

SEPA's consultation on its guidance for developers of run-of river hydropower schemes

Response to consultees

November 2010

1. Introduction

- 1.1 SEPA consulted on new guidance to developers of run-of-river hydropower schemes in March 2010. The consultation closed on 30 April 2010. Over 50 responses were received.
- 1.2 This paper describes how SEPA has taken account of the main issues raised by consultees. An updated version of the guidance, which takes account of these comments, is available on SEPA's website.
- 1.3 The Table below provides information on the range of interests represented in the responses.

Respondee category	Number of Responses
Hydropower-related businesses and representative bodies for such businesses	12
Responsible authorities	5
Non-Government organisations - environment and recreation interests	15
Individuals	25

2. Responses to specific questions

- 2.1 SEPA asked consultees to consider a series of questions. The sections below summarise SEPA's response to issues raised by consultees in response to these questions.

Q1: Appropriateness of acceptability criteria

Taking account of the mitigation described in Part B, do you agree that sub-100kw schemes identified as provisionally acceptable according to the criteria described in Part A will not cause deterioration of the water environment?

- 2.2 The guidance sets out a series of criteria in the form of checklists that can be used by developers to identify sites and scheme designs that will not cause significant adverse impacts on the water environment.

- 2.3 Respondees from hydropower-related businesses and their representative bodies agreed with SEPA's view that developments meeting the criteria presented in the guidance would not cause significant adverse impacts on the water environment.
- 2.4 A number of respondents representing environmental and recreational interests voiced concerns about some of the criteria. In particular, it was suggested that one type of site, steep streams, might be important for sea trout. It was also suggested that identifying degraded sites as potentially suitable for hydropower development might compromise future improvement of those sites.

SEPA response

The types of site and scheme designs identified in the first version of the guidance as likely to be acceptable have been retained in the updated version.

The criteria relating to steep streams are based on data on the distribution of migratory fish species, including sea trout. For this reason, SEPA does not believe that use of the types of steep stream sites specified in the guidance will pose a significant risk to sea trout stocks.

The guidance aims to direct developers to degraded sites that are not planned for improvement (eg because the degraded stretch is too small to affect the status of a water body). SEPA will make this clearer in the updated version of the guidance so as to avoid any misunderstanding.

Q2: Additional acceptability criteria

Are there other circumstances under which you think sub-100kw schemes could be developed that will not (cumulatively or individually) pose a risk to the water environment?

- 2.5 No additional circumstances in which schemes would not be expected to have significant adverse impacts were identified by consultees.

SEPA response

No additional types of site or scheme designs have been included in the updated version of the guidance.

SEPA has made a number of drafting improvements to the checklists to improve clarity. The guidance now makes clear that schemes of any size that meet the criteria in the checklist will be acceptable, subject to consideration of their effects on the interests of other users of the water environment..

Sometimes, part of a scheme may meet the checklist criteria (eg because it is located in a degraded part of the water environment). In determining an application for such a scheme, SEPA will assess whether the benefits provided by the whole scheme outweigh the adverse impacts of only those parts of the scheme not meeting the checklist criteria.

Checklist D has been revised to make clear that a scheme intended to produce < 0.35 gigawatt hours is unlikely to be acceptable if it would cause deterioration of the status of a high status water body.

Q3: Helpfulness of checklist format

Do you find the checklist format for setting out the criteria for identifying acceptable sub-100kw schemes helpful? Please make any suggestions you may have for how SEPA could make the information clearer to users?

- 2.6 The guidance incorporated the criteria for identifying likely acceptable sites and scheme designs into a series of checklists. These were intended to enable developers to assess the likely acceptability of a potential scheme at a very early stage of the development planning process.
- 2.7 Most respondents who commented said that they found the checklist format helpful. Many asked for further simplification and made suggestions for additional clarification.
- 2.8 Some respondents from hydropower-related businesses or their representative bodies were concerned that SEPA's approach would be too inflexible to respond to local circumstances.

SEPA response

SEPA has retained the checklist format in the updated version of the guidance.

The updated version explains how the checklists can be used to streamline and simplify assessment of schemes with a larger installed capacity than 100 kilowatts. SEPA has also added a flow chart to help clarify what considerations apply in what circumstances when it determines an application.

In due course, SEPA intends to make the checklists available as forms on its website. In the longer-term, SEPA hopes to make much greater use of web-based communication with developers.

SEPA agrees that, in practice, it will not always be clear cut whether the criteria are

met. The updated version clarifies that SEPA will not apply the guidance inflexibly in such situations. Instead, it will consider the balance of risks and benefits in each such case.

Q4: Optimising the use of the resource

Do you agree that the draft criteria on the efficiency of schemes of 100kw or more (in terms of energy output per length of river upstream affected) will help:

- ***Deliver Scottish Ministers' objective of minimising the use of the resource;***
- ***Ensure deterioration of status is not caused where there are significantly better environmental options for generating the same quantity of renewable energy?***

2.9 The guidance incorporated a series of criteria intended to:

- help optimise the potential for hydropower generation; and
- ensure that deterioration of status is not permitted if there are significantly better environmental options for generating the equivalent amount of renewable energy.

2.10 The criteria were to be applied to all proposals for schemes with an installed capacity > 100 kilowatts. Under the criteria, a proposal that would cause deterioration of the status of a water body would not normally be acceptable if:

- (i) its installed capacity was \leq 500 kilowatts;
- (ii) its annual electricity output per length of river or stream it would adversely affect is equivalent (pro rata) to less than 1.75 gigawatt hours per 500 metres in water bodies at high status and less than 1.75 gigawatt hours per 1,500 metres in water bodies at good status; or
- (iii) the particular importance of the site makes the adverse impacts of the proposal particularly significant.

2.11 Respondees from hydropower-related businesses or their representative bodies were strongly opposed to the use of a performance standard based on "electricity output per unit length" as a means of promoting optimised use of the water environment. They were particularly concerned that the energy output per unit length criterion for high status water bodies would be very difficult to achieve. However, no respondees proposed an alternative means of securing the optimal use of the resource.

2.12 Respondees representing environmental and recreational interests made no substantive comments on this aspect of the guidance. However, the Salmon and Trout Association questioned why it was acceptable to provide a lower level of protection in Scotland than in other European countries, particularly Germany. In Germany, proposed schemes of

less than 500 kilowatts must have no significant adverse environmental effects if they are to benefit from the country's feed-in-tariff system.

SEPA response

SEPA will not apply the criteria relating to electricity output per unit length [bullet point (ii) in paragraph 2.10 above] at this time. SEPA will review its position if there is evidence that the other provisions of the guidance are insufficient to encourage optimised use of the resource.

The updated version of the guidance retains the criteria referred to in bullet points (i) and (iii) in paragraph 2.10 above. To ensure the approach takes account of the variation in output of schemes that have the same installed capacity, the 500 kilowatt criterion has been changed to an annual electricity output threshold (1.75 gigawatt hours per year).

Proposals that would generate < 1.75 gigawatt hours per year will not normally be acceptable if they cause deterioration of status. SEPA believes that it cannot reasonably conclude that the criteria specified in European law for permitting deterioration of the status of a water body would be met unless such proposals also provide other significant social or environmental benefits.

SEPA will continue to assess proposals that would generate \geq 1.75 gigawatt hours per year on a case-by-case basis using its published regulatory method (WAT-RM-34), as updated from time to time.

In relation to high status water bodies, SEPA has recently reviewed its data. Around 7.5 % of water bodies in Scotland are classified as at high status. This figure is not expected to increase. Consequently, the overall proportion of water bodies at high status will decline if hydropower developments on such water bodies affect their status. For these reasons, in SEPA's judgement, the environmental importance of such water bodies is greater than indicated in the current version of the supporting guidance to its published regulatory method (WAT-SG-67). Based on the application of the generic criteria in that supporting guidance to the latest data, high status water bodies are of at least medium environmental importance.

Q5, 6 & 7: Views on required mitigation

Do you agree that the mitigation identified will help achieve the Scottish Ministers' objective of minimising the adverse impacts of hydropower scheme developments on the water environment?

Do you agree that, in general, the mitigation identified is likely to be practicable?

Do you think that there are other practicable measures which could be taken to achieve an equivalent or greater level of mitigation?

- 2.13 The guidance included a list of the mitigation that SEPA expects to be taken to minimise the adverse impact on the water environment of proposed schemes. This encompassed requirements in relation to the protection of river flows, provision for fish passage and the management of sediment.
- 2.14 A range of views were received on the mitigation relating to the protection of river flows. In general, respondents representing hydropower-related businesses questioned the scientific basis for the specified flow requirements. Respondents representing environmental or recreation interests suggested that a greater proportion of flow should be left in the river rather than abstracted for hydropower generation. Scottish Renewables suggested that the appropriate flow mitigation may vary depending on the characteristics of the site and that the guidance should provide flexibility in this respect.
- 2.15 A number of respondents representing environmental and recreation interests suggested that SEPA require mitigation to minimise the risks to the water environment of very rapid flow rises and falls resulting from the operation of hydropower schemes (sometimes called 'hydro-peaking').

SEPA response - protection of river flows

The updated version of the guidance retains the original version's mitigation requirements for protecting river flows.

This already provided for site-specific characteristics to be taken into account. The flexibility is set out in general terms in the introduction to Part B of the updated version as well as in sections dealing with particular mitigation requirements (eg protection of high flows). SEPA will include advice on the use of this flexibility when training its staff in the application of the guidance.

The updated version includes references to the sources of external advice SEPA took into account in producing the list of mitigation.

SEPA has not included mitigation requirements in relation to any effects of a proposal on the rate of river flow rises and falls. SEPA does not have evidence that the normal operation of run-of-river schemes (as opposed to storage schemes) is likely to lead to significant hydro-peaking problems.

- 2.16 A number of respondents representing hydropower-related businesses or representative bodies suggested that the maximum screen gap size for intake structures (ie 10 mm)

was overly stringent. Similar concerns were raised regarding the maximum gap size for tailrace screens (ie 20 mm).

- 2.17 Scottish and Southern Energy considered that the way the approach velocity to intake screens was specified was too complicated and that the velocity set was too high to protect fish.

SEPA response - fish screen gap sizes

The updated version of the guidance makes clear that SEPA expects developers to use coanda screens to screen intakes wherever possible. These screens normally have gap sizes much less than 10 mm.

The updated version still provides flexibility to use other types of screens if the use of coanda screens is impracticable. It also retains the default maximum gap size of 10 mm for such screens. This gap sized is based on the latest published literature on intake screens. However, the updated version allows for larger gap sizes to be used where certain criteria relating to the characteristics of the fish populations at a site apply

Similarly, the default gap size for tailrace screens of 20 mm has been retained. However, the updated version allows for larger gap sizes or for no screen at all, under certain circumstances.

- 2.18 A number of respondees representing hydropower interests questioned the requirement for fish passes to operate at flows equivalent to Qn10.
- 2.19 Scottish and Southern Energy argued that the requirement that the plunge pool on the downstream side of the intake structure should be 1/3 the height of the weir could result in unnecessarily deep plunge pools being required where the height of a dam exceeded a few metres.

SEPA response - fish pass design

The updated version of the guidance makes clear that fish passes should be capable of being used for upstream fish migration when river flow upstream of the intake rises to Qn10. This does not mean that the fish pass has to operate with a Qn10 flow through it.

The plunge pool requirements have been amended to introduce a maximum depth requirement of 1 metre.

2.20 British Hydropower Association suggested that the sediment management requirements would be too onerous for all but the most profitable schemes.

SEPA response - sediment management

The appropriate management of sediment accumulating upstream of the intake structure is necessary to maintain the operation of the scheme as well as to help prevent downstream reaches from being deprived of sediment. The mitigation requirements are in line with SEPA's standard requirements in relation to the management of sediment accumulations at small dams and weirs.

Scottish & Southern Energy operates a number of intake structures that are designed to allow high flows to move sediment over them and into the rivers downstream. At its suggestion, this technique for securing low-maintenance, sediment management has been included in the updated guidance.