



**Cyfoeth  
Naturiol  
Cymru  
Natural  
Resources  
Wales**

# Guidance Note

## Hydropower Guidance Note: HGN 11 Monitoring

This guidance note is not intended as a statement of law. It should be read in combination with, and in the context of, the relevant enactments and EU obligations. Nothing in this guidance is intended to give Natural Resources Wales (NRW) power to do anything that it would not otherwise have power to do, or exercise any of its functions in a manner contrary to the provisions of any enactment or any EU obligation. In the event of any conflict between this guidance and enactments or EU obligations the latter takes precedence.

This Guidance Note has been prepared by Natural Resources Wales (NRW) to provide information for applicants for abstraction and impoundment licences for the purpose of hydropower schemes on monitoring. Its contents may be updated periodically and Licence Holders should ensure they read the most recent version, which is available on the NRW website.

## Introduction

### The purpose of monitoring

Licences for hydropower schemes will include conditions about operational control and monitoring. It is the Licence Holder's responsibility to provide on-going evidence that they are complying with these conditions. Such evidence is gathered through what is referred to as compliance monitoring.

We may require environmental monitoring to ensure that individual schemes do not harm the environment or breach environmental legislation. Information from environmental monitoring is also used to improve future regulation of hydropower development through the process of adaptive management.

### Compliance monitoring

There are two main aspects of compliance monitoring:

- **Installation compliance** – Licence Holders need to be able to demonstrate to NRW that the scheme is being built and installed as licensed.
- **Operational compliance** – Licence Holders need to be able to provide evidence that the scheme continues to operate as licensed, complying both with environmental and

ecological safeguards and with the requirements for flow management. For some schemes, we will ask for monitoring of site-specific safeguards and make site visits.

## **Environmental monitoring**

We need to be sure that individual schemes don't harm the environment. For some schemes, we will ask for environmental monitoring to help manage any risks from these potential changes. Any monitoring we request will be proportionate to environmental risk. We will ask you to set up a suitable monitoring programme, which we will agree with you.

Monitoring information can be used to help mitigate such impacts and improve future management. You can also use any environmental monitoring evidence that you have gathered when you apply to renew your abstraction licence. We will ask for monitoring of site-specific safeguards and make site visits.

Environmental monitoring will normally be time limited, but over an appropriate timeframes to assess biological impacts.

## **Compliance monitoring**

### **Installation compliance**

We must be satisfied that schemes are built, installed and maintained in accordance with licence conditions. We will visit your scheme in line with our current inspection and compliance policy in order to confirm details on site. Key areas that we may check are:

- Has the scheme been built in accordance with the licence?
- Have the requirements for fish passage been met?
- Do any permanent structures comply with the conditions set down for the scheme's design?

### **Operational compliance monitoring**

When we issue licences, we specify requirements for operational controls and monitoring:

- It is the responsibility of the Licence Holder to demonstrate compliance with the licence conditions. These may include the quantity of water that can be abstracted, and the measurement of flows and water levels.
- The precise method chosen to measure and record such flows or levels may be different for each site.

- We will expect the Licence Holder to have a system in place which controls and monitors the flows in their schemes. The data from this system must be properly recorded so that the data can be used to demonstrate compliance with licence conditions.

The Water Resources Act 1991 requires us to specify on the abstraction licence the quantity of water authorised to be abstracted. We include the following:

- an instantaneous rate of abstraction
- an hourly rate of abstraction
- a daily rate of abstraction
- the annual abstraction.

Depending on the type of scheme installed, we may also require monitoring systems to demonstrate that the other safeguards needed are operating in accordance with the licence conditions. Examples of site-specific safeguards include fish passage flows and behavioural systems for screening fish.

### **Compliance monitoring for flows**

We may require you to monitor flows regularly, in order to show that the scheme is complying with your licence conditions.

The main requirements are to ensure that:

- flow in the depleted reach is always maintained as licensed
- the Hands-Off-Flow does not fall below the required level
- the flow through the hydropower scheme is assessed.

Where electronic controls are used to control flows and water levels, you must archive the data and be able to provide us with the data when asked. The frequency and timing of the data required will need to be agreed in writing with Natural Resources Wales.

The data may include:

- operational compliance data (on levels, flows etc) – either at intervals of 15 minutes, or at other specified intervals;
- volumetric data – for weekly, monthly and annual periods, or for any other specified periods.

The level and frequency of data required will reflect the level of risk the scheme poses to the environment, and to other licensed and lawful users.

If you do not control and monitor operations electronically, we shall specify other verifiable control and compliance systems to help you demonstrate your compliance with the licence conditions.

You need to assess both the volumes of water used by your hydropower scheme and the electricity generated. These figures are required by NRW on a scheme by scheme basis, and for national statistics.

It is possible to assess flow by converting the records of electricity generated. To do so you will need to calculate the conversion factor for your scheme.

## Environmental monitoring

For some schemes, we may require environmental monitoring. Normally we only ask for environmental monitoring to be carried out for a set period of time. However, we may extend this period if we need to gather more evidence of the scheme's environmental impacts.

### Environmental monitoring – the key points

- Applicants and Licence Holders may need to provide monitoring data to help us assess the environmental impacts of the scheme. If we require environmental monitoring to take place this may be necessary before, during and after implementation of the scheme. It may also be necessary to monitor areas not affected by the scheme to provide 'control data' to help assess the impacts of the scheme.
- If we ask for monitoring, it will usually relate to specific risks identified during the application process. The duration of monitoring will need to be long enough to accommodate natural variation in environmental conditions. Monitoring could be needed for several years or even cover the lifetime of the licence. However, monitoring will typically be time limited.
- If environmental monitoring demonstrates that the scheme is damaging the environment, we may ask you to amend the operation of your hydropower scheme. It is not generally possible to predict what might trigger the need to amend an operation or the steps that might then be needed. It is important to consider this possibility when planning your scheme.

## What do you need to do?

### Pre application:

At the pre-application stage we may ask you to carry out ecological surveys, so that we can understand the species and environment at the site.

We may also ask you to conduct monitoring at your site and similar sites nearby before we issue a licence, so that we have baseline data which we can use to set licence conditions and assess future impacts.

### Pre- and post-installation:

You can minimise the environmental impact of your scheme by carefully considering its location, design, and operation. Where schemes pose little risk to the environment, we may only require you to carry out compliance monitoring as described above.

However, we may still need you to monitor the environmental impacts before and/or after we make our decision on permitting your scheme. This may be necessary in locations where it is unclear whether the scheme design will adequately protect particular species or hydrological and morphological conditions. It is also important to understand what types of schemes have lower environmental impacts so we can improve future management.

Your scheme may contain features which are not covered by this guidance. If this is the case, we may ask you to carry out additional monitoring. We will specify this in our licence conditions for the scheme.

You will be required to undertake and pay for any monitoring specified in the licence.

### In a designated site:

Designated sites include Special Areas of Conservation, Special Protection Areas, Ramsar sites and Marine Conservation Zones.

If there is any risk of damage to the features for which the site is designated, you must act to mitigate this in advance and not rely on environmental monitoring after the scheme is operational. We may also ask you to carry out more extensive environmental monitoring before setting up your scheme – perhaps to identify the presence of particular features of conservation interest, or to determine site-specific responses to environmental variables.