

The MHA response to the EA's revision of the GPGs

The MHA would like to thank the Board for continuing this difficult debate with regard to the best way to progress hydro power within England; whilst considering the multiple stakeholders and the ongoing improvement of our water bodies' status.

The MHA would like to endorse the BHA's stated points and to give additional feedback specific to the <100kW sector members we represent.

The EA have set out to revise their GPG and developed methods of assessing the options using six benefits:

1. Maintaining 'no deterioration' in water body status nor preventing achievement of good ecological status or potential.
2. Maintaining, improving and developing fisheries, including fish migration and angling
3. Maintaining rate of scheme development
4. Minimising regulatory burden and cost to the industry
5. Being responsive to stakeholders and achieving consensus
6. Reducing the environment agency costs of permitting

We address each of these below.

1 Maintaining 'no deterioration' in water body status nor preventing achievement of good ecological status or potential.

Status of 'Water Bodies' as defined in the Water Framework Directive is rarely affected by sub 100kW High Head schemes since they typically abstract from and return water within catchments of < 10km².

It is going to be increasingly difficult to determine "No deterioration" with the increasing effect of climate change. What specific measurements will be made to determine "no deterioration" in Water Bodies where schemes create depleted reaches which will technically lower Water Body status?

2 Maintaining, improving and developing fisheries, including fish migration and angling

We note that the improvement of angling is included as a benefit, while creating sustainable renewable carbon free energy is not. We would suggest that the displacement of environmentally damaging energy generation afforded by hydropower is included as a benefit and given a high weighting.

3 Maintaining rate of scheme development

This point highlights that 'maintaining' a rate of development is desirable, however, at no point has the rate of scheme development been considered as woefully slow, due to the restrictive bureaucracy faced by landowners, communities and developers aspiring to implement hydro turbines. Quote from two installers:

Of a pico turbine – 'Over 1 year for permissions = 3 hours to install'

Of a mirco hydro turbine: '40 months for permissions and 9 studies for a turbine with a capacity smaller than a washing machine'

This highlights the disproportionate nature of regulation for small scale, low impact schemes which has held back this area of renewable generation and opportunities for small businesses to develop.

4 Minimising regulatory burden and cost to the industry

As highlighted in point 3 the current burden of regulation and cost to both the EA and industry is disproportionately high, especially for the <100kW schemes. The new guidelines do nothing to address this, and indeed make the licence application process even more onerous.

The new guidelines suggest that the burden of proof to demonstrate that deviating from the original guidance and obtaining more water, will be arbitrarily up to individual permitting officers. Historically the differing approaches at the frontline have caused confusion and although the officers will be overseen by the 'Hydro Power Sector Group' there is no comment as to what proof of "unacceptable impact" may be required; this is likely to result in confusion and disparity.

- Historical empirical evidence from other similar sites? With so little empirical evidence currently available it will be exceptionally hard for a small scheme to prove that a deviation from the guidance will not cause harm. Any man made structure will have an impact on the environment.
- Ongoing monitoring? This will be expensive for small schemes: will they be expected to fund ongoing studies – or should this be the remit of the EA?
- Site surveys?
- Anecdotal evidence from ecology professionals?

5 Being responsive to stakeholders and achieving consensus

Despite the potential benefit to landowners, installers, and the EA, there has still been neither recognition in the proposed guidelines or procedures that the micro <100kW sector is and should be treated as a different entity to larger scale Hydro, nor any attempt to find a proportionate response to the requirements of this sector.

The new Guideline will disproportionately affect the <100kW industry, which has great potential to provide jobs, income, socio-economic benefit to a broad swathe of the population, including land owners, farmers, and communities, particularly in rural areas.

6 The MHA asks the EA to recognise that to small, remote communities and large, industrial communities the 'think local' agenda has momentum and small hydro is seen as extremely beneficial. Reducing the environment agency costs of permitting

As determined in point 3 – the time delays for permissions can be correlated to the burden and cost to both the regulator and the industry

For all depleted reach schemes there is likely to be requirement to deviate from the guidelines. Although the burden of proof is on the developer, the delivery of these deviations by the EA through increased time and skill resource will be considerable.

The MHA has grave concern about the ability of the EA to deliver the deviations with consistency throughout England.

The MHA's concern is that the burden of proof to demonstrate that deviating from the original guidance and obtaining more water will be arbitrarily up to individual permitting officers, differing from case to case, without being evidenced based or drawing on the insufficient empirical studies undertaken.

Other points requiring clarification "Unacceptable impact"

The EA is proposing that "Environmental assessment must demonstrate [that a] proposed scheme will not have unacceptable impacts."). Who will make this assessment of any environmental survey and against what criteria? Is this to be carried out by the new proposed central panel ("Hydropower Flows Panel") or by local or area officers?

MHA recommendation

The MHA proposes that there should be a Hydro Sector group specifically for <100kW schemes, which has close ties to professional and respected industry experts who have proved their capabilities with installations of best practice schemes.

If this collaborative approach could be formed, the MHA will endeavour to build a library of current schemes, highlighting their idiosyncrasies to form a basis of evidence to be used for future schemes.

The MHA asks the EA to establish a <100kW Hydro Sector group to develop the scheme registration principles and criteria for ensuring low impact that we have proposed in a discussion draft as part of the recent consultation. These are detailed below under "Scheme Registration - Draft Proposal"

Scheme Registration - Draft Proposal

In a recent survey of members of the mha, all responders endorsed the idea of a registration approach as a simplified alternative to licensing for very low impact hydro schemes (typically 5-30kW capacity, but ranging from 1-100kW)¹. In order to make registration of micro hydro schemes acceptable, many agencies will need to be satisfied that the design and ecological criteria applied will achieve the aims of the present regulation. Scheme developers /owners will therefore need to demonstrate in their submission for registration, and in scheme design documents, that they will provide appropriate ecological protection and will conform to construction guidelines, electrical regulations, and riparian rights. (Ofgem also require registration through the ROOFIT process to gain eligibility for the Feed-in Tariff).

Based on consideration of the survey responses, present regulatory requirements used to permit hydropower, and knowledge of schemes which have been permitted to date, we are proposing a set of simplified principles and specific criteria which could be used for registration of micro hydro schemes. An applicant for registration of a scheme would need to make a **declaration** that the complete set of registration criteria will be met and to support this with a design statement. Where any of the criteria could not be met, an applicant would be expected to provide additional evidence to satisfy the competent authority that registration was still an appropriate route rather than reverting to the licensing process currently used for both high and low impact hydro scheme developments.

The most appropriate location for the register of schemes could be either the planning authority or the environment agency responsible for the area predominantly covered by the scheme (though this could on occasion straddle more than one authority /agency). The registration document and design statement should be available to all authorities.

Principles for micro hydropower regulation and suggested criteria are set out in

¹ see [Appendix III sample analysis of over 300 potential and actual schemes \(mainly in Scotland\)](#) - capacities

[Appendix I Proposed principles and criteria for registration](#) process. These aim to encompass all the existing regulatory principles and processes but in a simplified manner. They are designed to be used as the basis for a front-end procedure for regulation by the environment agencies (EA, SEPA, NIEA, NRW) heritage agencies (NE, SNH, NRW, NIEA) and planning authorities thus avoiding the need for prolonged and detailed licensing processes for low impact schemes and reducing the agencies' workload.

Appendix I Proposed principles and criteria for registration process

The proposed criteria following this page are designed to meet the **precautionary principles below** (which apply to all hydropower schemes). Hydropower schemes seeking registration will need to meet the principles by taking the actions noted in the bullet points.

A hydro scheme should not:

risk significant damage to or reduction in the fish population in the river basin as a whole*

- screen the entry of water at the abstraction point and screen outflow to avoid access to turbine
- limit disturbance of water and bed of watercourse at outflow
- ensure a hands-off flow (where water available) which will provide sufficient river bed coverage and flow so as to sustain any important habitat or food resource
- where there is significant use by fish of any affected reach of water (as judged by qualified walk-over survey and where appropriate electro-fishing): if there will be any weir re-construction or new structure exceeding the height of natural obstacles, provide suitable alternative fish passage up and down the watercourse and protect fish spawning habitat (e.g. weirpools) against adverse changes in flows

reduce availability of water habitat for fish or other protected species in a river basin*

- ensure a hands-off flow to provide sufficient river bed coverage and flow to sustain any important habitat or food resource (when water is available)
- mitigate adverse changes in sedimentation resulting from impoundment changes by mechanical means

increase risk of flood damage from a watercourse

- demonstrate that the net effect of raising the level of the watercourse or impoundment, and of diverting water from existing flows, does not significantly increase the potential risk of flooding surrounding land or property or reduces the risk

impact other (prior) water uses adversely or should compensate those affected

- contact all other affected users (e.g. livestock farmers, fish farms, canoe clubs, water companies) and agree any mitigation measures needed to allow continued use or agree compensation

damage land habitat of protected species

- in areas known or likely to provide critical support to protected species, conduct qualified ecological walk-over surveys to determine population and to confirm no significant impact from building or operating the hydro scheme – design mitigation measures if necessary
- avoid identified breeding or dwelling sites when building access tracks, foundations, laying pipes, etc.

create unacceptable noise in a populated or frequented area

- fit turbine houses with sound insulation if located in such an area

create unsightly structures in urban areas or places of natural beauty

- build small turbine houses using appropriate materials

create electrical or other safety risks

- notify/obtain connection offer from DNC via the appropriate procedure
- meet current electrical installation standards
- erect suitable barriers and signs where there could be risk of public access to moving equipment

* these principles address Water Framework Directive requirements for quality standards of watercourses designated as Water Bodies.

REGISTRATION CRITERIA FOR MICRO HYDRO SCHEMES

In order to meet the above principles, the applicant will be required to make a **declaration** that the following criteria are met (under three headings: Design, Ecology, Other):

Design

- 1 **the design flow/capacity (DNC)** relationship falls within the following bounds.:

any scheme where design flow $\leq Q_{70}$ and DNC $< 100\text{kW}^2$

schemes where design flow $> Q_{70}$ and $\leq Q_{\text{mean}} \times 1.5$ ($\approx Q_{20}$), capacity (DNC) $< 50\text{kW}$, and residual flow in any depleted reach immediately below the abstraction point always exceeds Q_{95} (when available) or Q_{90} where fish are present (see 6 below)

- 2 **design flow** $\leq Q_{\text{mean}} \times 1.5$, and **residual flow** immediately below the abstraction point always exceeds Q_{95} (when available) or Q_{90} where fish are present (see 6 below)

- 3 **depleted reach**

either there is a $>1:20$ (5%) average gradient measured along the depleted reach

or the habitat in a shallower depleted reach is of no ecological significance in the context of the river basin (see 6 below)

or there is no depleted reach (as in an on-weir scheme)

- 4 **the height of the intake structure** does not create an additional flood risk and is lower than the highest natural obstacles (to fish) in the depleted reach where fish are present (see 6 below) and upstream *or* agreement has been reached with the local fisheries body for mitigation (e.g. a series of pools stepping up to the weir crest)

- 5 **the catchment area** of the watercourse above the intake is $< 10\text{km}^2$ for a design flow of $Q_{\text{mean}} \times 1.5$; the area could be increased proportionally for design flow $< Q_{\text{mean}} \times 1.5$ or flow split schemes – i.e. catchment (km^2) $< 10 \times (Q_{\text{mean}} \times 1.5) / Q_{\text{design}}$

Ecology

- 6 a qualified³ walkover survey, or local expert opinion, has confirmed that in respect of expected changes in the geomorphology and ecological habitat afforded by the depleted reach (where there is one) :

either there are no protected fish or other protected species ,

² the suggested upper limit of 100kW is illustrative and in most cases schemes of over 50kW will potentially have some impact on the environment which should be carefully considered, and the abstraction and any impoundment licensed. However, there will also be schemes of this capacity which will clearly have negligible environmental impact and are therefore suitable for the proposed registration approach. For example, a 200m high head scheme using water from a 6km² high rainfall catchment area abstracted from the top of a cliff close to the sea would require a design flow of only ~21% (Q70) of mean flow to generate 750MWh/annum at a maximum power of 100kW. The turbine would require a 17.5cm diameter turgo runner and the penstock would have an external diameter of 250mm.

³ this could be carried out by the landowner where able to demonstrate good knowledge of ecology (e.g. where environmental agencies or fisheries boards are already satisfied with the landowner's ecological credentials) or by a qualified ecologist and/or fishery expert.

or the population that could potentially be affected is insignificant in relation to the remaining population in the same river basin

and the design will ensure that any protected species on land will suffer no significant impact from building or operating the hydro scheme and that identified breeding or dwelling sites will be avoided when building access tracks, foundations, laying pipes, etc.

Other

- 7 no heritage or otherwise controlled areas or buildings are affected or relevant consents are being obtained
- 8 all neighbouring property owners are notified and confirmed not opposed to scheme
- 9 whole scheme lies on own land or agreement is being formalised with affected parties
- 10 penstock (if any) is to be buried where feasible and otherwise secured safely
- 11 turbine house footprint will be < 30m² and walls sound insulated if within earshot of habitation or frequented nature location
- 12 where the scheme is to be grid connected, the DNO is being notified via the standard procedure appropriate for the power to be connected
- 13 electrical and safety regulations are being followed
- 14 there are no adverse impacts on the character of buildings or landscape.

Appendix III sample analysis of over 300 potential and actual schemes (mainly in Scotland) - capacities

Distribution of scheme capacities (kW) - 302 schemes

