Hydroelectric-power schemes

Pre-application form – Guidance notes

About this form

These guidance notes give you information to help you fill in WR315. You need to read 'Guidance for run-of-river hydropower development'. You can get the guidance by calling us on 03708 506 506 (8am to 6pm Monday to Friday), or sending an email to **enquiries@environment-agency.gov.uk**.

Hydroelectric power schemes may need the following permissions from us:

- Water abstraction licence, for abstracting (removing) more than 20m^3 of water a day from a water source
- Impounding licence, for impounding (holding back) water in a water source
- Environmental permit for flood risk activities, if you plan to build any part of your scheme in, over or under a main river, or close to the bank of a main river
- Fish and/or eel pass approval, if you need to build a structure to allow fish/eels to migrate upstream.

You will also need planning permission from your local planning authority. We recommend that you apply for planning permission at the same time as you make your formal application for our permissions.

We strongly advise you to contact your local planning authority, as well as local organisations which could be affected by your proposal (for example, angling societies, recreational water users, archaeological and heritage trusts), early in the process of planning your proposal.

The form is split into two parts:

- part A for general information; and
- part B for technical information.

You must fill in part A. If you can provide more detailed technical information on your proposed scheme, also fill in part B.

When you fill in the form, if you need more space for any of your answers, please continue on a separate piece of paper. Make sure you label each sheet clearly and tell us which question it applies to.

Contents

Part A

1 Licence you are applying for

1.1 Tick one of the boxes to tell us if you want Basic or Enhanced pre application.

1.2 There are a number of types of licence which you can apply for. Tick one of the boxes to show what type of licence you are applying for. The different types of licence are explained below.

New full abstraction licence

Tick this box if you need a licence for a new operation to abstract more than 20 cubic metres (4,400 gallons) of water a day from groundwater or surface water, for a period of 28 days or more. If you want to abstract 20 cubic metres or less a day, you do not need an abstraction licence.

New transfer licence

Tick this box if you need a licence to abstract water from one source, over a period of 28 days or more, to transfer it direct to another source without using it.

New impoundment licence

Tick this box if you need a licence for impounding works, such as a dam or weir, to impound, obstruct or impede the flow of inland water.

Apply for a replacement licence when the existing expires

Tick this box if you want to replace a licence that is due to end in the next 18 months, and you want to make a change or changes to that licence (for example, an increase in volume to be abstracted or adding another point of abstraction).

Formal variation to an existing abstraction licence

Tick this box if you want to make a change to an existing abstraction licence. Changes include:

- changing the point of abstraction
- changing what you will use the water for
- changing when you will use the water
- increasing the quantity of water you abstract

Formal variation to an existing impoundment licence

Tick this box if you want to make a change to an existing impoundment licence. An example of a change would be an alteration to the structure.

Note: For information on charging for both pre-application and formal go to https://www.gov.uk/guidance/environment-agency-fees-and-charges.

2 Contact details

We need details of whom we should contact about this pre-application.

2.1 If you are an advisor or agent appointed by the applicant, give your contact details in question 2.2 and the applicant's details in question 2.3.

If you are the applicant, skip question 2.2 and give your details in question 2.3.

2.4 Give the name and phone number of any person in the Environment Agency whom you have spoken to about the proposal.

2.5 If you have spoken to any conservation agencies (for example, Natural England) about this proposal, give details in question 2.5.

Part B

You may not yet have the information asked for in this part. However, if you do not provide it now we will need it before you make your formal application.

3 Site details

With the form you need to include a scaled and labelled Ordnance Survey map or sketch plan of the proposed scheme showing the location of:

- the point where the water is abstracted, impounded (held back) and discharged;
- the turbine or turbines;
- any penstock pipeline or open channel;
- existing water-control structures;
- proposed water-control structures; and
- fish and eel pass facilities and fish and eel screens.

3.1 Site name

Give the site a local or relevant name to help us distinguish between other sites.

3.2 Name of the watercourse

Please give the name of the watercourse that you intend to abstract water from or impound water to generate electricity.

3.3 Location details

Please provide 12-character National Grid References (NGRs) for all the locations that are relevant to your scheme and any descriptions, in as much detail as you can. Continue on a separate piece of paper if you need to.

You need to give NGRs of the following:

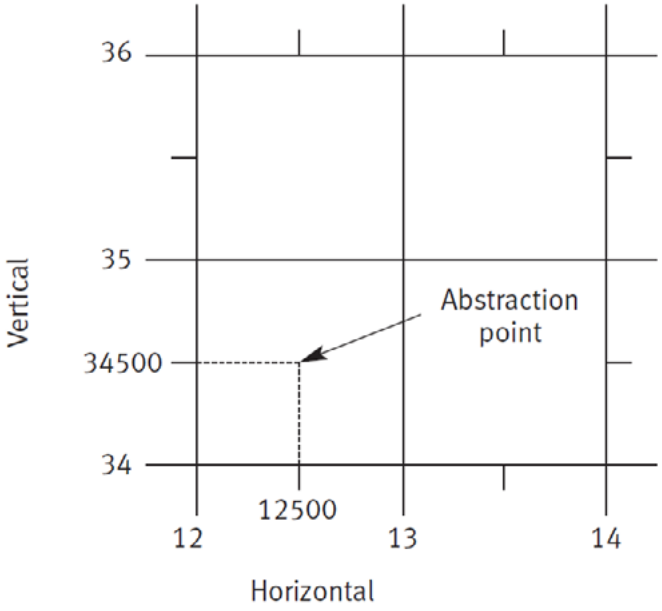
- the abstraction point (the point where water is abstracted from the river or stream)
- the discharge point (the point where the water you have abstracted is returned to the river or stream)
- any proposed impoundment (structure for holding back water to increase the head); for example, a weir, sluice or hatch
- any existing impoundment
- any proposed or existing water-control structure (for example, lock, waterwheel, fish pass or canoe pass)
- any other proposed or existing features that are relevant (for example, turbine or flood alleviation channel).

An NGR is not the same as a field number.

You can find out the NGRs relating to your site using an Ordnance Survey map. In these maps, the boxes marked out in blue are equivalent to an area of 100,000m^2.

Do the following to work out the NGR of your proposed abstraction point to the nearest 10m^2. Looking at the example below will help.

- Read the two letters identifying the box the abstraction point is in. In the example below we have used the letters ST.
- Identify the vertical line immediately left of your proposed abstraction point and read the numbers. In the example below it is 12.
- Identify the horizontal grid line immediately below the proposed abstraction point and read the numbers. In the example below it is 34.



If you imagine the square is split into 10 sections across and 10 down, the final grid reference is ST 12500 34500.

3.4 Right of access

You can only apply for a licence to abstract water if you have, or expect to have from the date when the proposed licence is to take effect, a right of access to the land directly adjoining the inland waters at the place (or places) where the abstraction is to take place.

Where you already have or expect to have a right of access, it must be for at least 12 months from the date the proposed licence is to take effect, unless you only need the licence for a period of less than 12 months.

We may ask you to provide proof of your rights of access. If you are not sure what rights of access or proof you need, get advice from us. We may have to return your application if you do not have the correct access rights or are unable to provide proof when we ask for it.

With the form include a scaled and labelled Ordnance Survey map or sketch plan of the proposed scheme. On the map, highlight the different ownerships or access rights to show:

- who owns or has rights to the left and right banks upstream and downstream of the site and within any depleted reach of the river;
- who owns the watercourse and to what extent (for example, the bank, middle of the watercourse and so on);
- who owns or has rights to operate any water-control structures; and
- any fishing or navigation rights that exist.

3.5 Please provide a brief description of the proposal

Please provide further details on your proposal in support of your application.

3.6 Length of any depleted reach of river created

If you take water from a river, the stretch between the abstraction point and the discharge point has a depleted (reduced) flow. That stretch of water is known as the 'depleted reach'. In question 3.6, tell us the length (in metres) of any depleted reach associated with this scheme.

3.7 What type of turbine do you propose to use?

For example, Kaplan, Francis, Pelton or Archimedes screw. If you propose to use more than one turbine, please include details on a separate piece of paper attached to this form. If you are using an Archimedes screw, the extra information we ask for helps us assess the need for fish screening.

3.8 Number of turbines

In the space given, state how many turbines you propose to use.

3.9 Proposed turbine flows

In question 3.9, give the following details for each separate turbine.

- Maximum design flow (sometimes called the 'instantaneous turbine flow', which is the maximum flow capacity of the turbine), in litres per second, at any given moment.
- Maximum flows (in cubic metres) for the turbine in any hour, day and year. (In most cases, the maximum annual turbine flow will normally be 220 × the daily turbine flow).
- Minimum turbine start-up flow (the flow needed for the turbine to start), in litres per second.

Please provide information on how these quantities have been calculated on a separate sheet

3.10 Raising the level of an existing impoundment?

An impoundment is a structure, such as a dam or weir, that impounds (holds back) or obstructs the flow in an inland watercourse. If you are planning to raise the level of an impoundment, you need to let us know by how much, in millimetres.

3.11 Planning permission

If you have already applied for planning permission from your local planning authority, tell us:

- which local planning authority you applied to;
- the reference number of your application; and
- the status of your application (pending, approved or refused).

4 Scheme details

4.1 Gross head

The gross head is the maximum difference in height (in metres), from the upstream level (such as the water intake) to the downstream level where the water leaves the turbine.

4.2 Net head

Net head is the gross head, minus losses due to friction and turbulence, when transferring water into and away from the turbine.

4.3 Estimated generating potential

Provide the scheme's estimated generating potential (that is, the amount of electricity you expect the scheme to generate) in kilowatts (kW).

4.4 Annual generating potential

Provide the annual generating potential of the scheme in kilowatt-hours (kWhrs).

4.5 Control of the scheme

Please describe how you are going to control the hydroelectric-power scheme, including the turbine and any control structures used, such as hatches and penstocks. Say whether the scheme will be operated manually or automated (for example, by using head-level sensors, automated sluice gates, automated start-up and shut-off, automated screen cleaners and so on).

5 Water resource considerations

Assessment of existing hydrology

This assessment will need to include analysis of how the proposed scheme will affect the volume of water flow, or water level, within all channels present or proposed. You'll also need to fully explain the effect the scheme will have on the flow and level of water over any structures in the river, such as weirs or fish passes.

The assessment will need to include the following:

- An overview of the catchment hydrology
- Hydrometric information (current meter gaugings, gauging station data, model data, rainfall data)
- An assessment of the change in flow within all channels affected
- Seasonal variation in flows
- Base flow/run-off comparison
- An assessment of high-flow events (management of structures, relief channels)
- The reduction in downstream levels and the raising of upstream levels
- The residual flows downstream of intake needed to protect the river and other interests.

We will always try to make our requests for hydrometric information appropriate to the site and the proposed scheme. However, if we need a more detailed assessment of the potential effects of your proposal (for example, because the scheme lies within a national or European conservation area or there are significant fishery or biodiversity issues) we may need you to provide more information and analysis. This can include a comprehensive flow survey of the site, including current meter gaugings over a range of flows. We will try to tell you what we need at an early stage.

We may be able to provide some of the hydrometric information you need to help with the hydrology assessment. We manage a national network of river flow, river level and rainfall monitoring stations. The information from these is available to the public. We may charge for the information, depending on how much you need, how long it will take us to provide it, and what you will use it for. To find out what information we have available for your location, phone the National Customer Contact Centre on 03708 506 506 (8am to 6pm Monday to Friday), or send an email to enquiries@environment-agency.gov.uk.

The Centre for Ecology & Hydrology has hydrometric information on the National River Flow Archive, which you can view on the website at **www.ceh.ac.uk/data/nrfa/index.html**.

5.1 Flow duration statistics

The flow duration curve (FDC) represents the statistical availability of any given flow, based on best available information. The FDC and associated information can indicate the volume of flow which is available for any percentage of the time.

Please provide both the FDC, flow duration statistics (if they have been produced) and the available flow in megalitres per day (ML/d) that is exceeded at least:

- 95% of the time (Q95);
- 80% of the time (Q80);
- 50% of the time (Q50);
- 40% of the time (Q40); and
- 10% of the time (Q10).

Also provide:

- the average of all flow measurements taken over a period of time (Qmean); and
- a pre-scheme assessment (flow survey) of all channels included within the scheme.

5.2 Base-flow indicator value (BFIV)

Your BFIV is your Q95 divided by your Qmean value.

We use BFIV figures to classify rivers as having low, medium or high base flows (this is how much of the river water comes from groundwater). Rivers with a low base flow are sometimes described as 'flashy' rivers.

Use the 'Flow and abstraction management' section of 'Guidance for run-of-river hydropower development' to understand more about the BFIV.

You need to calculate your BFIV for use later on when working out your indicative design flows.

5.3 Abstraction sensitivity band (ASB)

ASBs are used to describe a watercourse's sensitivity to abstraction pressures. We give all watercourses an ASB of either 3 for 'high sensitivity', 2 for 'medium sensitivity' or 1 for 'low sensitivity'.

You need the ASB to work out your indicative design flows at question 5.4. Contact the Agency to get the ASB for the proposed location of your hydropower scheme.

5.4 Indicative design flows

You must read the 'Flow and abstraction management' section of 'Guidance for run-of-river hydropower development' when working out your indicative design flows, which you can get by calling us on 03708 506 506 (8am to 6pm Monday to Friday), or sending an email to enquiries@environment-agency.gov.uk.

Table A gives the basic indicative design flows that should be suitable for most hydropower schemes.

5.5 Applying for higher levels of abstraction

If you think that the design flows from question 5.4 are not sufficient for your hydropower scheme and you would like to apply for higher levels of abstraction, you need to fill in this section.

See tables B, C and D in 'Flow and abstraction management' section of 'Guidance for run-of-river hydropower development'. Those tables set out indicative departures (possible additional flow) that we may consider for different types of scheme (for example, low head or high head).

You will need to provide supporting evidence, in an environmental report, to demonstrate that your scheme will:

- not prevent Water Framework Directive objectives from being achieved (see the Water Framework Directive, 'Nature conservation and heritage' section of 'Guidance for run-of-river hydropower development');
- maintain or improve fisheries, fish passage and fish migration (see the 'Fish passage and screening' section of 'Guidance for run-of-river hydropower development');
- not have unacceptable impacts (effects) on protected sites or species (see the Water Framework Directive, 'Nature conservation and heritage' section of 'Guidance for run-of-river hydropower development'); and
- not have unacceptable impacts on the rights of other water users, including anglers.

Send us a copy of your report with this form.

The amount of additional flow we may allow above the design flows in table A will depend on:

- the potential risk to the environment; and
- the measures you propose to avoid environmental damage or keep it to a minimum.

You may also need to know if your river has fish-migration issues. We will be able to provide you with this information.

If you are applying for a high head hydropower scheme, you will also need to provide the flow value for Q80 (the flow we expect to see for 80% of the time).

In this section, enter your proposed hands-off flow (HOF), maximum abstraction and percentage take above HOF (or, if using table D, percentage flow for protecting flow variability) on the form.

6 Fisheries considerations

6.1 Fish and eel screening at intake and outfall

There is a wide variety of fish and eel screening systems available to suit the species and size of fish and eel to be protected, environmental conditions and budgets.

In the table, give details of screening proposals for both water intakes and outfalls for your proposed hydroelectric-power scheme. Please include the following information:

- Type of screen – such as mesh screens, vertical or inclined bar racks, coanda screens (wedge-wire spillway screens).
- Size of the intake screen, in millimetres (mm).
- Dimensions (width × height) of the screen in millimetres (mm).
- Angle of the intake screen (in degrees) in relation to the main flow path (This should be adequate to effectively guide fish to the bypass channel).
- The approach velocity, for the intake screen only, in metres per second (m/s). Say how you worked this out (the approach velocity for screen-design purposes is defined as the velocity 10cm upstream of the screen, perpendicular to the screen face). Say how you worked this out.
- The 12-character National Grid Reference of the intake screen.

6.2 Fish and eel screening

State whether the fish and eel screening is in line with the 'Screening guidance' section in 'Guidance for run-of-river hydropower development', which you can get by calling us on 03708 506 506 (8am to 6pm Monday to Friday), or sending an email to enquiries@environment-agency.gov.uk.

6.3 Bywash channel

The design of a bywash channel is critical to the performance of any fish screen placed within a channel. The entrance to a bywash should be where the fish have the best chance of finding it. Please say whether the bywash is a separate channel, if the fish pass forms part of the bywash channel, and the dimensions. Please also include the units.

6.4 Other screening methods proposed

Other screening methods, such as behavioural fish barriers, can be used where physical screens are not practical. Behavioural fish barriers include louvre bar, acoustic, BAFF and strobe lighting.

Please provide details of any alternative screening methods you are proposing to use at the site.

6.5 Fish and eel passes

If you tick 'Yes'

If you are providing a new fish and eel pass (or passes) or existing passes are being refurbished, we will need to be sure that your plans are suitable for the location and intended range of species.

If there are already any upstream passes on the impoundment, we will have to consider the effect your proposed scheme could have on their performance. Details you provide on existing passes will help us.

If you tick 'No'

We will need to decide whether including a fish and eel pass will be a condition for your scheme to get permission. If there will be no upstream fish passes, explain why not.

7 Flood risk considerations

7.1 Flood risk assessment and flood consequence assessment

If you have already completed a flood risk assessment or flood consequence assessment, send a copy with this form.

7.2 Proposed in-river constructions or modifications that could change the flood risk

If you have not yet carried out a flood risk assessment or flood consequence assessment, provide details of the proposed in river construction or modifications which could change flood risk (for example, alterations to the width or height of the weir crest or obstructions to the flow on floodplains).

8 Planning considerations

8.1 Contact with your local planning authority

If you have already discussed your proposal with your local planning authority, please send us a copy of their advice.

If you have not discussed your proposal with your local planning authority we recommend that you contact them as soon as possible.

8.2 Environmental impact assessment

You will need an environmental impact assessment if your scheme will have a significant effect on the environment. You can ask your local planning authority for a screening opinion to help you find out if

you need an environmental impact assessment. If significant effects are expected, you will need to provide an environmental statement as part of your planning application.

You will need an environmental statement if:

- your scheme will produce 0.5 MW or more of power; or
- your scheme is in a sensitive area (for example, a site of special scientific interest or a nature reserve).

Please answer 8.3 and 8.4

8.5 Screening opinion

If you have a screening opinion from your local planning authority, send us a copy with your form.

8.6 Land contamination

Identifying the existing and previous uses of the site will give an indication of the possibility of contamination. If land contamination poses a risk of pollution to water, we will give the local planning authority advice when they are considering your planning application.

8.7 Preliminary risk assessment

If you do not provide at least a preliminary risk assessment with this form, we may object to your planning application. So we strongly advise you to send us a preliminary risk assessment with this form.

Providing a preliminary risk assessment will also help us decide whether a site investigation and more detailed risk assessment would be needed as part of your planning application. If you have any of this extra information already, send it with this form.

The preliminary risk assessment should identify possible pollutants for the site. It should also assess the previous uses of the site, their potential for contamination and potential risks to waters. For more information on contaminated land, see www.gov.uk/government/collections/land-contamination-technical-guidance.

Please note that we cannot give advice on the risks to human health arising from development on contaminated land. If necessary, you should get this advice from your local authority's environmental health department.

9 Checklist

Please read through the checklist and tick all the items you have enclosed. If you do not enclose all the items we need, we may return your application.

If you have design drawings or further details ensure that you provide document reference(s) for these.

10 Fees

To find out the pre application fee for your abstraction or impounding licence, see the **https://www.gov.uk/guidance/water-management-apply-for-a-water-abstraction-or-impoundment-licence**.

11 General Data Protection Regulations

Privacy notice: how we use your personal data

We are the Environment Agency and we run the water abstraction licence and impoundment licence service. We are the data controller. A data controller determines how and why personal data (personal information) is processed.

Our Personal Information Charter (**https://www.gov.uk/government/organisations/environment-agency/about/personal-information-charter**) explains how we deal with your personal information. Go to GOV.UK and search 'Environment Agency personal information charter'.

Why we are collecting personal data and what we will do with it

We the Environment Agency are the data controller. We are collecting and processing personal data to:

- process your abstraction or impounding licence applications including pre-application
- advertise your application, if required
- make your application available to the public and organisations that we have to notify, as required by the Water Resources Act 1991
- keep public registers up to date
- charge you for your abstraction or impounding licence as set out by our charges scheme
- process your records of abstraction (returns)
- make sure you keep to the conditions of your abstraction or impounding licence
- contact you about managing your abstraction or impounding licence or applying for other licences you may need
- contact you to gather feedback to improve the level of service that we provide
- register you to use our online water resources service

Processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the data controller. This is to undertake our responsibilities for managing water resources in England through our abstraction and impoundment licensing system.

We do not use your personal data to make an automated decision or for automated profiling.

Sharing and transferring personal data

We will not share your personal data with anyone outside of the Environment Agency without your consent unless we are allowed to do so by law. But we may pass your data on to our agents or representatives to process it for us.

We transfer your data through servers in the UK and Amazon Web Service (AWS) servers in Ireland. We store the data on servers in the UK and AWS servers in Ireland. The data will not be transferred outside the European Economic Area.

How long we hold personal data for

We will keep your personal data as required by law to maintain the Water Abstraction and Impounding Licence public register with details of all applications and our decisions on those applications.

We will keep other personal data for 7 years once the abstraction or impoundment licence ceases to have effect. After 7 years we will review retention in line with our standard information retention policy.

We will keep your personal data required to access the 'Manage your water abstraction or impoundment licence' service for as long as you require access to the service.

Contact details

Our Data Protection Officer (DPO) is responsible for independent advice and monitoring of the Environment Agency's use of personal information.

If you have any concerns or queries about how we process personal data, or if you would like to make a complaint or request relating to data protection, please contact our DPO:

Data Protection Officer, Environment Agency, Horizon House, Deanery Road, Bristol, BS1 5AH

Email: **dataprotection@environment-agency.gov.uk**

You can find out about your personal data rights from the Information Commissioner's Office (ICO) at www.ico.org.uk. The ICO regulate the data protection legislation. You have the right to lodge a complaint with them at any time.

12 Where to send the form

Please send this form and any supporting documents to:

Permitting and Support Centre
Water Resources Team
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield
S9 4WF

Or email to:

psc-waterresources@environment-agency.gov.uk

If you are not sure about anything in this form, phone us on 03708 506 506.

13 Next steps

We will check this application and contact you if we have any questions.

If we approve this application, we will send you the licence. We will contact you once this is done.

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, or you would like us to review a decision we have made, please let us know.

More information on how to do this is available from our complaints and appeals procedures (**https://www.gov.uk/government/organisations/environment-agency/about/complaints-procedure**)