation checklist attached to your licence document. If you do not currently know this data, please be aware that NRW does not hold this site and equipment specific data. Any further assistance will need to be sought from the company / companies who provided the equipment and / or any agent responsible for scheme design and construction.</p>	
	Main return information table – KWh generated in period (column 2)	<p>Please provide the actual* (not cumulative) amount of electricity generated (in kilowatt hours (kWh)) in column 2 of the table against each relevant pre-populated date.</p> <p>*It is important that you do not simply provide electricity meter readings against each relevant pre-populated date as this will represent the cumulative amount of electricity generated and will significantly over estimate calculated volumes of water abstracted.</p> <p>When the return form is submitted, any blank box in column 2 will be considered to represent a zero.</p>
	Main return information table – Calculated abstraction m ³ (column 3)	Please calculate and provide the volume of water abstracted for each 'kWh generated in period' entry in column 2 of the table. This is calculated by multiplying the 'kWh generated in period' value by the 'Calculated HAF' value. Please use the example provided in the calculation sheet attached to your abstraction licence (also provided in Appendix 2 of this guide) to assist you.
7. End electricity meter reading	Date	Please provide the date you took the last electricity meter reading for this abstraction return period.
	Reading	Please provide the last electricity meter reading of this abstraction return period.
8. Total water abstracted m ³	Amount abstracted	Please calculate and provide the total amount of water abstracted (not electricity

		generated) during the abstraction return period.
9. Declaration	Signature	Please sign to confirm accurate data has been provided.

Table 4: Summary of blank boxes for hydropower returns using **water meter**

Section	Box	Required Information
1. Start meter reading	Date	Only complete this section if you used a water meter.
	Reading	Please provide the date and the start meter reading for the start of the abstraction return period.
2. Return lines	Meter readings / abstraction volumes	Please indicate whether the return data being provided is meter readings or abstraction volumes.
	Cubic Metres / Litres / Gallons	Please indicate the unit of measurement for the return data being provided. Please note: Only cubic metres, litres or gallons are acceptable. Meter readings or abstraction volumes recorded / assessed in alternative units will need to be converted prior to being provided.
	Main return information table – Meter readings / abstraction volumes (column 2)	Please provide the meter reading or abstracted volume in column 2 of the table against each relevant pre-populated date. When the return form is submitted, any blank box in column 2 will be considered to represent a zero.
	Main return information table - Estimated indicator (column 3)	Indicate using 'Yes' or 'No' whether each entry in column 2 of the table is an estimated figure.
3. End meter reading	Date	Only complete this section if you used a water meter.
	Reading	Please provide the date and meter reading for the last abstraction during this abstraction return period.
4. Total water abstracted	Amount abstracted	Please calculate and provide the total amount of water abstracted during the abstraction return period using the same units of measurement as selected in Section 7.
5. Declaration	Signature	Please sign to confirm accurate data has been provided.

Appendix 2

Calculating the Hydro Abstraction Factor (HAF) and converting electricity generated to quantities of water abstracted

Please note: The values provided below are example values only. You must determine and use the site-specific values for your hydropower scheme. If not known, these should be sought from the company / companies who provided the equipment and / or any agent responsible for scheme design and construction.

Example

Performance Data		
Parameter	Value	How was the parameter determined?
Net operating head of the system at maximum power output ($H_n (P_{max})$) in metres	150	Site survey
Turbine / water wheel efficiency at maximum power output ($e_{turbine/water\ wheel} (P_{max})$)	0.9	From manufacturer
Generator efficiency at maximum power output ($e_{generator} (P_{max})$)	0.85	From manufacturer
Transmission system efficiency at maximum power output ($e_{transmission} (P_{max})$)	0.85	From manufacturer

Calculation of overall system efficiency of the rotating parts of the hydro system, at maximum power output ($e_{system} (P_{max})$)

$$e_{system} (P_{max}) = e_{turbine/water\ wheel} (P_{max}) \times e_{generator} (P_{max}) \times e_{transmission} (P_{max})$$

$$= 0.9 \times 0.85 \times 0.85$$

$$e_{system} (P_{max}) = 0.65$$

Calculation of HAF

HAF = Hydro Abstraction Factor for the site in question

$$= 366.972 / (H_n (P_{max}) \times e_{system} (P_{max}))$$

$$= 366.972 / (150 \times 0.65)$$

$$= 3.764 \text{ (m}^3 \text{ / kWh)}$$

The volume of water abstracted for any period (V_{period}) can then be calculated by simply multiplying the HAF by the number of kilowatt hours generated thus:

$$V_{period} \text{ (m}^3\text{)} = kWh_{period} \text{ (kWh)} \times HAF \text{ (m}^3 \text{ / kWh)}$$

If, for example, your total export of electricity for the period was 68,400 kWh, then you would have abstracted a total volume of water of:

$$V_{period} \text{ (m}^3\text{)} = 68,400\text{kWh} \times 3.764\text{m}^3 \text{ / kWh} = 257,457.6\text{m}^3$$