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GUIDANCE FOR DEVELOPERS OF RUN-OF-RIVER HYDROPOWER SCHEMES – CONSULTATION RESPONSE

Dear SEPA,

I am writing to provide a response to your consultation on the draft guidance for developers of run- of-river hydro schemes.

TLS Hydro Power are developers and operators of small hydropower schemes. We believe that hydropower can make an important contribution to meeting the country's targets for renewable energy generation without significant negative impacts on the environment.

We currently operate 5 schemes in Scotland (ranging between 100kW and 700kW) and we have several more at varying stages of development including a 900kW project which has just received its CAR licence. Therefore the proposals in this document have the potential to very greatly affect our core business. Due to the short timescale of the consultation we have not had a chance to review our entire portfolio of projects or to fully understand the extent that this will affect the small hydropower industry. However, in consultation with SEPA we have identified at least one project in our portfolio (Dalmigavie – for Further details refer to Richard Fyfe) which does not appear to be consentable under these new regulations.

The main point we wish to make in this consultation response is that we believe the flow standards used to assess hydro schemes should be urgently reviewed. This would achieve appropriate and environmentally sustainable use of Scotland's small hydropower resource without causing deteriorations in waterbody status which may have political implications in Europe.

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Secondary and important points we have are:

1. The document goes far further than ministerial statement

For projects of less than 100kW the statement acknowledges the value of small projects but says that the value is not significant enough to warrant a deterioration in the water environment. Although not specific, it appears that this refers to preventing deteriorations in water body status. The guidance goes further than this and does not allow a deterioration or any environmental impact. For projects greater than 100kW the implication of the statement (albeit very subjective) is that these projects are valuable enough to allow some deterioration. The SEPA guidance is far more stringent than the implications of the statement.

2. Policy rather than guidance

Although titled as guidance, the document is effectively a new policy on how SEPA will regulate new hydro. We believe that as such there should be a more in depth legislative process to bring in such an important change rather than implementing the new restrictions out of the blue.

3. No impact assessment

It does not appear that any impact assessment on these new policies has been done. We not yet fully understand the impact in terms of numbers or types of schemes affected however it appears that small schemes are likely to be at a significant disadvantage and that a large number of schemes may be affected. Policies which have the potential to make large impacts should be properly assessed prior to implementation.

4. The guidance appears to be driven by European politics than actual environmental protection

The document is designed around preventing reporting to Europe downgradings in water body status in order to prevent embarrassment. This is not a good reason to significantly impact a valuable industry which has an important role to play in reducing Scotland's actual environmental impact. We welcome the mitigation measures which we feel will help protect Scotland's actual aquatic environments.

5. Use of other environmental option is not appropriate

For various reasons it is not appropriate to use other renewable technologies as an alternative solution to an individual project: until we have met our targets for renewable generation all projects of all technologies are needed; other technologies also have environmental impacts; other technologies are not available options for individual landowners or developers.

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This is analogous to the 'sequential approach' which has been rejected from Scottish Planning Policy.

6. Definition of efficiency is not appropriate

We disagree with the definition of 'efficiency' as energy generated per unit length as this does not take into account the size of the watercourse or indeed the environmental value of the watercourse. More appropriate would be energy generated per unit of mean flow in the watercourse per unit length; or per square metre of aquatic habitat affected by the scheme.

7. The values set are very high

If SEPA is intent on using this definition of efficiency, there is very little rationale behind the 1.75GWh limit set. For a high status waterbody the limit is so high as to be very rarely achieved. For good status waterbodies it is likely to be more achievable however it appears that smaller schemes would be penalised and we have an example in our current portfolio of projects under development which would fail the test.

8. There is no need to set the 500kW limit

The 1.75GWh limit set, already discriminates against small schemes. If a scheme of <500kW did meet that limit for its annual output it would seem illogical to exclude it on the grounds of its rated capacity. Furthermore, the use of one European country as an anecdotal example does not appear to be sufficient grounds to exclude smaller schemes.

9. Inbuilt protection against inefficient schemes

There is inherent protection against less 'efficient' schemes because schemes which are built on less steep watercourses (and indeed schemes with lower rated outputs) are more expensive to build per unit of energy produced. Thus there is a large amount of self regulation against a proliferation of 'inefficient schemes'.

We therefore oppose the application of acceptability criteria to schemes above 100kW.

10. We welcome the publication of the mitigation guidelines

We hope these will ensure that the environment is suitably protected when new hydropower schemes are implemented and ensure that a consistent approach is applied across the country.

Further to these we have provided a more detailed response to the document as a whole.

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We trust that you will take these comments into account and would be very happy to provide further feedback on any detailed issues. If you have any comments please get in touch.

Yours faithfully,

Nick Bard
Development Manager

Cc: Sue Kearns – Scottish Government
Joyce Carr – Scottish Government

Flow Standards

Neither the ministerial statement nor the draft guidance makes any differentiation between deterioration of actual aquatic habitats and deterioration of water body status. It appears that the ministerial statement and Part A of the guidance are aimed at preventing deteriorations in water body status in order to reduce the number of derogations which require to be reported to Europe. Conversely Part B of the guidance is aimed at actually protecting the aquatic habitats of Scotland from damage by small hydropower schemes.

We therefore strongly support the principles of and the vast majority of the detail in Part B. However we support neither the principle, nor the proposed details of limiting the development of hydropower schemes according to their output. We believe that each scheme should be judged on its merits and actual impacts on the environment – not on artificially set limits which cause political discomfort in Europe.

The main reason why there is such a large discrepancy between waterbody status and actual environmental protection is the flow standards set by UKTAG. These have been arbitrarily set at a level which means that all hydro schemes, regardless of the mitigation measures they propose, will fail the test. This often causes a deterioration in water body status, resulting in the need for a time consuming, complicated and costly derogation to allow a licence to be issued. The differing flow standards may be a reason why different European countries have different policies on supporting small hydropower.

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We therefore suggest that a more appropriate solution to the problem of potentially large numbers of water bodies suffering deteriorations in status would be to **REVIEW THE FLOW STANDARDS SET BY UKTAG**. We suggest that this should be done urgently and preferably backed up by research from existing hydro schemes. We suggest that broadly, the acceptable flows outlined in Part B of the guidance do prevent actual deterioration of aquatic habitats when hydro schemes are constructed and thus may offer a basis on which to build new standards.

Part A – Sub 100kW

Q1. We do agree that with the mitigation of Part B the majority of schemes should be consentable regardless of their rating

Q2. If the flow standards were changed, many more schemes could be implemented without causing downgrading of water body status.

Q3. When trialled on two different projects, the checklist was found to be very user friendly and gave a clear answer. However it does seem rather complicated and it is difficult to clearly understand what the criteria for eligibility actually are.

Part A – 100kW+

Furthermore guidance to help identify which schemes would cause a deterioration in environmental status would be useful.

Clarification is needed on two points:

- Talking to Richard Fyfe, it appears that the efficiency value is to be calculated per length of classified waterbody affected rather than per length of deprived reach. This needs to be more clearly stated.
- The three criteria on page need to have an 'or' between each one

Q4. We disagree with the definition of 'efficiency' as energy generated per unit length as this does not take into account the size of the watercourse or indeed the environmental value of the watercourse. More appropriate would be energy generated per mean flow per length; or per square metre of aquatic habitat affected by the scheme.

With the definition of 'efficiency' as used we feel that the value of 1.75 GWh is far too high and would prevent good schemes, which genuinely make a significant contribution whilst having a minimal impact, from going ahead.

Part B – Mitigation

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General - The guidance is explicitly aimed at run-of-river schemes and no mention of storage schemes is made. Some clarification of where storage schemes fit in would be useful.

Q5. We agree that these measures will minimise adverse impacts of schemes on the water environment

Q6. In general, yes. Some comments on the detail are given below

Q7. We do not have suggestions at this point for other measures however we would like to point out that in line with the minister's aim of optimising use of the resource, SEPA should aim to encourage schemes which generate the maximum amount of energy from a given site whilst protecting the aquatic environment. The complicated system proposed would not necessarily do this. For example, at our Dalmigavie site (just over 500kW) we do not meet the 1.75GWh criteria, therefore we are considering the use of a smaller scheme with a deprived reach of less than 1,500m and much lower capacity in order to fit in with the guidelines. It appears non sensible not to develop the site to its full potential.

We support the majority of the mitigation measures. We do however have comments on the following points:

1.1

- Through Pipes - This section appears to be addressing the actual flow only. The comment on delivery method would be better off placed in the section on weir design
- The reason behind having an increased HOF for catchments $<10\text{km}^2$ is not clear. This appears to be a severe measure that would significantly negatively impact energy generation from some of the most environmentally benign projects (small and steep watercourses). For example increasing the HOF from Q95 to Q90 results in a drop in annual output of 6% for a scheme with a catchment of approx 10km^2 using LowFlows2000 FDC

1.2

Scheduled Shutdowns - The document is unclear as to what requirements might be. A scheduled shut down of 6 hours per week would reduce the annual output of a scheme by 3.5%. This is a significant loss of generation for unclear benefit. During dry spells the turbines do not abstract water at all. It appears that the method of increasing hands off flow with increasing total flow would be much more effective.

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1.3 We welcome these proposals although it is unclear why there are different limits for sub 100kW projects and how the site characteristics would affect the 1.3 - 1.5 value. Use of 1.5 times the mean flow corresponds (generally) with our design methodology.

1.4 We agree with the principle of these proposals. It is difficult to be proscriptive given the site specific nature of this issue and it may be best to deal with this on a case by case basis.

2.1A

- It may not always be possible to abstract at 90 degrees to the flow direction although this is preferred
- The way Coanda screens function, they cannot keep the entire face wetted at all times.

2.1D

Due to the high exit velocities (with reaction turbines – i.e Francis turbines) and vertical drops (impulse turbines) it is very rare that fish can enter any turbine from downstream. Therefore screening provisions should be dependent on issues of upstream migration and fish stranding in the tailrace only. Furthermore the bar spacings specified (10mm and 25mm) are more arduous than standard spacings that have been proven to be effective in the past (12.5mm and 40mm).