



Energy UK Response to UK Technical Advisory Group on the Water Framework Directive Consultation on Updated Recommendations on Environmental Standards: River Basin Management (2015-21)

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About Energy UK

Energy UK represents a wide spectrum of interests across the sector. This includes small, medium and large companies working in electricity generation, energy networks and gas and electricity supply, as well as a number of businesses that provide equipment and services to the industry.

Key points

We appreciate the opportunity to contribute to this consultation. Our responses to the individual consultation questions are set out below, but we would like to draw particular attention to the issue of flow standards. The use of flow standards is central to key elements of water environmental regulation. These include classifying the status of water bodies under the Water Framework Directive and interactions with the water abstraction licensing regime in establishing environmental needs. The flow standards are potential drivers of significant costs and restrictions to any water-based activity and, in particular, to electricity generation technologies, both in-stream (for hydro generation) or abstractive (in thermal power plants, principally for cooling purposes). This is true across the whole flow range, but is especially important with regards to the low flow standards.

It is unclear why the low flow standards were excluded from this review. Energy UK considers that UKTAG should carry out and publish as comprehensive an analysis of the low flow standards against biological data as can be carried out as a matter of urgency. Unless this is done, the low flow standards cannot be seen as sufficiently robust to give any degree of confidence in classification, justify regulatory action aimed at achieving changes in classification or underpin water resource allocation mechanisms, which will influence investment in long-life, water-dependent infrastructure such as power stations (both hydro and thermal). We expand on these points in our responses to the consultation questions, and under Question 3 in particular.

Consultation questions

1. Is the report clear in explaining how we have developed the proposed environmental standards and conditions?

In general, the report is sufficiently clear. However, the report could be improved further by including a glossary of definitions.

The role of standards – Protected Areas

We note the mechanism for standard derivation for protected areas on p9 relating to the Common Standards Guidance agreed by the Conservation Agencies. Since the conservation objectives are not open to public consultation we consider that the Common Standards Guidance should be made available publicly and be open to consultation. We also take the view there should be public consultation on the conservation objectives themselves, to help ensure they are clear and workable for all stakeholders whom they might affect.

Standards for specific pollutants

We support the UKTAG principle of not setting a standard where the available test data would lead to an excessively high safety factor when determining a Predicted No-Effect Concentration (PNEC) (p17). However, even safety factors of 50 and 100 could lead to extremely precautionary Environmental Quality Standards (EQSs). We therefore suggest that where safety factors above 10, say, are used in setting an EQS, this is highlighted. It would also be useful if UKTAG could include a statement of how regulatory authorities should take the magnitude of the safety factor into account when determining permit applications for emissions of specific substances. It is often the case that stakeholders assume that exceedence of an EQS will inevitably mean harm will occur and it is clear with the use of such safety factors that this need not necessarily be the case. UKTAG note that failure of a standard may trigger the gathering of additional data to reduce uncertainty in the standard (p18). Whilst this may be the case as regards 'classification', it may unnecessarily restrict applicants for new discharges and/or lead to unwarranted pressure on existing discharges, particularly in the case where the proposal is for the tightening of an existing standard.

We support the use of Maximum Allowable Concentration (MAC) standards as 95-percentiles rather than 100-percentiles (p23).

We support the UKTAG recommendation that 95% confidence of failure of a standard is required before triggering action, though it may be helpful to amplify the meaning of 'serious' and 'expensive', perhaps with reference to Water Framework Directive (WrFD) disproportionate cost.

The wording of Table 2.18 and the box on p22 should be revised to make it clear how to define the natural background for zinc to be used additively with the bioavailable concentration (freshwaters) and the dissolved concentration (salt waters). The box is headed 'methods', but might better be 'data sources' rather than methods. It should be made clear in the box what phase and fraction the word 'concentration' refers to in each of points a) to h) and, where the point relates to a data source rather than a prescription, a reference to the way in which the data can be used to derive the quantity to use additively in Table 2.18 should be given.

Groundwater

In general terms, the proposed nitrate threshold values for assessing risks to wetlands are clear and the proposed threshold values for assessing risks to uses of groundwater are clear.

The methodology for deriving threshold values for groundwater to assess risks to associated surface waters is clear. However, the effect of the revised thresholds which are expected to have the greatest impact in England (phosphorous and metals) have not been adequately quantified to date. As UKTAG also propose to reduce the limit values for a number of existing Specific Pollutants (copper, cyanide and

zinc), the combined effects of these two simultaneous changes are unclear. In view of this, further investigation work needs to be undertaken to assess the impact of the proposed changes. We would not support the changes in the absence of an impact assessment.

River flows

In Chapter 5, in order to allow understanding of Tables 15 and 16, UKTAG should discuss explicitly the definition of natural flows.

It is not clear why low flows were excluded from the technical assessment in the supporting paper by Richard Gosling: "A proposal for amending the Poor and Bad status environmental river flow standards at medium and high flows". No reason for this exclusion is given despite the clear need for the flow standards to be fully tested against ecology data.

Given that the data and methodology exist to allow a technical assessment of the low flow standards, it is unclear how UKTAG can have "concluded that there is no new quantitative data that can be used to refine the standards for low flows."

Assurances were given by the Scottish Government in 2011 that low flows would be fully considered in the review of standards, but this has clearly not been the case. The data and methodology used for mid and high flows were equally applicable across the whole flow range, so why were low flows not looked at? The same technical assessment of low flows needs to be carried out and published before a final set of flow standards can be developed.

2. The report defines the environmental standards and conditions required for the Water Framework Directive. The purpose of the stakeholder review is to seek views on how the environmental standards have been developed by the UK. With this in mind, do you think that the approach we have taken, as identified in the report and supporting technical documents

a. Identifies the environmental standards and conditions required to achieve the environmental objectives of the WFD?

The role of standards

We consider the report could usefully include, or make reference to, material on the practical application of the standards, including the use of mixing zones. For example, p7 para 2 is misleading in that, in isolation, it could be read as indicating that a new discharge would not be permitted to lead to the exceedence of a standard at any point in a water body at any time. However, in line with UK practice and Directive 2008/105/EC and the Technical Guidance (2010), mixing zones (essentially regions of EQS exceedence) can be allowed if they do not affect compliance of the water body as a whole. Whilst the EU Guidance was prepared in the context of Priority and Priority Hazardous Substances, the principles align well with the UK permitting practice. It would be helpful if the UKTAG recommendations were to make it clear that the regulatory use of mixing zones would be expected for all types of emissions, not just Priority Substances and Priority Hazardous Substances.

We support the UKTAG desire to address the "one out all out" bias in classification based on monitoring (p8) and hence avoid unduly pessimistic reporting of classification and triggering calls for measures unnecessarily. This is particularly important in view of the "no deterioration" principle of WFD. We look

forward to seeing how UKTAG propose that the recommendation can be implemented in practical regulation in a way that is consistent with existing WFD guidance.

Standards for specific pollutants

We support the UKTAG recommendation not to derive new standards for the Dangerous Substances Directive (DSD) 'legacy' substances (p15).

We are concerned that the UKTAG report does not contain an explicit statement along the lines of a reality check on whether exceedence of the proposed revised standards for some substances are associated with reported or conjectured biological 'problems', which would seem to be a natural step to take.

Further, does the quantification of non-compliance take into account the use of mixing zones associated with point discharges?

We consider that the statement on p33 regarding not requiring local ecological corroboration of damage in general is inappropriate and should be revised to provide a more appropriate regulatory default position. The current statement of position does not seem well aligned with the intent underlying p24, which requires a high-level of confidence that the standard is exceeded. Since the role of specific pollutants related to the control of pollution is linked to 'harm' rather than simply emission, it would seem that there should also be confidence that actual harm is occurring as well as that the EQS has been exceeded. This alternative position would appear to be in line with WFD itself (Annex V 1.2.6iii which allows evidence of field effects to be considered when deriving a standard). Thus the statement should:

- take more account of the potential for the use of mixing zones for specific pollutants, and
- take account of the safety factor used in establishing the EQS.

Thus, for a substance in which a high safety factor is used, it would be appropriate to consider evidence of the nature and extent of harm occurring within the specific water body of interest before committing to action.

We note that, according to Table 4, nearly a third of freshwater water bodies in England are considered to fail the proposed iron standard; is it the case that biological consequences associated with elevated iron concentrations have been reported or conjectured? Similarly, Table 4 would suggest that more than a half of coastal and estuarine waters are failing zinc standards and more than a quarter are failing copper standards. The UKTAG report suggests that these numbers may be artificially high because natural background concentrations and complexation have not been considered, but the question remains whether such a scale of exceedences is associated with reported or conjectured biological effects. Given the potential scale of the copper and zinc non-compliances, further work could usefully have been done prior to the consultation to illustrate the scale of zinc non-compliance when dissolved organic carbon (DOC) and natural background concentrations are taken into account (perhaps through one or two case studies) and the findings integrated into the report, in order to present stakeholders with a better indication of the likely significance of the proposed change.

Similar considerations also apply to Table 6 for Scotland and Table 8 for Wales with respect to iron.

Whilst the association of iron with mine workings is well known, it is not clear whether or not this is the predominant cause of expected non-compliance with the proposed iron standard. The inclusion of wording regarding the use of iron in water treatment works suggests that UKTAG suspect that an appreciable proportion of the forecast exceedences is related to the use of iron compounds within the water industry. Some further information on this would be helpful, since iron compounds are used more widely in water treatment than just within the water industry.

River flows

We support the UKTAG position that requiring costly action is not appropriate for waters classified as moderate status on the basis of river flows unless there is evidence of ecological damage (p59).

Work to compare the hydrology classification with the biological classification has improved the mid to high flow standards and this is welcomed.

However, the low flow standards have still not been tested against ecology data, despite data and a suitable method being available, and so remain insufficiently robust for classification or for justifying potentially very costly regulatory decisions.

UKTAG should complete the technical assessment started for mid to higher flows and publish the results for low flows before deciding on a final set of proposals.

b. Uses the best information currently available?

The literature review raised nothing new and low flows were excluded from the technical assessment despite the data and methodology being equally applicable to the whole flow range. Including low flows would have allowed a much larger sample of water bodies to be used and so was actually more suited to the methodology used.

3. Are there any other issues in relation to UKTAG's approach to developing UK environmental standards and conditions that you wish to comment on?

River flows

The use of flow standards is central to key elements of water environmental regulation. These include classifying the status of water bodies under the WtFD and interactions with the water abstraction licensing regime in establishing environmental needs. The flow standards are potential drivers of significant costs and restrictions to any water-based activity and, in particular, to electricity generation technologies both in-stream (for hydro generation) or abstractive (in thermal power plants, principally for cooling purposes). This is true across the whole flow range but is especially important with regards to the low flow standards.

Accordingly, due to the possible scale of impacts on the energy sector and the wider UK economy, it is critical to ensure the flow standards are set on the basis of complete and sound science. Failure in this respect could inappropriately restrict the use of water for generation purposes; present an unwarranted risk to potential investment in water-dependent infrastructure such as power stations; hinder the UK reaching its renewable generation targets; reduce the thermal power plant sector's overall thermal efficiency by preventing water-cooled generation that otherwise could have occurred, with

consequences for increased emissions of greenhouse gases; result in disproportionately high mitigation costs; and potentially lead to security of supply issues should generation output be inappropriately restricted.

The medium and higher flow standards have, for the first time, been calibrated against ecology data and have been shown to be systematically overestimating the environmental impact of abstraction. Energy UK welcomes the UKTAG proposals to alter these and we have provided some detailed comments on what has been proposed. However, despite assurances being given to industry prior to the start of the review, the low flow standards have still not been assessed against biological data. The current low flow standards therefore rest entirely on expert judgement, which the participating experts themselves indicate is subject to significant uncertainty (Sniffer report WFD48). From a review of the supporting UKTAG paper by Richard Gosling, it seems clear that the same data and methodology that were used to review the medium and higher flows were equally, if not more, applicable to the low flow standards. It is therefore unclear why the low flow standards were excluded from this review.

We consider that UKTAG should carry out and publish as comprehensive an analysis of the low flow standards against biological data as can be carried out as a matter of urgency. Unless this is done, the low flow standards cannot be seen as sufficiently robust to give any degree of confidence in classification, justify regulatory action aimed at achieving changes in classification or underpin water resource allocation mechanisms, which will influence investment in long-life, water-dependent infrastructure such as power stations (both hydro and thermal).

Groundwater standards are clearly defined as triggers to collect site specific data and not for regulatory action. Given the limited analysis at low flows and the wider uncertainty around links between hydrology and ecology, the flow standards should be clearly presented in the same way.

We welcome the recognition that SEPA have to date implemented the flow standards differently in Scotland than from the rest of the UK. Despite this recognition, the consultation still falls short of giving a clear guarantee that UKTAG will deliver a fully consistent UK approach for the next River Basin Management Planning period. This commitment is essential and should be clearly stated in any final set of proposals.

Other legislation and atmospheric deposition

The requirements of the WFD should be considered alongside those of all other relevant EU Directives and national regulations, allowing an integrated approach to environmental protection consistent with recent Government initiatives (e.g. the Red Tape Challenge). The Large Combustion Plant Directive (LCPD) and National Emissions Ceilings Directive (NECD), together with the Integrated Pollution Prevention and Control (IPPC) and Industrial Emissions Directive (IED) requirements for Best Available Techniques (BAT), set challenging emission reduction targets and permit conditions on electricity generators, and were designed specifically to deal with the long-range cumulative effects of air pollution and deposition. Thus we consider that appropriate and consistent implementation of existing and currently drafted legislation (with no gold-plating of EU Directives during UK transposition) remains the most appropriate way to continue to reduce the impacts of atmospheric emissions on ecosystems, including freshwater ecosystems and river catchments.

Although the control of power station emissions is highlighted (on p71) as one of the issues most likely to be affected by failure to meet water quality standards for acidification, atmospheric emissions from

power stations have reduced substantially in recent decades, and acid deposition is now often dominated by nitrogen deposition associated with ammonia emissions from agriculture and NO_x emissions from transport and other non-power station sources (<http://www.apis.ac.uk/>). The basic principles of proportionality in environmental protection and regulation require that any mitigation measures for individual regulated sources should reflect the source contribution to the total pollution burden. There should also be a prioritisation of control measures between different source categories (e.g. large combustion plant and agricultural sources) on the basis of the differing cost-effectiveness of emissions reductions.

Prevent or limit the input of pollutants into groundwater

Hazardous Substances.

Based on the information provided in the report and the inclusion of the following sentence,

'Where there is a significant risk of inputs of a hazardous substance not listed in Table 12, UKTAG recommends that the agency derives and applies a standard based on the routine 'limit of quantification' for the substance achieved by a competent authority'

it is unclear whether Table 12 represents a definitive list of Hazardous Substances as defined by the UKTAG. For example, under Directive 80/68/EEC, cyanide was designated as a List I Substance but is not included within Table 12. To provide clarity and for the avoidance of any doubt, we strongly recommend that, should this list not represent a definitive list of Hazardous Substances, then it should be displayed on an appropriate website, which is updated when new Hazardous Substances are determined and the appropriate standard provided. Furthermore, based on the information contained within Table 12 it is unclear whether UK laboratories can achieve the minimum reporting values for all substances listed in groundwater.

It is unclear how the UKTAG approach with respect to preventing the entry of Hazardous Substances into groundwater compares to methodologies adopted in other European Member States. Are other Member States adopting similar approaches or is the UK attempting to 'gold-plate' the standard? An appropriate balance needs to be struck between environmental protection and the economic impacts associated with policy decisions. We have concerns that the adoption of overly prescriptive measures with respect to the assessment of Hazardous Substances may have far-reaching consequences. For example, the Construction Products Directive requires that product standards comply with Essential Requirement 3 (ER3), which states that construction products must not emit dangerous substances into the air, groundwater, marine waters, surface water or soil. We are concerned that, if the standards as detailed in Table 12 were applied to prevent dangerous substances being emitted to groundwater, this may detrimentally impact the future marketability of construction products such as secondary aggregates.

Non-Hazardous Substances

The UKTAG recommended approach for the assessment of non-hazardous pollutant source areas to groundwater is to apply standards which are protective of human consumption at various compliance points (50 and 250 m) down hydraulic gradient from the source area. In many secondary aquifers the existing baseline quality for some parameters may already exceed standards which are protective of human consumption. In these circumstances, applying standards protective of human consumption to

back-calculate appropriate remedial targets appears to be very precautionary and does not embrace 'modern regulation' and risk-based principles. Furthermore, it is not considered appropriate to prescriptively specify compliance distances in this document. Compliance point distances should be assessed on a site specific basis based on the development of a robust conceptual model.

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