

Response to SEPA consultation on run of river hydro guidance from Gavin King-Smith

Administrator of the **micro hydro association** (<http://www.microhydroassociation.co.uk>), representing over 40 current and potential generators and 10 suppliers of resources for small hydro scheme development.
Proprietor of **High Appin Hydro** High Appin, Tynron, Thornhill, Dumfries & Galloway DG3 4LF 01848 200770 gkingsmith@gmail.com

Question	Response
General	<p>I have been in touch with SEPA since December 2008 on the subject of guidance for small hydro schemes, specifically with David Sigsworth, David Ruczkowski of the Dumfries Office, Michael Wann in Dingwall and Pauline Silverman. I welcome the decision to consult more widely on the draft proposals that have now emerged.</p> <p>I have two main concerns:</p> <ol style="list-style-type: none">1 there is a problem in how the objective that “no deterioration will be permitted” has been interpreted; deterioration cannot at present be quantified given the absence of data on the impact of hydro schemes under 100kW: I consider it important that studies are commissioned and data collected over a reasonable number of years in order to assess impact before guidelines are applied rigorously2 the guidelines lack proportionality in the requirements for assessing and mitigating the impact of the smaller scale schemes, particularly those involving very small amounts of power production (sub 50kW and sub 15kW), rather than focusing on larger schemes; this conflicts with SEPA’s obligations to protect the environment. <p>Should the guidelines be implemented as drafted I believe that fewer schemes would be implemented and the benefits of small-scale hydro technology lost. I therefore propose that the guidelines be revised and then offered as a provisional code of practice. SEPA should exercise their powers to refuse a licence for, or to impose special conditions on, a proposed scheme only where there is supportable evidence that it could cause significant environmental damage.</p> <p>Responses below amplify these concerns.</p> <p>Throughout I suggest that the term “developers” be replaced by “proprietors/developers” since many small schemes will be initiated and implemented by proprietors rather than by developers.</p>

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Question	Response
<p>Part A General</p> <p>“Likely acceptable schemes include those:</p> <ul style="list-style-type: none">• situated in degraded parts of the water environment;• situated in small, steep streams;• delivering an overall improvement to the ecological quality of the water environment;• using only that proportion of flow that can be abstracted from the river or stream without breaching river flow standards.”	<p>I agree with these criteria and that mitigation measures should be taken but only where found necessary (see answers to 1 & 2 below). I consider that the criteria will apply to the majority of small economically viable run-of-river schemes. I base this assertion on my surveys to date by map, and in many cases on the ground, of over sites mostly in Dumfries and Galloway each with the potential for a hydro scheme (76% of sites <15kW, 23% 15-50kW, 1% 50-100kW).</p> <p>For this reason I propose that for the present SEPA award licenses for such schemes by default, subject to proprietors/developers being required to commit to adherence to a provisional code of practice with measures similar to the draft guidance. As data on the impact of such schemes on the environment is collected and analysed, it may then become possible to develop quantified criteria on the basis of which licences can be awarded and conditions set on new schemes. If found necessary for environmental protection purposes, existing licences could be modified with additional conditions.</p>
<p>Part A criteria – sub-100 kilowatt schemes</p> <p>1. Taking account of the mitigation described in Part B, do you agree that sub-100 kilowatt schemes identified as provisionally acceptable according to the criteria described in Part A will not cause deterioration of the water environment?</p>	<p>I agree that schemes under 100kW which put in the mitigation measures described in Part B are unlikely to cause any significant deterioration of the water environment. I also suggest that schemes with mitigation may in some cases improve it, for example where mitigation improves upstream migration past old dams or other impediments, as otherwise such stretches of river would not be assessed at all and hence no improvements identified.</p> <p>However, I do not agree that mitigation should always be a requirement (see response to question 2).</p>

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Question	Response
<p>2. Are there other circumstances under which you think sub-100 kilowatt schemes could be developed that will not (cumulatively or individually) pose a risk to the water environment?</p>	<p>All human activity will carry the risk of damage to some feature of the environment, some activities considerably more so than others. With its inevitably limited resources, it will be important for SEPA to focus on developments that have the potential of causing significant and measurable damage (commercial and industrial building, roads, forestry, wind farms, large hydro schemes, large agricultural operations) rather than on small hydro schemes where very little knowledge exists to indicate whether there is any damage to the environment.</p> <p>The risk of cumulative damage could arise only after a period of development. This should allow time for SEPA to collect data on the impact of a statistically significant number of small schemes and on the effectiveness of mitigation measures.</p> <p>See also my response to "Part A General" above</p>
<p>3. Do you find the checklist format for setting out the criteria for identifying provisionally acceptable sub-100 kilowatt schemes helpful? Please make any suggestions you may have for how SEPA could make the information clearer to users.</p>	<p>The checklist approach is in my opinion workable in principle, but could be greatly simplified for the smallest hydro scheme proposals (under 15kW capacity); such proposals would be well served by a much shorter checklist with tick boxes to be confirmed by the proprietor/developer and reviewed by SEPA. This would also reduce the administrative load for SEPA.</p> <p>The following clarifications would be helpful:</p>

Question	Response
3. continued	<p>Checklist A</p> <p>Q1: give reference to website containing details of “heavily modified water bodies”</p> <p>Q2: add: (iii) subject to forestry operations upstream</p> <p>Q3: give reference to website containing details of river basin management plans</p> <p>All remaining checklists</p> <p>In order for proprietors/developers to assess whether (as described in part B):</p> <ul style="list-style-type: none"> • <i>the mitigation measure is unnecessary because of the site characteristics;</i> • <i>another measure will deliver equivalent mitigation;</i> • <i>the mitigation measure would be impracticable to incorporate into the development (ie for reasons of unusual technical constraints at the site)</i> <p>it would be helpful to give reasoning in accompanying notes for the chosen values of the parameters (e.g. catchment area, length of watercourse between intake and tailrace).</p> <p>Checklist B:</p> <p>Q5: give reference to website containing details of status of water bodies.</p> <p>Checklist C</p> <p>Q1 and Q2: propose remove the word “significantly” for small schemes below 50kW</p> <p>Q3: explain the example</p> <p>ANNEXE A PART A Guidance paragraph 3</p> <p>Last sentence appears to prevent sub 100kW schemes being installed on any stretch of water where there is a possibility, however remote, that trout, or even salmon, may at times find a suitable habitat – this would be a disproportionate measure since only a small proportion of the trout or salmon population in the country would be affected, at least in the first few years of development. This last sentence should be removed or expanded to explain how this item of guidance should be interpreted.</p>

Question	Response
<p>Part A criteria – 100 kilowatt + schemes</p> <p>4. Do you agree that the draft criteria on the efficiency of schemes of 100 kilowatts or more (in terms of energy output per length of river or stream affected) will help:</p> <ul style="list-style-type: none"> • deliver Scottish Ministers' objective of optimising 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? 	<p>No comment on larger scale schemes other than to note that the potential damage from such schemes would dwarf that possibly arising from smaller schemes, at least for a considerable period of time.</p>
<p>Part B mitigation measures</p> <p>5. Do you agree that the mitigation identified will help achieve Scottish Ministers' objective of minimising the adverse impacts of hydropower scheme developments on the water environment?</p>	<p>Deterioration could occur through multiple other causes outside the scope of these guidelines (large-scale hydro schemes, forestry, large-scale agriculture, wind farms, natural events), so in my opinion the identified mitigation measures will have little effect. More importantly, too stringent regulation could discourage initiatives and stifle small scale hydro developments. This would cut off access to a resource with significant economic and social consequences (e.g. job creation – see recent report for the Scottish Executive: http://www.scotland.gov.uk/Publications/2010/01/19141527/2). It would also prevent reductions in CO₂ emissions in a significant way since, relative to other small-scale renewable energy technologies, hydro offers more reliable and efficient generation of “green” electricity.</p>

Question	Response
<p>6. Do you agree that, in general, the mitigation identified is likely to be practicable? If not, please give your reasons for this view.</p>	<p>The mitigation measures identified may be practicable but would not always be necessary and could in some cases lead to unnecessary costs or to delays (see above).</p> <p><i>Introductory paragraph exceptions:</i></p> <ul style="list-style-type: none"> • <i>the mitigation measure is unnecessary because of the site characteristics;</i> • <i>another measure will deliver equivalent mitigation;</i> • <i>the mitigation measure would be impracticable to incorporate into the development (ie for reasons of unusual technical constraints at the site).</i> <p>See answer to question 3 "All remaining checklists"</p> <p><i>Paragraph 1.1</i> <i>"Sites:</i></p> <ul style="list-style-type: none"> • <i>with populations of salmon or sea trout;</i> • <i>designated for the conservation of aquatic plants or animals;</i> • <i>with catchment areas upstream of the tailrace of <10 km²;</i> • <i>where the wetted width is significantly reduced at flows below Qn90."</i> <p>It should be clarified whether these criteria are intended to be taken together or individually or in some combination thereof. For example requiring a hands off flow of Qn90 or more might represent a disproportionate constraint if the criterion of catchment upstream of the tailrace being <10km² were also to be applied.</p> <p>I suggest instead: <i>"Sites</i></p> <ul style="list-style-type: none"> • with populations of salmon or sea trout and/or designated for the conservation of aquatic plants or animals AND • with catchment areas upstream of the tailrace of <10 km² or where the wetted width is significantly reduced at flows below Qn90."

Question	Response
6. Continued	<p><i>Paragraph 1.2</i> This mitigation should be discretionary until such time as evidence is obtained of the impact of sustained hands-off flow. Because of the highly variable nature of flows that occur, I consider this requirement would be impractical to monitor and achieve in an effective manner on small schemes with design flows less than, say, 0.3m³/s.</p> <p>As an additional criterion, schemes where a significant impoundment is involved should be allowed to use full capacity abstractions to achieve optimum efficiency. This is effected by repeatedly depleting the impoundment to an acceptable level and then allowing it to be replenished.</p> <p><i>Paragraph 1.3</i> This mitigation is likely to be redundant for many sub 100kW schemes. These are often designed with mean flow as the maximum abstraction rate.</p>
7. Do you think that there other practicable measures that you think could be taken to achieve an equivalent or greater level of mitigation? If yes, please describe the mitigation and your reasons for believing that it would be practicable and effective in minimising adverse impacts on the water environment?	<p>Other improvements may be appropriate when developing schemes, for instance measures to improve stability of watercourse banks, and to improve drainage in moorland in ways beneficial to species diversity and improved land use. However I consider that these could be achieved by providing good practice guidelines, not only to proprietors/developers, but also to landowners not seeking to install hydro schemes.</p>
Until the guidance is finalised, SEPA will apply this draft when carrying out its regulatory functions	<p>In view of the significant number of potential small-scale hydro schemes and the urgency to respond to CO₂ reduction initiatives, SEPA should aim to finalise these guidelines with the suggested improvements quickly, publishing them as a provisional code of practice. In this way, work can commence on schemes and the resources for implementing schemes can be expanded as soon as possible without fear of licence rejections, delays, or imposition of disproportionate conditions.</p>