

Hydropower Good Practice Guidelines

December 2012

Competing hydropower schemes

This guidance supplements the advice in section 5.1 (Water Resource Permits) of our Good Practice Guidelines (GPG) published in August 2009. We will incorporate this advice into a revised edition of the GPG, which we expect to publish in 2013.

Introduction

1. A key function of the Environment Agency in its role as an environmental regulator is the determination of applications for water resources (abstraction and impoundment) licences. Until recently, the Agency has very rarely had to consider competing licence applications for the same water for hydropower, largely because of the limitations on the persons entitled to apply (a right of access to the land adjoining the water is needed) and because of the small quantities (as a proportion of the river flow) normally applied for by those seeking to abstract water. But recent increased interest in hydropower schemes has led to a number of occasions where the Environment Agency has been faced by two competing proposals for hydropower schemes at the same site. The purpose of this guidance is to explain the Environment Agency's general approach to such situations for the benefit of future applicants.
2. In determining any application for an abstraction or impoundment licence for a hydropower scheme, the Environment Agency is bound by a number of general statutory duties e.g. sections 4, 6, 7 and 39 Environment Act 1995 and specific statutory duties e.g. sections 38, 39 and 40 Water Resources Act 1991 as well as the requirements of the Water Framework Directive, in accordance with which it will seek to act. It is emphasised that this guidance is non-statutory and is not intended to detract from any of those general or specific duties. Rather, it is intended to assist applicants who find themselves in the challenging situation of being faced with a competing hydropower proposal by another applicant at the same site.

The Environment Agency's Overall Approach

3. Water is an increasingly scarce and precious resource which is subject to a number of different pressures - for example, from discharges of sewage or industrial or agricultural pollutants; as a result of modification for flood defence or navigation; and as a result of changes in the climate including the risk of more frequent floods and droughts. Accordingly, it will be increasingly important for the Environment Agency to be able to make careful judgements about the desirability, both now and in the future, of licensing a particular proposed abstraction or impoundment, particularly where there is an actual or potential alternative scheme competing for a licence.

4. In managing water resources, the Environment Agency's key policy aims include promoting efficient water use and effective water resource management; protecting the environment; and working with all abstractors and users of water to ensure that they manage demand, and use and share water in the most efficient way. The Agency is also under a statutory duty to have regard to costs and benefits in exercising its licensing powers.
5. The Environment Agency actively supports the use of sustainable energy, including hydropower, to help meet UK and Welsh Government renewable energy and greenhouse gas reduction targets. That said, if not properly designed, hydropower schemes can threaten fish populations and other aspects of river ecology and can increase flood risk or adversely affect land drainage. The Environment Agency's overall aim, therefore, is to ensure the development of the best possible sustainable hydropower schemes: see our Hydropower position statement.
6. Once approved and built, a hydropower scheme is likely to remain in situ for decades, perhaps for many generations. A decision to approve a particular scheme therefore has long-term implications for the environment (both locally and potentially nationally) and for the amenity of the local area – hence the need for well-designed, high quality, sustainable schemes.
7. Where two or more (current or prospective) applicants seek to develop hydropower schemes at a single site, there may be a number of possible options:
 - a. The applicants may be able to work together to bring forward a joint (shared) scheme, agreeing between themselves such issues as how investment in the scheme, and the electricity generated (or any profit from such generation), is to be split between them. They will then be able to seek the necessary licences from the Environment Agency for the joint scheme and these will be considered in the usual way [see the Environment Agency's hydropower handbook and Good Practice Guidelines].
 - b. It may be possible for the water at the site to be shared, with each of two applicants installing their own hydropower equipment. This will not be possible at all sites and may involve the need for each party to accept a lower abstraction level than that originally proposed. It will also normally entail the need for cooperation and agreement between the parties. This issue is considered further below under 'Split schemes'.
 - c. If neither a shared scheme nor a split scheme is possible, it will become necessary for the Environment Agency to decide which (if any) of the proposed schemes should be permitted to proceed: see below under 'Factors to be considered when choosing between competing schemes'.
8. There are significant benefits to applicants in agreeing a shared or (where this is considered by the Environment Agency and the applicants to be feasible) a split scheme. Where agreement can be reached, both parties may be able (subject to Environment Agency approval) to benefit from a hydropower scheme at the relevant location. In the absence of agreement, there is a risk that neither scheme – or at most only one scheme – will be licensed. We therefore encourage parties to reach agreement if possible.

9. A number of general points should be understood by applicants who are unable to reach agreement:

a. In reaching a decision as to whether to license a particular scheme, the Environment Agency will consider applications on their merits having regard to any other (actual or potential¹) competing applications relating to the same water of which it is aware. The fact that a particular application has been received first in time, or that a particular applicant contacted the Environment Agency first, will not normally be relevant. The ultimate question in every case will be which scheme (if any) is desirable (or most desirable) in the public interest as informed by our legislative duties and policy aims referred to above. See further 'Factors to be considered when choosing between competing schemes', below.

b. It follows that the Environment Agency does not operate a 'first come first served' policy in relation to competing hydropower applications. Rather, the Environment Agency will usually be concerned (where it is necessary to choose between competing schemes) to determine which of two or more competing applications is most desirable in the public interest and/or of greater public benefit, regardless of which application is received first.

c. It cannot be assumed that the Environment Agency will necessarily license one of two or more competing applications. There may be particular circumstances where it is considered that it is not in the public interest to license any of the existing applications – for example, in a case where none of the proposed schemes is of sufficiently high quality or where a river is of particularly high quality for fish and any scheme would be damaging or detrimental to fish populations. Once again, the long-term nature of most hydropower schemes is of relevance here.

Split schemes

10. In many cases, hydropower schemes will propose to use the maximum available amount of water as set out in the Environment Agency's Good Practice Guidelines. It will not normally be viable to have two schemes using that maximum amount.

11. Where the applicants express an interest in pursuing the possibility of a split scheme, the Environment Agency will consider with the applicants whether a split scheme – two hydropower schemes each utilising a proportion of the available flow – is feasible at the site in question. Such consideration may include the following factors, where relevant:

a. The physical location and the feasibility, desirability and impact (including visual impact), of installing two sets of hydropower equipment.

b. The available flow at the site and the available flow for each of the two schemes.

¹ In considering a potential competing scheme in circumstances where no application has yet been made, the Agency will consider in particular the likelihood of an application being made in relation to that scheme in the future. The circumstances may vary from, on the one hand, a scheme which has already gone through detailed pre-application discussions and intra-Agency consultation to, on the other, a scheme which has, to date, only been the subject of an informal enquiry.

c. The viability – both in practical and economic terms – of the two schemes with a share of the available flow.

d. The enforceability of licence conditions for the two schemes. In particular, a feasible means of apportioning the available flow between the two schemes and of enforcing a 'Hands Off Flow' licence condition independently for each scheme will be needed. It is likely that control systems for two schemes will require shared elements, for example one system to monitor flows and/or water levels. The details are likely to be site specific.

e. Any agreement which the applicants have made, or propose to make, in relation to the split scheme – including any agreement as to, for example, shared costs; monitoring; operation of scheme and fish pass; and mutual co-operation.

12. In some cases, the Environment Agency may conclude that a split scheme is not feasible, or is not desirable in the public interest, at the site - for example where there will be unacceptable impacts upon fish passage, weir pools or increased flood risk. In such cases, if both applicants still wish to proceed with schemes at the site, the applicants may wish to consider proposing a joint (shared) scheme. Failing this, it may fall to the Environment Agency to choose between the two competing schemes.

13. Shared schemes are likely to be preferred to split schemes for environmental reasons especially in relation to fish passage, all others things being equal. On split schemes the siting of a single fish pass may not be effective, leading to the need for two fish passes to utilise the attraction flow from each scheme.

Factors to be considered when choosing between competing schemes

14. If the Environment Agency decides that only one of two (or more) competing schemes at a particular site may be licensed, it will then (where appropriate) consider which of the schemes (if any) is to be preferred. In doing so, some or all of the factors set out in paragraph 17 below may be of relevance, depending upon the characteristics of the site and all the other circumstances of the case. It is emphasised that the list below is non-exhaustive: other factors may be relevant and may be of equal, or greater, importance (again, depending on the circumstances).

15. The ultimate question in every case will be which of the proposed schemes, if any, it is desirable, in the public interest, for the Environment Agency to license. The Environment Agency's role will be to make decisions about the appropriate use of the site for the benefit of existing and future generations, bearing in mind the long-term nature of many hydropower schemes and the Environment Agency's statutory remit. That remit includes: contributing to sustainable development, conserving and enhancing the natural beauty and amenity of waterways and land associated with them, conserving the aquatic environment, protecting fisheries and securing the proper and efficient use of water resources.

16. The Environment Agency's overall aim in making its decision will be to ensure the development of the best possible sustainable hydropower schemes (see our Hydropower Position Statement) both now and in the future. If faced with two or more competing schemes, only one of which (at most) can be licensed, it will choose between the schemes on their merits by deciding which scheme offers the greatest public benefit by

reference to the factors set out below (this list is not exhaustive – see paragraph 14 above), including in particular the need for efficiency in the use of water resources and the need to protect the environment.

17. In deciding which scheme (if any) should be licensed, the Environment Agency will normally give particular weight to the following issues (although other issues may be of equal or greater weight in any particular case):
- a. The optimum use of available water resources considering for example (i) the amount of water used; (ii) the reasonable requirement for water (iii) the amount of power proposed to be generated and (iv) any adverse impacts in water resources terms.
 - b. Local and wider environmental effects of the proposed scheme. Such effects may be positive or negative and the effects considered might include, for example, changes in hydromorphology, other changes to water body status, changes to fish passage through inclusion of a fish pass, provision of appropriate screening and site layout design of the scheme to enable best measures for fish protection/passage.
 - c. Assessment and mitigation of flood risk of the proposed scheme both where a scheme requires consent from the Agency for works and in its role as adviser on flood risk with a duty to exercise a general supervision over all matters relating to flood risk.
 - d. Impact on other water users of the proposed scheme in terms of effects on protected rights of existing abstractors and lawful uses of water by others for agricultural, industrial, public supply or recreational purposes including fishing and on requirements of fisheries, navigation or land drainage.
 - e. The impact of the scheme in climate change terms, including both (i) carbon emissions saved by electricity generation, (ii) the amount of renewable energy generated and (iii) embedded carbon and the lifecycle carbon footprint of the scheme.
18. Annex 1 sets out particular issues which will usually be considered in reaching the decision on which proposal (if any) to licence. To undertake a comparison of potentially relevant factors the Environment Agency will need to be provided with information in the environmental report accompanying each scheme application

Conclusion

19. Every case will turn on its own merits. The Environment Agency will seek to grant those hydropower applications which are of greatest public benefit, bearing in mind their short and long-term effects on the local and national environment and the overall desirability of any particular scheme in the public interest, when considered against all other actual or potential proposals at the site.

Annex 1 – non-exhaustive list of potentially relevant factors where the Environment Agency considers two or more competing hydropower applications

a. Water resources, fish passage and technological issues

- the location of the proposed scheme: an ‘on weir’ scheme will normally be preferred to a scheme which creates a depleted reach, as it is likely to reduce the potential environmental impact of the scheme;
- the scheme that best demonstrates a reasonable requirement for the water and efficient use of such water;
- the scheme which best includes provision of a fish and/or eel pass and best facilitates fish passage;
- the scheme which best includes appropriate fish and eel screening of the turbines as set out in the Environment Agency’s GPG and ensures protection against fish entrainment or impingement;
- the scheme which best meets the GPG requirements for design/environmental mitigation;
- the scheme which makes best use of water available (see the GPG guidance);
- the scheme which best suits the proposed turbine type to the location, bearing in mind both environmental factors and aesthetic/amenity issues at the location.

b. Hydromorphological impacts of location of turbine/HEP scheme in relation to flows in the river channel

- the scheme which best considers and mitigates impacts on flow pattern particularly with respect to the intake and outfall;
- the scheme which best considers and mitigates impacts on the weir pool morphology/ecology;
- the scheme which best considers and mitigates impacts on sedimentation;
- the scheme which best considers and mitigates impacts of the scheme on flood risks;

- the scheme which best considers and mitigates impacts of the scheme on other water users such as fisheries interests, recreational uses, agricultural or industrial uses.

c. Impact of the scheme in relation to climate change.

- the scheme which best considers the carbon footprint of scheme design and construction including factors relating to the design of the scheme, including cost-effectiveness and sustainability – for example, construction costs, materials used, lifetime of components;
- the scheme which best considers carbon saving (in absolute terms) and/or relative to carbon cost of scheme construction;

d. Other factors

- the scheme which best considers aesthetic criteria, including heritage considerations and has the least impact on natural beauty and local heritage including on buildings and sites of archaeological, architectural, historic or engineering interest.
- electricity distribution issues (e.g. environmental impact of infrastructure necessary for connection to the grid) and energy efficiency of the scheme.
- community involvement/benefit: for example, a community scheme using the electricity locally and avoiding use of grid distribution may have significant environmental benefit.
- legal issues relating to the ownership and responsibility for any weir/impoundment: the proposal that best demonstrates the licence holder will have complete control over the operation of the scheme.

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NA/EAD/1212/pdf/v1

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