



Review of Good Practice Guidelines
for run-of-river hydropower schemes

Supplementary consultation on river
flow and water abstraction standards

A summary of consultation responses

We are the Environment Agency. We protect and improve the environment and make it a better place for people and wildlife.

We operate at the place where environmental change has its greatest impact on people's lives. We reduce the risks to people and properties from flooding; make sure there is enough water for people and wildlife; protect and improve air, land and water quality and apply the environmental standards within which industry can operate.

Acting to reduce climate change and helping people and wildlife adapt to its consequences are at the heart of all that we do.

We cannot do this alone. We work closely with a wide range of partners including government, business, local authorities, other agencies, civil society groups and the communities we serve.

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Purpose of this document

This report provides a summary of our consultation on river flow and water abstraction standards for hydropower. We explain why and how we ran it, outline the responses we received and explain how we intend to consider the results to inform the development of our revised guidance for hydropower developers.

Introduction

We ran this consultation to gather views about our proposed changes to river flow and water abstraction standards for hydropower.

It is our role to ensure that hydropower schemes include appropriate measures to protect the environment.

Our Hydropower Good Practice Guidelines (GPG) provide advice and technical guidance for designers and developers of low head hydropower schemes. Revisions to river flow and water abstraction standards are part of our wider review of the GPG.

We first consulted on our proposed changes to the GPG in 2011. We received a wide range of responses to this initial consultation and are taking account of them in preparing the revised guidance. You can view the closed consultation and our summary of the responses on our website at <https://consult.environment-agency.gov.uk/portal/ho/br/gpg/review>.

Respondents to the initial consultation represented a wide range of views and raised concerns about our approach to river flow and abstraction guidance for hydropower:

- Some thought our flow tables were too precautionary, while others said they were not sufficiently precautionary.
- They told us that guidance should make more provision for site specific characteristics and needs. This is particularly important for the protection of ecological and environmental features in any depleted reach.
- They suggested that high head guidance needs to address a wider range of ecological and environmental sensitivities, particularly in any depleted reach.

As a result, we decided to launch a supplementary consultation to gather further views, addressing in particular:

- i. concern about apparent inconsistencies between our proposals for high head schemes and our approach to low head schemes; and
- ii. the potential for adverse environmental impacts to certain species and ecosystems resulting from loss of flow variability in depleted reaches.

About the supplementary consultation

We presented four options and asked consultees to indicate which they preferred:

1. A development from current GPG standards;
2. An ecological sensitivity scoring approach;
3. General standards for water abstraction; and
4. General abstraction standards (as 3 above), with some provision for modification.

We also invited respondents to suggest alternative options.

We also sought views on when any changes, if adopted, would be introduced within the permitting process.

How we ran the consultation

We ran the consultation for 10 weeks, from 21 January until 2 April 2013. We received 752 responses.

How we consulted

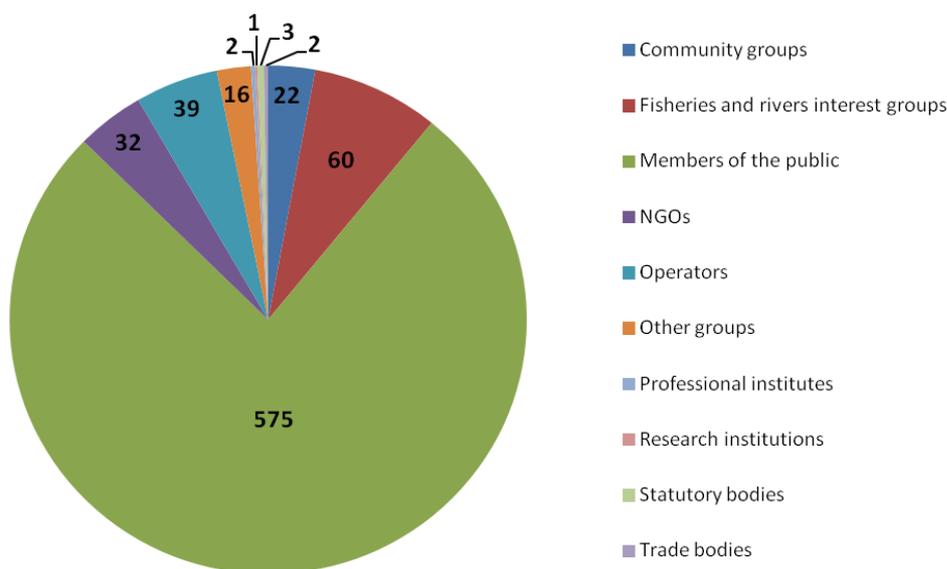
We published the consultation on our website at <https://consult.environment-agency.gov.uk/portal/ho/br/standards/hydro>. We invited consultees to submit comments online, by email, post and by fax.

We contacted all of those who had responded to our consultation in 2011 to notify them of this supplementary consultation. We also notified everyone registered on our online consultation system who had expressed an interest in hydropower or related topics. In addition to the formal consultation, we discussed issues of interest with key representatives from industry and interest groups through the Hydropower Working Group (see Annex 3 for details).

Overview of responses received

We received 752 consultation responses altogether, of which 22 were from community groups, 39 from operators, 32 from trade bodies, 60 from fisheries and rivers interest groups, and 575 from members of the public (see Figure 1). A number of responses shared similar or identical text.

Figure 1: Number of responses from different customer groups



You can view the consultation responses that were submitted online in full on our [website](#).

Summary of key findings

The consultation attracted a range of views from people with various interests in hydropower flow standards.

Table 1 shows how many consultees chose each option. Responses were broadly split between those favouring Option 1 and Option 3.

Table 1: Number of respondents who chose each option

Option	Number of respondents	Percentage of respondents
Option 1	335	44.5%
Option 2	16	2.1%
Option 3	337	44.8%
Option 4	6	0.8%
A different option	58	7.7%

We have considered all of the comments made in the public consultation. Respondents made helpful observations about each of the options presented, as well as suggesting alternative options.

Responses to questions one to four

Questions on Part 1 of the consultation

Question 1: Please indicate which option you prefer. Option 1; Option 2; Option 3; Option 4; A different option. Please explain the reasons for your preference. If you selected a different option, please explain why and describe your alternative.

Question 2: Would you like to make any suggestions for improving or amending any of the options? If yes, please describe your proposals.

In response to question one, many respondents made comments in support of their preferred option, as well as reasons to suggest why the other options are not appropriate.

In response to question two, many respondents suggested how we could improve their chosen option.

We have grouped the comments on questions one and two together in separate tables for each option. The tables summarise what consultees said; they do not represent the Environment Agency's view. Quotes from respondents are shown in speech bubbles.

Table 2: Summary of responses to questions one and two in relation to Option 1

Summary of responses in relation to Option 1	
<p>Points made in support of this option</p>	<ul style="list-style-type: none"> Environmental sensitivity is assessed at each site, to determine the appropriate level of protection. A proportionate and risk-based approach. With a clearly defined set of standards, developers can understand our requirements before they apply. We can be confident in adopting the Scottish Environment Protection Agency (SEPA) approach for high head schemes because it has proven track record in Scotland. High head schemes in upland streams have a low environmental impact. <p>"an upper limit and a minimum limit is consistent, uncomplicated and understandable to site owners and developers"</p> <p>"only Option 1 will allow for the commercial development of hydro schemes (in most cases) under the current financial framework"</p> <ul style="list-style-type: none"> This is the only economically viable option. If all options protect the environment, then we should choose Option 1 because it puts the least burden on development.
<p>Points made against this option</p>	<ul style="list-style-type: none"> This approach does not go far enough to protect the environment and is not backed up by evidence. Lack of evidence – there is no need to change the current guidance. <p>"minimal residual flow approach prescribed by Option 1 results in declines in fish populations and diversity as well as causing delay or blockage to migration"</p>

<p>Suggestions for changing this option</p>	<p>"imperative that hill streams with high disturbance and fluctuation in flow are not assessed in the same way as low lying rivers with very different features, pressures and user groups"</p> <ul style="list-style-type: none"> • Separate guidance for high head and low head to take account of the different characteristics of rivers and scheme design. • Apply standards flexibly so that more water may be allowed if applicants can demonstrate they will not damage the environment. <p>Assess schemes individually while applying proportionate regulation for the smallest schemes, such as a basic assessment.</p> <p>Comments that the standards are overly restrictive in certain circumstances.</p> <p>Take a balanced view to consider the benefits of schemes on the environment, both locally and in terms of global climate change. We should also consider socio-economic benefits.</p> <p>"Some schemes are rejected on the basis that they do not fall within the guidance but have much less impact than some that do"</p>
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Table 3: Summary of responses to questions one and two in relation to Option 2

Summary of responses in relation to Option 2	
<p>Points made in support of this option</p>	<ul style="list-style-type: none"> • Provides a consistent method for calculating environmental sensitivity at each site. • Considers and protects all aspects of the environment to comply with WFD objectives. • Adopts a precautionary approach. <p>"misleading and dangerous to generalise on complex issues associated with river ecology"</p>
<p>Points made against this option</p>	<ul style="list-style-type: none"> • The scoring method is not appropriate because it is open to interpretation and is not scientific. This creates uncertainty for developers. • Falsely equates ecological richness with vulnerability to hydropower abstraction, and so the flow restrictions do not benefit the environment. • Makes schemes unviable. <p>"complex scoring systems...merely give the illusion of rigorous scientific accountability, but often end up being scored arbitrarily"</p>
<p>Suggestions for changing this option</p>	<ul style="list-style-type: none"> • Collect more evidence and conduct monitoring to fully understand the impact of hydropower on ecology. • Scoring should take account of WFD status upstream of a development.

Table 4: Summary of responses to questions one and two in relation to Option 3

Summary of responses in relation to Option 3	
<p>Points made in support of this option</p>	<ul style="list-style-type: none"> Treats hydropower in the same way as other abstractions. Greatest environmental protection (of the options available). Ensures we maintain the most natural conditions in rivers, including flow variability in depleted reaches. <p>" Once proposals have been adopted, it is much more difficult to rein them back than to expand them"</p> <p>" none of the others comes close to meeting the required level of fisheries and ecological protection"</p> <ul style="list-style-type: none"> Adopts a precautionary approach, with the onus being on developers to provide evidence of no environmental damage if they want to deviate from the standards. Guidelines are clear and do not risk being misinterpreted.
<p>Points made against this option</p>	<ul style="list-style-type: none"> Does not adequately protect the environment. It is the option closest to maintaining flow rates and flow variability but is not good enough. Methodology is inappropriate; it is based on coarse-scale analysis of some areas of the country, rather than assessed on a site-specific basis. <p>"the ecology of rivers is critically dependent on the average flow rates and variability of flow. Option 3 falls short of providing full or even adequate protection of these parameters but it provides the best protection of the options offered"</p> <p>" excessively restrictive on percentage take for no significant ecological benefit"</p> <ul style="list-style-type: none"> It is not appropriate to treat hydropower as a consumptive abstraction. Further restricting flow would prevent schemes from being viable.
<p>Suggestions for changing this option</p>	<ul style="list-style-type: none"> There are issues with CAMS so we should improve the evidence base to understand more about the impact of flow standards. Unhappy with the proposed 30% increase in flow above current guidelines. We should require schemes to include monitoring to demonstrate that they are not damaging the environment. As part of the licensing process, we should weigh up the impact on the local environment against the environmental benefit of producing renewable energy. <p>"totally unacceptable and inconsistent with meeting existing good and future improving standards of environmental protection"</p> <p>"there must be a switch to the responsibility/liability being placed on the developer to provide the evidence of no adverse impact on the ecology of the river"</p>

Table 5: Summary of responses to questions one and two in relation to Option 4

Summary of responses in relation to Option 4	
Points made in support of this option	<ul style="list-style-type: none"> • Sets upper and lower limits to abstraction. • Site-specific assessment with more flexibility than set standards. <p>"it is sensible to allow specific exceptional catchment and site based features to over-ride the standard"</p>
Points made against this option	<ul style="list-style-type: none"> • As for Option 3. • May not be applied consistently.
Suggestions for changing this option	<ul style="list-style-type: none"> • Consider the benefits of hydropower for climate change as well as local environmental impacts.

Table 6: Summary of responses to questions one and two in relation to "A different option"

Summary of responses in relation to "A different option"	
<p>"the word "sensitivity" is not useful and should be replaced with specific descriptions such as no depleted reach, depleted reach with spawning ground, depleted reach with muddy bottom etc"</p>	<ul style="list-style-type: none"> • Clearer definitions and explanations, such as removing the word 'sensitivity' and considering what counts as a depleted reach. • Propose changes to the 'hands off flow' and maximum abstraction limits set out in some of the options. • Apply a risk-based approach to standards and guidance. <p>" ensure that the regulatory requirements and cost of implementing guidelines are appropriate to the level of risk identified"</p>
<ul style="list-style-type: none"> • Introduce time-limited flow standards, such as turning schemes off during fish migration periods, or allowing higher abstraction for very short periods of time. • Other general responses to this question included: <ul style="list-style-type: none"> ○ support for the Angling Trust's position ○ points in favour of keeping the current guidance ○ expressions that hydropower should not be allowed at all ○ asking us to consider the benefits of schemes against potential impacts. 	

Question 3: To help the Environment Agency and Natural Resources Wales to analyse the responses to this consultation, are you primarily interested in hydropower development in England, in Wales or both England and Wales?

Altogether, 95 respondents, or just over 1 in every 10 respondents, told us that they were primarily interested in hydropower development in Wales. Everyone else expressed an interest in England, or did not answer this question (see Figure 2). Most of the Welsh respondents chose Option 1, as shown in Figure 3. They particularly made comments on high head hydropower.

Figure 2: Respondents from Wales

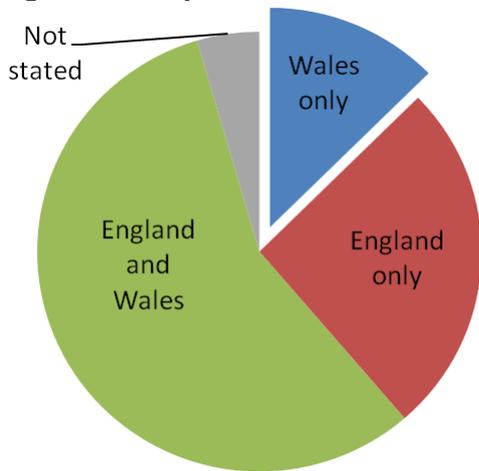
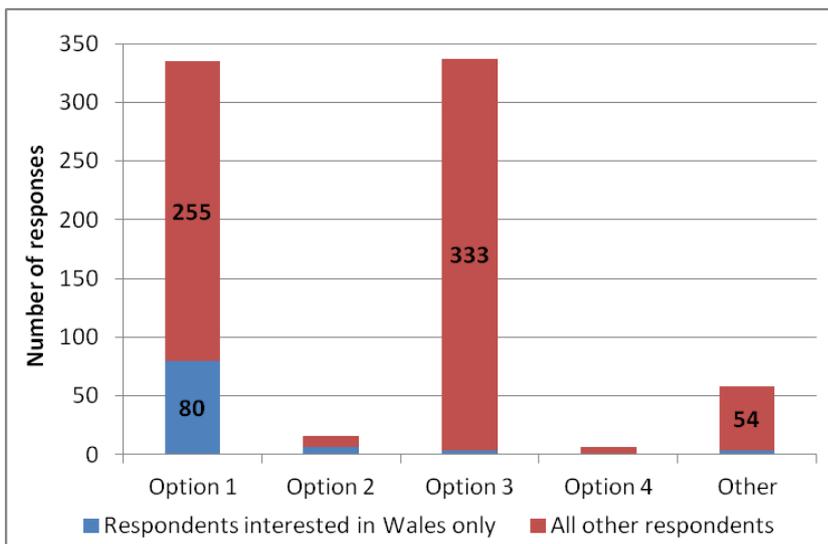


Figure 3: Options preferred by Welsh respondents



We have not included responses from those who said they were interested in hydropower development in Wales only in our analysis. We have shared the consultation responses with Natural Resources Wales.

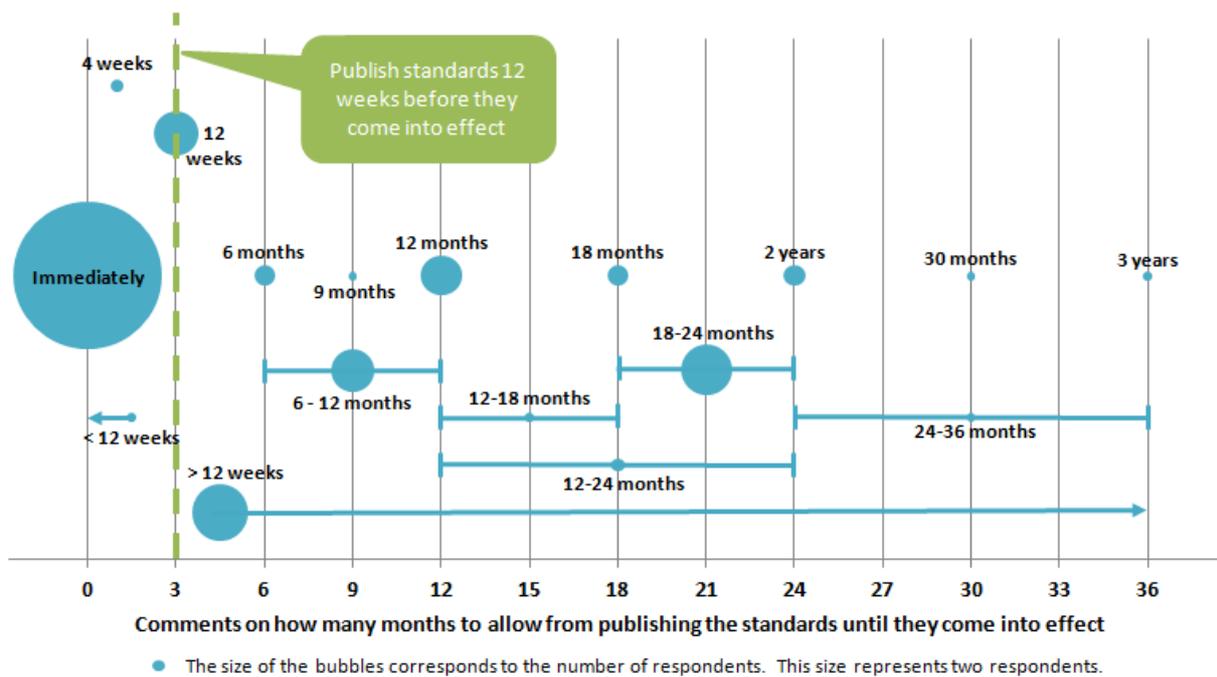
Questions on Part 2 of the consultation

Question 4: We will publish revised standards 12 weeks before they come into effect. Do you have any comments on this approach?

In the consultation we stated that we will use the revised standards for permit applications for new hydropower schemes which we receive and accept as valid from 12 weeks after the publication of the revised GPG. This follows the recommendation in the Code of Practice on Guidance on Regulation.

We received 454 responses to this question. Respondents expressed a wide range of views, as shown in Figure 4. The diagram shows the different lengths of time that respondents suggested we should allow between publishing the guidance and using it for new permit applications. The size of the bubbles indicates how many consultees suggested each length of time. The horizontal bars indicate that consultees responded with a time period, e.g. "between 6-12 months".

Figure 4: Length of time respondents suggested we should allow between publishing and using the new standards



Respondents gave various reasons why they agreed or disagreed with our proposal, as shown in Table 7. The table summarises what consultees said; it does not represent the Environment Agency's view.

Table 7: Summary of responses to question four

Justification for length of time between when the guidance is published and when it comes into effect	
Immediately	<ul style="list-style-type: none"> • There should be a hold on licensing any new applications until the new guidance is published. • We have already spent a long time developing the new guidance, so we should avoid any further delay.
12 weeks	<ul style="list-style-type: none"> • Gives enough time for pre-application discussions. • Would need to state whether there would be a hold on new applications during the 12-week notice period, or whether they would be licensed under the old guidance.
6-12 months	<ul style="list-style-type: none"> • Better reflects the length of time it takes to develop plans for a hydropower scheme. • If changes were introduced within 12 weeks, many schemes that have been scoped out under the old guidance may find that they can no longer proceed.
Over 12 months	<ul style="list-style-type: none"> • Better reflects the length of time it takes to develop plans for hydropower schemes, particularly community projects.

Next steps

We are taking account of these consultation responses as we develop the revised Hydropower Good Practice Guidelines.

We are also carrying out an assessment of the potential economic impacts of the options on the hydropower industry, in accordance with guidance from the Department for Business, Innovation and Skills ([Accountability for Regulator Impact](#)).

We expect to publish our revised hydropower guidance later in 2013 or early in 2014. At the same time we shall make available the results of our economic assessment.

Individuals who wish to follow up their responses, or points made within this document, in more detail are welcome to contact us at hydropowerGPG@environment-agency.gov.uk.

From 1 April 2013, responsibility for regulating hydropower in Wales transferred to Natural Resources Wales. We have shared the responses to this consultation with them to support their own review of hydropower guidance in Wales.

Annex 1 - List of respondents

4 in 1 Angling Club
Abergavenny & Crickhowell FOE group
Abergavenny Area Community Orchards and Gardens CIC
Abergynolwyn Community Hydro Electric Scheme
Abingdon Hydro
Albion Water Group
Alliance and Leicester Angling Club
Allied Hydro Power
Angling Society
Angling Trust
Antrim and District Angling Association
Aquatic Management Services Ltd
Arts Factory, Rhondda
Atlantic Salmon Trust
Auchenchyne
Awel Aman Tawe
BAE Systems
Banbridge Angling Club Ltd
Bat Conservation Trust
Beneco Energy Ltd
Billingham Angling Club
Birmingham Angler's Association
Blackmill Ward Environmental Group
Blueprint for Water Coalition
Brecon Beacons National Park Authority
British Hydropower Association (BHA)
Burton Mutual Angling Association
Bury Jubilee OPC
Canal and River Trust
Canoe England and The British Canoe Union
Carlisle City Council
Carmarthenshire Energy Ltd
Carp-Forums.com
Carter Jonas LLP
Ceredigion County Council
Chichester & District Angling Society
Cinder Hill trout Syndicate
CLA
Clady & District Angling Club
Colne Valley Anglers' Consultative
Communities First
Conservation Volunteers (Cymru)
Cotswold Rivers Trust
Cressbrook & Litton Flyfishers Club
Cwmdu Sustainable Environment Group
Cwmynyscoy Community Action Trust Ltd
Cynnal Cymru
Daerwynno Outdoor Centre
Derwent Hydro Developments Ltd
Derwent Hydroelectric Power Limited
Dopower Limited Hydropower Operator
Dulas Ltd
Ecodyfi

Ellergreen
Exmoor Rivers and Streams Group
Faringdon Hydropower
Federation of Clwyd Angling clubs
Fellside Hydro
Fish Legal
Fishtek
Game Fishing Syndicate
Gerlan Hydro Ltd
Grafton Angling Association
Green Valleys CIC
Greenearth Hydro Limited
Grwp Adfywio Mawddwy and Cwmni Nod Glas Cyf.
Gwent Angling Society
H2 Rheidol Hydro Limited
Halcrow Group Ltd
Halton Lune Hydro
Ham Hydro CIC
Heidra Ltd
Hereford and District Angling Association
Herefordshire Hydro Group
Hexham Anglers' Association
Highland Eco-Design Ltd
Hilltop Angling Club
Hydropol International
Infinis
Institute of Civil Engineers Wales
Institute of Fisheries Management
Interlink RCT
JCB Academy
Killington Sustainable Energy Trust
Kings Arms & Cheshunt Angling Society
Lagan Rivers Trust
Linton Falls Hydro Electric Power Company Ltd
Liskeard and District Angling Club
Llangattock Green Valleys
Llangynidr Energy Action Project
Loughborough Soar Angling Society Committee
Low Carbon Hub
Low Carbon Wolvercote
Lullington Power
Lune Rivers Trust
Lure Anglers Society
Lyn Riparian Owners Association
Mallusk Angling Society
Mann Power Consulting Ltd
Medip Power Group / River Energy Networks Ltd
Menter Y Canolfan Enterprise Cyf.
Merriman Solutions
Micro Hydro Association
Morris Marshall & Poole
Myddleton A/C
Neen Sollars Community Hydropower Co-operative Limited
Newmills Engineering Ltd
NFU
North Wales Hydro
Old Windsor Angling Club

Omagh Anglers Association
Opus International
Parkside Angling Club
Peel Energy
Penllergare Trust
Pico Energy Ltd
PLAN B
Plantlife
Pride of Derby Angling Association Ltd
Prince Albert Angling Society of Macclesfield
Redcotec LLP
Renewable Heritage Trust
Renewable Power Ltd
Renewables First Ltd
RFCA RAA Environment
Ribble Fisheries Consultative Association
Richmond and District Angling Society
River Barle Fishing Club Ltd
River Eden & District Fisheries Association
River Exe & Tributaries Association
River Taw Fisheries Association
Robert Owen Renewables Ltd
Roe Angling Ltd
Ross on Wye Angling Club
RWE npower renewables ltd
Salford Friendly Anglers Society
Salmon & Trout Association
Severn Rivers Trust
Sharpening Pencils
Sheridan Associates
Shropshire Anglers' Federation
Sinnington Anglers
Six Mile Water Trust
South Somerset Hydropower Group
South West Rivers Association
South West Water
Spanns
STAG Gamefishers
Talybont on Usk Energy
TGVHydro Ltd
Thames Anglers' Conservancy
Thames Valley Angling Association
The Brambles
The Hodder Consultation
The Rivers Trust
Torrs Hydro New Mills
Transition Network
Treforest Residents Association
Tyne Anglers Alliance
Tyne Fisheries Interest Group
Tyne Rivers Trust
Ulster Angling Federation
University of Glamorgan
Upper Thames Fisheries Consultative
Wallingford Hydrosolutions Ltd
Wear Rivers Trust
Welsh Dee Trust

Welsh Water
West End Anglers
West Oxford Community Renewables
Wickford Railway Angling Club
Wild Trout Trust
Willowbrook Fly Fishers
Woking and District Angling Association
Worcester Angling Society
Wreake Angling Club Leicestershire
Wye & Usk Foundation

Members of the public - 575 responses

Annex 2 - Glossary

Abstraction	The removal of water from a watercourse.
Catchment Abstraction Management Strategies/Environmental Flow Indicator (CAMS/EFI)	Our approach to managing and regulating abstraction. For more information, please refer to our website .
Depleted reach	This is the section of a watercourse between the point where water is taken out of the river and the point at which it is returned.
Feed in Tariff	Financial support incentive that the government set up to encourage the uptake of small-scale renewable energy development.
Flow variability	Natural changes in the level of water flowing in a river, that support wildlife and habitats
Hands Off Flow (HOF)	The protected minimum level of flow over a weir and down the depleted reach, below which diversion of flow to the hydropower turbine must cease.
High head	Schemes that generally make use of the height over a weir to generate electricity.
Low head	Schemes with less of a drop over the weir that need to have more flowing water to generate electricity.
Mitigation	The measures taken to reduce or remove the risk of activity causing damage.
Qmean	The average daily flow of a river across a year
Residual flow	The flow which must remain in the depleted stretch of river.
Run-of-river	Schemes that use the natural flow of a river and divert water to a remote powerhouse containing the turbine and generator to generate electricity,
UK Technical Advisory Group (UK TAG)	A partnership of UK environment and conservation agencies which provides co-ordinated advice on the science and technical aspects of the European Union's Water Framework Directive.
Water Framework Directive (WFD)	This EU legislation requires member states to plan and act to protect and improve the water environment. It has significant implications for hydropower schemes.

Annex 3 - Hydropower Working Group

The Hydropower Working Group brings together key representatives from interest groups and partners. We are working with the group to review the regulation of hydropower and to support the development of environmentally sustainable schemes across England.

The Environment Agency chairs the Hydropower Working Group which includes representatives from:

- Department for Environment, Food and Rural Affairs (Defra)
- Department for Energy and Climate Change (DECC)
- Natural England
- British Hydropower Association
- Micro Hydro Association
- Angling Trust
- Salmon & Trout Association

Until 31 March 2013 the Group also included representatives from:

- Welsh Government
- Countryside Council for Wales (CCW)

The group is a forum where members can:

- consider the potential effects that hydropower has, and could have, on the environment
- help to improve the regulation of hydropower in key areas of the Environment Agency's work, including permitting, technical guidance and our approach to water catchments
- contribute to the evidence base and technical judgements, in order that we can make the most informed decisions possible.

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