

**UK Technical Advisory Group
on the Water Framework Directive**

**Responses to submissions from
stakeholders on proposals for new
standards**

**UKTAG Stakeholder Review on
UK ENVIRONMENTAL STANDARDS AND
CONDITIONS**

Final

February 2013

(SR – 2012)

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SECTION 1 – ABOUT THIS DOCUMENT

The United Kingdom Technical Advisory Group (UKTAG) sought comments on the scientific work that underpins its third set of proposals for environmental standards. The standards are designed for use in taking decisions under the Water Framework Directive. A draft report was issued in April, 2012, and is available on the UKTAG's website.

We asked the following questions:

1. Is our report clear in explaining how we developed our proposals?
2. Do you think we have identified standards that will help define and achieve the objectives of the Water Framework Directive? Such objectives include, for example, getting waters to good status and ensuring they stay there.
3. Do you think that our approaches use the best information available? (Please let us know of data or methods that could improve our approach).
4. Are there other issues you wish to comment on?

35 replies were received. They cover close to 190 points and questions. They include views from non-government environment and fishing organisations, water companies and utilities, energy, industry and farming sectors, conservation agencies, aquatic consultants and research institutes. The full comments are on our website:

http://www.wfduk.org/sites/default/files/Media/Submissions%20for%20web%20final_0.pdf

We discussed the comments with the authors of the technical reports that underpin our proposals. We also discussed them with the environment and conservation agencies, and with the UK administrations.

We found the comments very helpful. As a result, we identified:

- Changes to our proposals and in our report and its supporting documents.
- Issues that need to be addressed, but which do not change our proposals at this time. We have explained better how the standards might be used, expanded on future work and on issues that we cannot deal with at this time.
- Issues for the attention of the UK administrations and UK agencies.

This document is our response to the comments. Both this document, and a final report on our proposals, will be put on our website, and also made available to those who ask us for copies.

The main changes to our proposals are summarised below:

- Some comments questioned whether our work reflected the true risks posed by iron to the environment, in particular the ameliorating effect on toxicity of dissolved organic carbon (DOC). We were informed of further research which will lead to a better understanding of the risks posed by iron and the effects of DOC. We shall therefore come back with a revised proposal when this further research is complete in 2013. In the meantime, we propose that the existing standard is retained and withdraw the technical report.

- As a result of the consultation, comments and new data were made available on pendimethalin and the proposed EQSs for saltwater zinc and saltwater copper. These have been carefully scrutinised. As a result, revised EQSs for saltwater zinc, saltwater copper and pendimethalin have been proposed along with a modification of the formula used to correct for DOC in relation to the copper saltwater standard.
- Before we can implement the zinc EQS, information on the background concentrations of zinc are required because this is an explicit requirement of compliance assessment for this particular metal. The review document outlined potential approaches for determining background concentrations that had been identified by the EU but an agreed approach needs to be defined. This point was made in many of the comments received during the stakeholder review. Further work is being undertaken to develop an approach for determining background concentrations. This is due to report back in March 2013. An updated version of this report will be produced to incorporate the methodology for determining background concentrations along with details of the EQS values for zinc.
- As a result of the consultation, UKTAG have been made aware of further information that was not available when the cyanide EQS was developed. UKTAG think this will have a bearing on the determination of a robust EQS but there is insufficient time to take this forward so the standard will be withdrawn. The existing standard for cyanide will be retained.

• SECTION 2 – SUMMARIES OF OUR RESPONSES

Details are in Annex 1. This section covers the main points, grouped under headings that match those in the report on our proposals.

Summary for Chapter 1: Introduction

Generally the feedback identified that the report was clear and understandable. Several comments led us to improve our text and to change the supporting technical documents. In particular, we expanded detail on how the standards might be used within the full process of taking decisions.

Future ways of working

There were reminders that the planning cycles for the Water Framework Directive need to engage with those for planning investment by the water industry.

It was suggested that the consultation on our proposals would be improved by involving stakeholders at an earlier stage and by running the consultation over a longer period of time. It would also help to choose a different time of year. We shall act on these points in future.

It was felt that standards for phosphorus should have been included. Proposals will be available soon. A key part of the work is the need to ensure that expensive action is sought only when supported by a full and complete weight of evidence.

There was a general consensus in favour of our aim to align, where possible, the standards for the Water Framework Directive with those for Natura 2000 sites. We continue to work on this.

Impact Assessments

Comments were made on the need for more monitoring. Several requests were made for Regulatory Impact Assessments – work to check the scope and scale of the impact of a standard. These assessments, with the monitoring, were to be done before the standards are used. There were requests for clarity about when the standards would come into play.

We were advised that we should assess the costs and benefits of action to achieve standards and of action to prevent future failures. These would lead, for example, to advice on what was “disproportionate” in terms of the Directive, and what would count as “technically infeasible”.

The UKTAG agrees that these issues are very important. The main purpose of the phase of the work embodied in our proposals is to assess the causes of risk and damage and to recommend standards based on the best of the current science and data. We also focus attention on uncertainties in the science, and on how these should be interpreted in both in setting up a standard and in the context in which the standard is used.

Having done this, we recommend that our standards are well equipped to take decisions on whether to allow, for example, new discharges of substances.

The UKTAG takes care that its proposed standards are designed to meet all the technical demands of planning correct and cost-effective action. This covers the assessment of compliance, a correct apportioning of the causes of failure, and calculating the costs and benefits of action. Our proposals prepare the way for subsequent work which will be undertaken by the competent authorities after the UK government administrations have decided whether to adopt UKTAG’s proposals for new and revised standards.

The UKTAG is not able to undertake detailed work on compliance, costs, benefits, feasibility and Regulatory Impact Assessment. This can only be undertaken by environment and conservation agencies as part of the river basin planning process. This process will lead to decisions on the action required, whether national or local. Those decisions will be subject to sign-off by Ministers when detailed river basin plans are produced. The monitoring and assessment associated with this process may also lead to revised standards. We recognise that certain standards may need to be tracked on a national basis by looking across all the river basin plans.

Implications

There was a request to include a discussion of Drinking Water Protected Areas. We were asked how information on compliance for individual quality elements will be combined into the reported results for classification. There was a concern that the results of classification are optimistic with more failures occurring than reported.

The UKTAG notes that extra monitoring to check compliance with existing standards may lead to more failures. This might happen in cases assumed wrongly to be at no risk of failure and so not to require direct monitoring. The agencies keep this issue under review in the design of their programmes of monitoring and in the deployment of their mathematical models.

The introduction of standards for new issues or chemicals will also produce downgrades in classification. We have tried to estimate these in our report. There are also standards where failure will be recorded, but where this is intended only to initiate investigations prior to considering action.

Overall, the UKTAG maintains that a main risk to classification is a pessimistic bias. This will occur if class is assigned without regard to the confidence of failure to meet a standard, and so long as class is reported for a water body on the basis of the “one out all-out” rule as applied across a group of standards and assessments. This bias must be managed in the assessment of national and regional summaries of performance and trend. The UKTAG advises how this can be done.

Summary for Chapter 2: Specific Pollutants

Other Member States

We were asked how the UK’s work on Specific Pollutants compared with that of other Member States in terms of the range and number of chemicals considered, and how the proposed standards differed.

The UK is aware of the work done on Specific Pollutants by France, Germany, Holland, and Denmark. The substances selected by the UK as candidates for Specific Pollutants, and the number of substances, are consistent with those in other Member States. A recent survey also showed that the UK's proposals for standards were in line with those of other Member States.

The identification of Specific Pollutants

We were asked for further information on how we identify Specific Pollutants. We were asked whether particular chemicals, for example, clopyralid and metaldehyde, had been considered. There were also questions about how some substances been identified in view of limited data on monitoring.

The Water Framework Directive requires that Member States identify as Specific Pollutants, substances that are 'discharged in significant quantities'. This prompted the development of a "prioritisation scheme" that was described in the consultation of 2008. This procedure has also been subject to scientific peer review and is endorsed by the UKTAG.

Details are in the report 'Prioritising chemicals for standard derivation under Annex VII of the Water Framework Directive (SC40038/SR). This sets out the process and its outcomes. It is available on our website.

The process considers the hazardous properties of candidates – their toxicity, the potential for bioaccumulation and their persistence in the environment. It looks at data on exposure on an equal basis across all the chemicals. To assess exposure, we used all the available data on monitoring for the period from 2000 to 2006. This was supplemented with data on the use of the chemicals. This helped get round gaps in monitoring.

All the properties are ranked and combined into a score that reflects the total risk to the environment. Substances attracting the highest scores are taken forward for the development of standards. The process led to the proposals for 2008 and the second set in 2012.

Biotic Ligand Models and background concentrations

The use of Biotic Ligand Model (BLM) leads to standards for certain metals that are based on the bioavailability of various forms of the metal. The approach to enable consideration of bioavailability in the determination of EQSs was generally well received.

Based on the comments received, we shall propose bioavailable standards where the evidence and the models support the approach. Where 'full' BLMs are not available but the scientific evidence supports an allowance for water quality factors, we shall include such principles in our proposals. This covers standards for copper in saltwater.

Whatever method is used to assess risks from metals, we need to account for the natural background. Comments were received on the determination of background concentrations for zinc and other metals. These views highlighted the need to have an agreed approach, and the need to consider the differing metallo-regions across the UK. We must also look at the potential for aquatic organisms to adapt and acclimatise to background concentrations.

Our consultation document described the approaches that have been identified by the EU for the derivation of background concentrations. We agree that a definitive approach is needed, especially for zinc in freshwaters. This is because the standard for zinc is expressed as an 'added risk' over and above a background. Details of the background are required in order to assess compliance and action. We plan to provide a finalised method on this by March next year before issuing final recommendations on standards for zinc.

Work is underway to consider these approaches and to propose a method that will be used in the UK. This will be published in 2013 and will consider the data and comments that have been received during the present consultation.

Deriving standards for Specific Pollutants

Some respondents stated that the Assessment Factors can result in over precautionary standards and that this has implications for costs for treatment.

Standards are designed to protect all receptors from the toxic effects of substances. They are derived from an assessment of available laboratory data on toxicity. Where field data are available, or where there are data from mesocosms (systems that simulate real-life conditions), these are incorporated.

We never have data for all the species that might be exposed. Assessment Factors are applied to take account of the gaps. Guidance on the selection of Assessment Factors has been developed by the EU. This reflects the current state of the science of risk assessment and aims to be consistent with other regimes for chemical risk assessment such as REACH.

Where there is a high uncertainty and big gaps, large Assessment Factors (and tighter standards) follow. If there is too much uncertainty, as shown by a large Assessment Factor, the standard was not included in our proposals. If new information is made available that helps reduce uncertainty, this may result in a revision of the standard.

Assurances were sought that the actual standards have not been influenced by the costs of measures needed to meet them. We respond that proposals have been developed using available data, scientific studies of the impact on the aquatic environment and following the EU's Technical Guidance on EQS derivation. The question of costs, benefits and the need to act is considered afterwards in the work on river basin management plan and is not an issue which the UKTAG can consider in making its technical and scientific recommendations to UK government administrations.

Individual chemicals: cyanide

As a result of the consultation, UKTAG have been made aware of further information that was not available when the cyanide EQS was developed. UKTAG think this will have a bearing on the determination of a robust EQS but there is insufficient time to take this forward so the standard will be withdrawn. The existing standard for cyanide will be retained.

Individual chemicals: zinc in saltwater

New data and comments have been provided by the zinc industry. These additional data included a recent and significant saltwater mesocosm study. We have reviewed this study and concluded that it helps reduce uncertainty in the standard. The study therefore supports a reduction in the assessment factor applied in the derivation of the saltwater zinc standard and, therefore, a revision to the proposed EQS.

Further work is also being undertaken to identify an approach for determining background concentrations for zinc which are required to implement both the freshwater and saltwater zinc EQSs. Once this further work is complete UKTAG will come forward with its recommendations for zinc. The EQS values and the method for estimating background concentrations will be included in an updated report on the Specific Pollutants recommendations in Spring 2013.

Individual chemicals: copper in saltwater

The copper industry has suggested a revision to the model used to correct for dissolved organic carbon and that EC50 rather than EC10 data should be used. The additional data and comments received have been considered and scenarios tested using all the possible combinations of input data and models to correct for DOC.

UKTAG prefers a correction based on EC10 values than one based on EC50 values, This is because EC10 values are the endpoints used to derive EQSs and they use directly measured

experimental data, thereby avoiding the need for a correction factor to extrapolate from an EC50. Both the power and linear interpolation models provide good description to the ecotoxicity datasets but the latter is favoured because it provides a slightly better fit to data in the species sensitivity distribution model used to derive the EQS. Furthermore, in the absence of a strong technical reason for favouring one model over the other, the conceptually simplest model should prevail. For these reasons, UKTAG proposes to correct for the protective effects of DOC based on a linear model applied to EC10 data.

Due to an oversight in applying the DOC correction to the data used to derive the EQS, the numerical value of the proposed copper saltwater EQS has changed to 3.76 ug/l dissolved copper, expressed as an annual average.

Individual chemicals: Pendimethalin

A number of comments were received on the derivation of the EQS for pendimethalin in freshwater. These included comments on the size of the Assessment Factor used to derive the water column standard, the end point used to derive the secondary poisoning standard and the size of the bioconcentration factor used to estimate a back-calculated water standard from the secondary poisoning (biota) standard. Detailed consideration of the comments and data provided has led to an amendment to the proposed EQS value for pendimethalin. In summary, the derivation of the standard to protect against secondary poisoning has been modified; as a result, the standard for direct toxicity via the water column and the water standard back-calculated from the biota standard are identical.

Summary for Chapter 3: Groundwater

The comments led to changes in our report to give greater clarity and explanation, especially in how the standards would be used in the full process of taking decisions. Details are in Annex A and are summarised below.

The comments included concerns about how the new nitrate thresholds for wetlands were derived and how they would be used. There was a range of views that the overall process was just right, too precautionary, or too strict.

Similar concerns were expressed about the threshold for use in protecting groundwater as resources for human use. There were queries about monitoring and how the thresholds will be applied in conjunction with the drinking water standard. There were mixed views about the proposed move to a single threshold for nitrate that applies to the whole of the UK.

There were questions about monitoring and how we take account of underground plumes of pollution. Hazardous substances attracted the most responses. A variety of responders expressed concerns about the way that Minimum Reporting Values (MRV) are proposed for use as "standards". Concerns focussed on how the values would be used. Some wanted no change from the current position.

For non-hazardous substances a concern was expressed that the new guidance links the water bodies to the standards for the protection of sources of drinking water, even when there is currently no such abstraction from the part of the groundwater body concerned.

Summary for Chapter 4: Alien species

There was general support for the UKTAG to base its listings of alien species on the risk assessments done by the GBNNSS. There was similar support for the creation of an "alert" list.

Respondents backed the idea that 'locally absent' species can have a 'high impact'. We will give further thought to this. However, as explained in the consultation, there are considerable difficulties in determining whether or not a species is naturally absent from a part of GB and if it is determined

to be so, finding evidence about whether or not, and in what circumstances, its impact may be high. These difficulties mean that UKTAG is unable to make any recommendations on locally absent species at this time.

There were no proposals for new species to be added but we were asked why the Pacific oyster and *Sargassum muticum* had been moved to a lower list. We explained the process of how the UKTAG links to the GBNNSS risk assessments. As more research becomes apparent the GBNNSS may revise the risk assessments.

Summary for Chapter 5: River flow

There were views that the standards for low flows should be tested against ecological data. Also, the UKTAG should complete the technical assessment for mid to higher flows, and publish the results for low flows, before deciding on a full and final set of proposals. In carrying out its review, UKTAG did review the available scientific information on the relationship between low flows, mid flows and higher flows and the ecological quality of rivers. We summarised the outcome of the review in the consultation and provide references to the supporting technical papers. UKTAG agrees that this is an area we need to keep under review. The development of better methods for quantifying the ecological effects of flow alterations is a key priority in UKTAG's on-going work programme.

There was concern that the UKTAG proposed to relax standards for all river types. We have clarified that the revision has been driven by evidence that the existing standards do not reflect an ecological impact consistent with poor and bad status. This applies only to mid and high flows – the current standards over-predict impacts. There has been no relaxation in any standards that apply to high and good status.

One respondent asked for guidance on a methodology for deriving naturalised flows. This work will be developed as a priority under the UKTAG's work programme.

Generally we have made changes in the wording to the report and provided extra information on the implications for existing abstractions.

Summary for Chapter 6: Water level in lakes

Certain questions led to more detail in our report on the implementation of our approach, and on topics such as Heavily Modified Water Bodies.

There was concern regarding the complexity of the method. We acknowledge that the revised method is more complicated. However to mitigate this we have proposed a tiered approach to its application. We also consider that the new approach better reflects the ecological risk posed by water abstractions and so continue to recommend its adoption.

In recognition of the increased complexity we recommend a risk based approach where water bodies are screened according to the pressure from existing abstractions and whether the existing lake outflow standards for good status are being met.

One respondent asked for more information on fluctuating levels and their effect on nesting divers. We have replied that the revised standards do not replace the need to actively manage lakes with designated habitats or protected species along the lake shoreline.

Summary for Chapter 7: Intermittent discharges

The comments required added text to clarify that the standards would not be used in classification, and to discuss the implications of the changes for future investment. The question of a Regulatory Impact Assessment was also raised.

Summary for Chapter 8: Acidification

Few changes were sought.

ANNEX 1 – DETAILED COMMENTS

For each chapter of the draft report on our proposals, the following are provided:

- advice on amendments to the report and supporting documents
- detailed comments covering our response.

Details for Chapter 1: Introduction

Comments on technical aspects

Methodology – Chapter 1: Introduction	
Comments	Response
<p>It would be useful to show how the different quality elements are combined to classify ecological status, chemical status and surface water status.</p> <p>[Anglian Water]</p>	<p>We have sought to improve the references to the UKTAG guidance on this. The key document is: Recommendations on Surface Water Classification Schemes for the purposes of the Water Framework Directive.</p> <p>http://www.wfduk.org/resources%20recommendations-surface-water-classification-schemes</p>
<p>A mention of Drinking Water Protected Areas is needed, as well as clarification of the difference to derive the status classification between surface water and groundwater bodies</p> <p>[Anglian Water]</p>	<p>Noted. As before, information can be found in the UKTAG guidance, Recommendations on Surface Water Classification Schemes for the purposes of the Water Framework Directive.</p> <p>http://www.wfduk.org/resources%20recommendations-surface-water-classification-schemes</p>

Comments on the policy aspects

Future ways of working – Chapter 1: Introduction	
Comments	Response
<p>6 weeks is too short a time for a consultation to deal with complex technical issues. This should be extended to 12 weeks. We also request a longer period for future public consultations.</p> <p>[Scottish Water, Non Ferrous Alliance, Shell Global Solutions, Thames Water]</p>	<p>We shall consider these points when planning the engagement and consultation on future proposals.</p> <p>The consultation on the report was part of a wider process of engagement that included workshops to brief and help interested parties prepare their responses for the consultation.</p> <p>After the consultation further meetings with some of the respondents took place to clarify their comments and to seek additional information and an appropriate way forward.</p> <p>There will be further opportunities to formally comment on the proposed standards should the UK administrations decide to act on the UKTAG's proposals and consult on the formal adoption of the proposed standards.</p>

Future ways of working – Chapter 1: Introduction	
Comments	Response
<p>The period of the consultation falls towards the end of the academic year and therefore, for a number of these other experts, the time frame and length of the consultation is inconvenient.</p> <p>[Non Ferrous Alliance]</p>	<p>We note the concerns about timing and will consider this for future consultations.</p>
<p>Planning for investment by water companies takes place 5-10 years ahead of delivery. The UKTAG should make allowance for planning and implementation by companies in the timeline for setting standards and bringing them into force.</p> <p>[Scottish Water]</p>	<p>We recognise that the planning cycle is not perfectly aligned with the cycles of water industry investment. The UK administrations will decide if and when the standards will be used.</p> <p>The UKTAG's proposals are for standards that can be used at their earliest in cycle 2 of river basin management planning. This cycle will involve planning up to December 2015 and delivery up to 2027 and potentially beyond.</p> <p>It is the river basin planning process (which includes extensive engagement and consultation) that will determine if and when measures are required to secure compliance with the standards.</p>
<p>Clarification is needed as to which standards will be applicable to the second river basin management plans and confidence is needed with regard to which intercalibration parameter will be available. This is essential to allow planning within investment periods to tie in with the phasing of improvements through the plans.</p> <p>In addition, it is imperative that river basin planners have a full understanding of the issue of confidence and the applicability of standards, particularly where they are recommended from indirect models. This needs to be considered when addressing "programmes of measures" to ensure that a balance is achieved between the requirement for more monitoring and the clear need for action.</p> <p>[Scottish Water]</p>	<p>Our above comments on the cycles of planning apply here.</p> <p>We agree that river basin planners must have full understanding of the issue of confidence and applicability of standards, and a full understanding of the context within which a particular standard is to be used.</p> <p>Our proposals ensure that standards are equipped to allow their use, with, for example, data from monitoring, to assess and report the statistical confidence that the standard is failed.</p> <p>This feature, taken with the appropriate level of monitoring, provides the technical basis for ensuring action is taken only when it is clear that a standard has been failed, for example, with the required level of confidence.</p>
<p>We note that a change to the phosphorus standard is delayed and due in autumn. If this is delayed this would lead to uncertainty in our Business Planning process and could lead to abortive investment.</p> <p>[Anglian Water]</p>	<p>Proposals for phosphorus are currently being developed and stakeholders will be updated on the proposals soon.</p> <p>A key part of the work is to ensure that expensive action is sought only when deemed necessary from the full and complete weight of evidence on the links to risks and damage and the causes of this.</p>
<p>One or more events are needed for phosphorus and these should review the issues considered by the UKTAG in coming to its conclusions on phosphorus standards. Independent experts and academics should be included, and the events should explicitly provide a platform for dissenting views (the case for and the case against).</p> <p>[NFU]</p>	<p>When proposals for revised phosphorus standards are ready and the UKTAG proceeds to consultation, meetings with all interested stakeholders will be arranged.</p>

Future ways of working – Chapter 1: Introduction	
Comments	Response
<p>Divergent standards for the WFD and protected areas should be unified – a common phosphorus standard for WFD and Natura 2000 sites is an obvious candidate for this.</p> <p>[Welsh Water]</p>	<p>The UKTAG is continuing work to determine whether standards achieving WFD and Habitats Directive objectives can be aligned.</p>
<p>An exact timetable for this for the WFD and protected areas work is requested. We should recognise that certain standards for protected sites may be higher than those set under the WFD.</p> <p>[Joint Links]</p>	<p>A detailed timetable for seeking alignment of WFD status and conservation objectives under the Habitats Directive is not yet available. A key part of such work is a review of the extent to which standards developed for ecological status take account of the needs of protected species and habitats</p>

Impact assessments – Chapter 1: Introduction	
Comments	Response
<p>There is a need to assess the potential cost versus environmental benefit of any changes being considered. A Regulatory Impact Assessment of any proposed changes should be undertaken before the proposals are implemented.</p> <p>This will indicate the potential implications of the proposals and therefore should be necessary. For example, source apportionment is not clear for all water bodies and there is a need to tackle diffuse pollution. We have developed models at a catchment level which demonstrate that urban and agricultural diffuse pollution is a contributing factor to failures.</p> <p>[Anglian Water]</p>	<p>The role of the UKTAG is to recommend standards to protect the environment based on the underlying science. We also ensure that these standards can be used correctly in the work needed for a Regulatory Impact Assessment, and used correctly to assess apportionment and the costs and benefits of action (within, for example, mathematical models). To this extent the UKTAG prepares the way for subsequent work which will be undertaken by competent authorities as part of the river basin planning process, should UK government administrations decide to adopt UKTAG's recommendations for new and revised standards.</p> <p>The decisions by which standards are adopted, when they should be achieved, and through which actions, are additional and critical processes. These decisions will be taken as part of the process of river basin management planning and will be subject to ministerial sign-off.</p> <p>This process will consider issues of apportionment, costs, benefits and affordability, as part of the assessment of "disproportionate cost" and "feasibility". In some cases the types of models described by Anglian Water will be a key part of this process</p>

Impact assessments – Chapter 1: Introduction

Comments	Response
<p>It is essential that the disproportionate cost and technical feasibility tests in Article 4 of the WFD are fully and robustly applied to ensure that (a) objectives / alternative objectives for water bodies are correctly established in the second RBMPs and (b) any further investment in treatment for such substances does not increase the carbon footprints of companies, for what will be marginal (if any) real and measurable benefit to the environment.</p> <p>The use of “alternative objectives” is important in allowing enough time to monitor a risk properly where confidence is low to allow appropriate spending of public money and this is essential to deliver the aims of the Directive in the most cost effective manner.</p> <p>Where good status is unlikely to be achieved over a single RBMP cycle (for example on grounds of cost, complexity of impacts, practicality etc.), then alternative objectives to include a phased investment over successive river basin management cycles is the best way forward.</p> <p>[Scottish Water]</p>	<p>The UKTAG agrees that these issues are important.</p> <p>As set out above, the UKTAG has proposed standards that are equipped technically for the types of calculations that will be needed to secure confidence in the need to act, and to ensure correct calculations to decide the forms of action that are appropriate. This includes decisions to set objectives and alternative objectives which will be presented by competent authorities in River Basin Plans, for ministerial approval.</p>
<p>There is on page 10 a comment on the "alignment" of WFD standards with protected area standards". This, of course, is a worst case scenario, which will push to highest ecological/chemical standards if applied, generating significant costs.</p> <p>[United Utilities]</p>	<p>The UKTAG would like to see the alignment of WFD standards and Habitats Directive standards. This would apply within the protected areas of the Habitats Directive. .</p> <p>For instance, we would like to explore whether for a particular substance, an objective under the Habitats Directive objective can be achieved by complying with the standard for good or high status under the WFD.</p>
<p>For some standards where extra corroboration is required, we assume that action will not be taken until the relevant data are gathered. This would avoid driving tighter standards and consequent investment in solutions, where it may not be necessary.</p> <p>[Anglian Water]</p>	<p>This is also the view of the UKTAG.</p>

Impact assessments – Chapter 1: Introduction	
Comments	Response
<p>No reference is made to how diffuse source pollution will specifically be managed. Diffuse pollution is often driven by a combination of land use activity and rainfall events. The damaging effects of diffuse pollution can therefore take place over a relatively short space of time.</p> <p>Without significant improvements in monitoring regimes, many diffuse pollutants may well go undetected and be able to impact stream ecology.</p> <p>[Scottish Water]</p>	<p>The proposals of the UKTAG for standards must embrace the requirements of procedures to assess risk, calculate compliance and calculate action to remove failure. For this for certain types of intermittent pollution this can be difficult.</p> <p>If a chemical enters a river only one or two days a year then the procedures may need to resemble those used to detect, manage and prevent the risk of pollution incidents and accidents.</p> <p>In most other cases the solution can lie in setting standards as means or percentiles that are correlated with the levels on peak events. On average, widespread failure of such standards would come through in the total numbers of failures of such standards. This would prompt a review of monitoring.</p> <p>Ultimately, in some cases, we may need to seek to capture samples on wet days or to pool data across a catchment or Region.</p>
<p>The huge tightening of Environmental Quality Standards may impact on activities in agriculture, with knock-on consequences that may impact the ability of agronomists and farmers to control diseases and weeds in a range of crops, which in turn will ultimately impact farm profitability. The consultation goes on to review the implications of the proposed standards for surface waters, by indicating the numbers of monitored sites that ‘would not’ or ‘might not’ meet the standards.</p> <p>Although it is predicted that no sites will ‘not meet’ or ‘might not meet’ the proposed standards for carbendazim, chlorothalonil or pendimethalin, we are concerned that this is based on a very low number of site assessments and / or very limited data.</p> <p>Should sampling be extended then the number of sites failing could be somewhat greater, again with knock-on consequences.</p> <p>Whilst we appreciate that cost effectiveness and disproportionate costs are taken into consideration when meeting the WFDs objectives, we feel that being aware of the consequences of setting lower (tighter) standards at an early stage in the process could avoid much unnecessary resource outlay in assessing the impacts of the consequences at a later date.</p> <p>[The Agricultural Industries Association]</p>	<p>The role of the UKTAG is to make recommendations for standards to protect the environment based on the underlying science. We also ensure that these standards can be used correctly in the processes for deciding action, and used correctly to assess apportionment and the costs and benefits.</p> <p>To this extent the UKTAG prepares the way for subsequent work on apportionment, costs, benefits and affordability, as part of the assessment of “disproportionate cost” and “feasibility”. Within this structure the UKTAG agrees the merits of an early start to such monitoring and assessment, including calculations with mathematical models. The assessment of factors such as “disproportionate” depends on the scale of damage across regions and the UK.</p>

Impact assessments – Chapter 1: Introduction	
Comments	Response
<p>This is a purely scientific based review and no consideration is given to the potential cost vs. environmental benefit of any changes being considered.</p> <p>We believe a Regulatory Impact Assessment of any proposed changes should be undertaken before the proposals are implemented. This will indicate the potential implications of the proposals and therefore should be necessary. For example, source apportionment is not clear for all water bodies, and there is a need to tackle diffuse pollution.</p> <p>The control of chemicals is mentioned and it is not confirmed if there are plans to control any of the new Specific Pollutants at source and ban or control their use under REACH regulations. We would like this to be assessed by a Regulatory Impact Assessment if this were proposed.</p> <p>[Anglian Water]</p>	<p>The above comments on topics such as Regulatory Impact Assessment, assessment of costs and benefits and control mechanisms apply also to the issues raised here. They are not issues which the UKTAG has responsibility for, but will be considered as part of the river basin planning process undertaken by environment agencies and which are subject to ministerial approval.</p>
<p>Supportive of approach for zinc, a full Regulatory Impact Assessment must be carried out.</p> <p>[Scottish Water]</p>	<p>The UKTAG's response to these comments is covered above in terms of the development of the proposed standards and conditions and their planned progress through the processes of the river basin management plans. These will supply the added data and assessments required to establish the standards within a full framework for taking decisions.</p> <p>Most of the comments we have received on this topic will be equally valid in these coming stages and will help equip agencies and others on what needs to be done.</p>
<p>Consequences of zinc and copper changes on costs and treatment not fully understood.</p> <p>[Anglian Water, ABP, Thames Water, Wessex Water, Scottish Water]</p>	
<p>Standards have been derived for many widely used pesticides and in many cases the standards have become more stringent e.g. carbendazim – concern was raised re: implications on these high use pesticides.</p> <p>[Agricultural Industries Association, Anonymous, National Farmers Union]</p>	
<p>New bio-available manganese standard - if the end result for manganese is a requirement for improved manganese removal in coal mine water treatment schemes, then this will further increase costs, adversely affecting cost-benefit ratios such that some schemes are not deemed to be cost effective; manganese removal is technically difficult.</p> <p>[The Coal Authority]</p>	
<p>Tightening of threshold risk assessment for ground water believed to impact on surface water quality (page 44) will prompt more groundwater investigations.</p> <p>[United Utilities]</p>	

Implications – Chapter 1: Introduction	
Comments	Response
<p>There is an overemphasis of the potential of reporting more failures than are actually occurring; in other words it has a pessimistic bias.</p> <p>This ignores the inaccuracy of the risk assessments and the limited biological monitoring, which mean that results are in fact likely to be overly optimistic, with more failures occurring than reported by the classification.</p> <p>[Joint Links]</p>	<p>We agree the need to ensure that risk assessments are accurate.</p> <p>The UKTAG agrees that additional monitoring to check compliance with existing standards may lead to more failures in cases that had been assumed wrongly in the past to have been at negligible risk of failure and so not to warrant much monitoring. The agencies keep these issues under review in the design of their monitoring programmes and in the deployment of their mathematical models.</p> <p>The introduction of standards for new issues, new aspects of biology, or new chemicals will also tend to produce extra downgrades. The UKTAG has tried to estimate this for each of the new standards.</p> <p>Overall the UKTAG remains of the view that the main threat to classification is a pessimistic bias. This outcome is mathematically certain so long as the class is assigned without reference to statistical confidence, and so long as class is reported on the basis of the “one out all-out” rule looking across lots of standards and assessments. This bias must be managed in the assessment of national and regional summaries of performance and trend.</p> <p>But the issue need not influence proposals for individual standards and their progress to decisions on taking action. The need be no bias for example in reporting that X per cent of water bodies fail their standard for phosphorus.</p>

Implications – Chapter 1: Introduction	
Comments	Response
<p>We are concerned that despite being a consultation on environmental standards this consultation continually strays into questions about the risk of wasted investment on measures. Questions of economics should not feature in the WFD process of standard setting.</p> <p>The agencies must, clarify how baselines have shifted in order to produce a representative picture of water body health over time. Throughout the consultation there appears to be an assumption that standards should be set in a way that minimises risk of failure rather than maximises environmental protection; this means that the consultation lacks an appropriately precautionary approach.</p> <p>[Joint Links]</p>	<p>The UKTAG seeks standards that are set using the best possible information in the science and data. The approach that also looks at the uncertainty in the relation between level and impact. We try to be explicit in how such uncertainty is interpreted in the process of setting the standard and seek action to increase confidence. In this stage of the total process the proposal is dictated by the scientific evidence of risk or damage. In some cases the process is guided by advice from Europe.</p> <p>We want to know the potential scale of non-compliance and therefore gain an indication of the potential impacts of achieving the standard. If the potential costs of compliance are high, we need to be more confident in our scientific understanding before potentially imposing unnecessary cost and diverting expenditure away from where it would deliver real benefits.</p> <p>Including information on possible consequences of adopting a new standard is also a good way of drawing the consultation to the attention of those who may need to plan to take action in the future.</p> <p>The UKTAG makes sure that the standards are framed in a way that allows them to be used correctly in subsequent stages of deciding what to do about failed standards. This allows a correct assessment of compliance and the costs and benefits of action. It also involves the best way of making regulatory decisions that will deliver the degree of protection required.</p> <p>The UKTAG agrees that if standards change over time, we need to take care in how we demonstrate the changes in real quality. This requires a back-calculation of past results using the latest standards. Or methods based, for example, on the actual concentrations and loads of pollutants.</p>

Implications – Chapter 1: Introduction	
Comments	Response
<p>Concerns re: the implications of the differing approaches for assessing pesticides under the Plant Protection Products Directive (PPPD) and the WFD. Comments were made on proposals for standards for carbendazim, chlorothalonil, methiocarb and pendimethalin back in 2009.</p> <p>These pointed out a number of discrepancies in how the proposed standards were derived compared with how 'Regulatory Acceptable Concentrations' (RAC) used to register pesticide products were determined. For chlorothalonil and pendimethalin may be in breach of proposed statutory standards.</p> <p>[The Chemicals Regulation Directorate]</p>	<p>The derivation of standards involves consideration of the available data on the impact of the substance on the aquatic environment. For pesticides this includes data that have been reviewed in relation to the risk assessments undertaken for the Plant Protection Products Directive (PPPD). These data are obtained from the risk assessments available on the EFSA and EU websites.</p> <p>There are differences between the WFD and the PPPD that result in different outcomes. Risk for example is determined through the PPPD via the derivation of a Toxicity Exposure Ratio (TER) which directly compares toxicity data (without the use of Safety Factors) with predicted exposure concentrations. This differs from the WFD where a standard is derived for the protection of aquatic life based on the methodology outlined in Annex V of the WFD and associated Technical Guidance. There are also some differences in the treatment of, for example, algal toxicity data.</p> <p>These differences can result in the different outcomes. In addition the fact that the PPPD includes assessments in field margin ditches close to the point of application and makes an allowance for recovery from impacts mean that differences in protection goals and methodologies can result in different assessments of risk</p>
<p>Comments were made on proposals standards for carbendazim, chlorothalonil, methiocarb and pendimethalin back in 2009. These pointed out a number of discrepancies in how the proposed standard were derived compared with how 'Regulatory Acceptable Concentrations' (RAC) used to register pesticide products were determined. For chlorothalonil and pendimethalin may be in breach of proposed statutory standard.</p> <p>[The Chemicals Regulation Directorate]</p>	<p>As noted above, there are some differences in the protection goals and methodologies used to estimate risks of pesticides in the PPPD and WFD. One major difference is that risk assessment under the PPPD is based on risks at a hypothetical field margin ditch whereas the WFD standards are intended to be used in controlled waters. Although data considered during the PPPD risk assessments are drawn upon in the derivation of the standards for WFD the differences between the two regimes can result in different outcomes.</p>

Implications – Chapter 1: Introduction	
Comments	Response
<p>Lack of monitoring data for many of the substances makes assessment of implications difficult and unable to support the inclusion of some substances as Specific Pollutants e.g. benzyl butyl phthalate. [Scottish Water]</p>	<p>We have used available monitoring data to give an indication of compliance with standards for a number of the substances limited monitoring data were available. Monitoring data were also used in the process of identifying substances for consideration as Specific Pollutants. These data were used to assess the potential exposure of the aquatic environment to the substance.</p> <p>As part of the river basin management planning process the agencies will introduce additional monitoring to confirm whether standards are met. This may be augmented by modeling. Additional monitoring and assessment may be needed in order to design control measures. In some cases the extra information may suggest a review of the standard if impacts turn out to be less or more than expected.</p> <p>In some cases, risk assessments and mathematical modeling potential impacts can also be used to identify the type and location of some control measures.</p>
<p>Compliance with some of the metal standards may be very difficult due to background concentrations and that by having standards close to analytical capabilities this will also cause issues. [The Coal Authority]</p>	<p>For each proposed standard we have undertaken an 'implementation analysis' to highlight potential difficulties associated with chemical analysis or with background concentrations. In such cases the UKTAG has taken steps to overcome those difficulties where possible.</p> <p>We are working to develop definitive guidance on the estimation of backgrounds for metals. For the metals we do not anticipate any analytical problems.</p> <p>In cases where action depends on monitoring, we advise that these issues are built properly into the estimates of confidence that a standard is not met. Taking action to secure compliance depends on securing the appropriate degree of confidence on this issue. The form of the standard has been designed to allow this and to allow all forms of uncertainties to be built in.</p>
<p>Methiocarb is a direct alternative to metaldehyde. The latter has been identified as of concern in drinking water but concern is that may have implications if methiocarb is identified as a Specific Pollutant. [NFU]</p> <p>... There is a strong case for the selection of metaldehyde as it is in widespread use, is persistent in the environment and runs off land into the water environment ... [Thames Water]</p>	<p>We have not proposed that metaldehyde be identified as a specific pollutant. Our selection procedure prioritises by ranking the risk posed to ecological quality not to drinking water.</p> <p>Metaldehyde is of concern in relation to drinking water and in some areas is posing a risk to the achievement of the objectives for drinking water protected areas. Where such objectives are at risk, the Water Framework Directive requires that we put in place the necessary protection.</p>

Details for Chapter 2: Specific Pollutants

Comments on technical aspects of the report

Methodology – the Identification of substances	
Comments	Response
<p>The balance of factors when ranking potential pollutants is not clear. Are hazardous properties e.g. toxicity, persistence, and the potential to accumulate in organisms given greater weight than potential exposure of the environment to the substance? We suggest that the greater weight should be placed on hazardous and persistent properties rather than regularity of occurrence.</p> <p>The report should identify the ranking for each Specific Pollutant indicating the main contributing factor to their listing as pollutants. For example the presence of glyphosate in the listing could be assumed to be more to do with the level of use within agriculture, amenity and garden usage rather than a concern about its toxicity.</p> <p>[Anonymous]</p> <p>With regard to glyphosate, do you have any information on exceedances of this standard?</p> <p>[Workshop in May, 2012]</p>	<p>The process used to identify the candidate Specific Pollutants gave equal weight to hazard and exposure.</p> <p>The approach involved combining the hazard and exposure scores to give a ranking of risk. Low exposure but high hazard gives a moderate to low ranking (a score of 3 or 5). Low hazard but high exposure results in the same ranking.</p> <p>For example, data showed the presence of clopyralid in the environment but it was not found to be of high hazard. As a result, the overall ranking was low and clopyralid was not taken forward as a Specific Pollutant. Only substances ranked 1 or 2 were taken forward. This requires hazard and exposure scores that are both moderate to high.</p> <p>The report outlining the prioritisation process used and the results is on our website (Prioritising chemicals for standard derivation under Annex VIII of the Water Framework Directive SC040038/SR). This report contains information on the exposure and hazard ranking that led to the overall ranking of a substance.</p> <p>The pesticides taken forward in the consultation were all identified as being of high toxicity and potentially high exposure based on their use and/ or the data on monitoring.</p> <p>Although glyphosate is of lower toxicity than the other pesticides taken forward it met the criteria for toxicity. Together with the fact that it is used in large quantities, including some 'high risk' applications (e.g. use on hard surface areas), this led to an overall ranking of 2. There was little information from the actual monitoring of the environment.</p>

Methodology – the Identification of substances	
Comments	Response
<p>How were the initial 300 candidates chosen and for what reasons were 290 excluded. Did the three compounds removed from consideration because they were on the EU proposed list, actually make it onto the EU list?</p> <p>[Anonymous, BASF]</p>	<p>The chemicals identified for inclusion as Specific Pollutants were identified through a prioritisation process which is outlined in the report Prioritising chemicals for standard derivation under Annex VIII of the Water Framework Directive SC040038/SR). This report is on our website as it was one of the background reports included with the consultation.</p> <p>The prioritisation process involved ranking substances as Priority 1-5 based on consideration of data on their hazard and exposure. The 300 substances considered included substances for which there are international and national obligations (such as OSPAR and the Dangerous Substance Directive 76/464/EEC) as well as those identified through national initiatives (such as surveys of UK pesticide use and reviews by the Environment Agency of human pharmaceuticals and veterinary medicines).</p> <p>The substances taken forward were among the substances that had a high priority ranking (1 or 2 based on the hazard and exposure data).</p> <p>The three substances were identified as candidate Specific Pollutants but not taken forward due to their inclusion on the EU list of potential PS/PHS are PFOS, 17 beta oestradiol and 17 alpha ethinyloestradiol. These substances were included in the EU proposals for a revised standard Directive which was published for consultation in January 2012.</p>

Methodology – the Identification of substances	
Comments	Response
<p>In the substances that have been considered and discounted for inclusion, were the compounds metaldehyde and clopyralid considered? These substances are known to be abundant in the environment and can cause issues for sources of drinking water. We would like to see them included. [Anglian Water]</p>	<p>Metaldehyde was one of the substances considered in the prioritisation exercise undertaken to identify candidate Specific Pollutants. It was assigned a priority ranking of 5 based on a score of 0 for hazard as it did not meet any of the criteria for P, B or T and an exposure score of 3. The latter was based on tonnage data as no monitoring data were available at the time of the prioritisation exercise (data considered for 2000-2006). Due to the low ranking the substance was not taken forward. Since the prioritisation exercise has been undertaken we have become aware of frequent occurrences of metaldehyde in drinking water.</p> <p>Clopyralid was also one of the substances considered. It was also assigned a prioritisation score of 5 based on a score of 0 for hazard (as it did not meet any of the criteria for toxicity, persistence, and potential to accumulate in organisms) and an exposure score of 2 based on data from monitoring and on usage. Monitoring data showed that clopyralid was widely monitored in groundwater but limited data were available for surface water. The monitoring data suggested it was not widely detected and this along with the hazard data meant clopyralid did not get a high priority ranking.</p>
<p>The limited monitoring data for many of the substances indicates the need to consider exposure further before designating as a Specific Pollutant. [BASF, Scottish Water]</p>	<p>The monitoring data used in the indicative compliance assessment was limited to those sites included in the current WFD monitoring programme. For many substances there has been little or no monitoring at these sites, as in many cases, the substances have not been covered by legislation and there had been no requirement to undertake monitoring</p> <p>The prioritisation exercise used all available monitoring data, i.e. data not restricted to WFD monitoring sites and also covered a longer time period, i.e. 2000-2006. The available monitoring data were considered alongside usage data to determine potential exposure of a substance to the environment. . This helps overcome gaps caused by sparse monitoring data.</p>

Methodology – the Identification of substances	
Comments	Response
<p>The UKTAG's review of substances has resulted in the selection of the molluscicide methiocarb for classification as a Specific Pollutant. This is supported but notes that the molluscicide metaldehyde has not been selected. There is a strong case for the selection of metaldehyde as it is in widespread use, is persistent in the environment and runs off land into the water environment. Aquatic based molluscs are at risk from this substance, but there is some evidence showing toxicology impacts on other aquatic life as well.</p> <p>[Thames Water]</p> <p>Methiocarb is a direct alternative to metaldehyde. The latter has been identified as of concern in drinking water but concern is that may have implications if methiocarb is identified as a Specific Pollutant.</p> <p>[NFU]</p> <p>... were metaldehyde and clopyralid considered? These substances are known to be abundant in the environment and can cause issues for sources of drinking water. We would like to see them included.</p> <p>[Anglian Water]</p>	<p>Metaldehyde was one of the substances considered in the prioritisation exercise. It was assigned a priority ranking of 5 based on a score of 0 for hazard as it did not meet any of the criteria for the toxicity, persistence, and potential to accumulate in organisms. It secured an exposure score of 3.</p> <p>The dataset included acute toxicity data for freshwater molluscs (zebra mussel) but this species was only moderately sensitive to methiocarb, in line with sensitivities of other aquatic invertebrates. Exposure was based on tonnage data as no monitoring data were available at the time of the prioritisation exercise (the data were for 2000-2006). Due to the low ranking the substance was not taken forward.</p> <p>We have not proposed that metaldehyde be identified as a specific pollutant. Our selection procedure prioritises by ranking the risk posed to ecological quality not to drinking water.</p> <p>Metaldehyde is of concern in relation to drinking water and in some areas is posing a risk to the achievement of the objectives for drinking water protected areas. Where such objectives are at risk from metaldehyde or clorpyralid, the Water Framework Directive requires that we put in place the necessary protection.</p>
<p>For pendimethalin, all available monitoring data showed no concern (page 26 to 32). Based on these facts and the substance properties, rather than identifying pendimethalin as a UK Specific Pollutant at this stage, it might instead be justified to increase monitoring and investigation to produce more reliable data 'to improve confidence in the ranking' (3rd bullet on page 13).</p> <p>Identification of pendimethalin as a UK Specific Pollutant without further investigation does not seem justified scientifically, nor from the viewpoint of cost-effectiveness (starting nationwide monitoring programs without any indication or evidence that pendimethalin endangers the goals of the WFD).</p> <p>[BASF]</p>	<p>The monitoring data used in the indicative compliance assessment was obtained from the sites included in the current WFD monitoring programme for the period 2008-10. For many substances there has been little or no monitoring undertaken at these sites as in many cases the substances have not been covered by legislation and there had been no requirement to undertake monitoring.</p> <p>Although a subset of the monitoring data has been used for the indicative compliance, all available monitoring data between 2000 and 2006 were considered for the prioritisation exercise, used alongside available usage data to determine the exposure score. Pendimethalin is a high usage compound and the available monitoring data indicated positive detections in surface water in a number of regions. Along with the high toxicity of this substance, this led to pendimethalin being proposed as a candidate Specific Pollutant.</p>

Methodology – the Identification of substances	
Comments	Response
<p>The findings in Table 4 suggest that no action will be required for the majority of the substances considered and this questions how they were selected for consideration bearing in mind Article 11.</p> <p>A more robust approach would be not to set a standard now, but to gather environmental data and then relate these data to impact.</p> <p>[Thames Water]</p>	<p>The compliance assessment undertaken for the consultation report has been based on a subset of monitoring data, i.e. those data from WFD monitoring sites over the period 2008-2010. Data for many of the substances are limited due to the fact that there has previously been no requirement to undertake monitoring for many of them.</p> <p>Although data for the compliance assessment was often limited and related to certain monitoring sites for a certain time period, monitoring data were also considered in the prioritisation process. For the prioritisation, a larger subset of data was considered with all monitoring data being considered (unless it related for example to a pollution incident or an effluent sample), covering the period 2000-2006.</p> <p>This monitoring data were considered alongside usage data to determine the priority of a substance. In many cases this wider dataset meant more evidence could be considered than was available for the indicative compliance assessment.</p>
<p>For the Specific Pollutants that have been identified, we would like to see a comparison made with the lists from other Member States to make sure that there is a level playing field.</p> <p>[Anonymous, Anglian Water, Dounreay Site Restoration Ltd]</p>	<p>Under the WFD, Member States are required to identify substances as Specific Pollutants. Individual Member States have identified Specific Pollutants to varying extents. A summary of substances that have been considered as Specific Pollutants by Member States has recently been published (Claussen U et al. 2012. Comparison of Limits of River Basin District Specific Pollutants set for the Demands of the European Water Framework Directive in Streams and Rivers. WFD CIS ECOSTAT WG).</p> <p>Through UK representation on an informal multilateral group however, we are aware of the work that is being done on Specific Pollutants by a number of other Member States including France, Germany, Holland, and Denmark. This indicates some variations in the number of substances identified as Specific Pollutants as well as the specific chemicals. These variations will reflect different priorities in Member States but it is clear that there is also a lot of common ground with Member States highlighting many of the same substances. To aid consistency, and to promote good practice, we regularly exchange views and data.</p>

Methodology - BLM and Backgrounds	
Comments	Response
<p>Comments were received stating that there is clear data to support the fact that aquatic organisms adapt and acclimate to background concentrations and references were provided</p> <p>[Non Ferrous Alliance]</p>	<p>The ecotoxicity data on which the zinc standard was derived were assessed for reliability. In addition the effects of concentrations of dissolved organic carbon (DOC), pH and calcium on the sensitivity of plants and animals were considered along with the background concentrations.</p> <p>Like the risk assessment for zinc, the EQS is based on the 'added risk' principle which makes an allowance for backgrounds. In deriving the standard, if the background concentration in a toxicity study was below the designated threshold of 1ug/l it was proposed that the data should not be considered in the derivation of the standard for zinc. This proposed threshold originated from the EU risk assessment which was used as a basis for the work on zinc. By taking backgrounds into account when we assess compliance (for zinc) or undertake investigations (for the other metals) we propose that the possibility of acclimation to natural backgrounds is addressed. Further work is underway to develop guidance on the estimation of natural backgrounds. The references provided by responders will be considered. Because the contribution from backgrounds is an integral component of the zinc EQS, UKTAG's proposals are postponed until Spring 2013 when we expect this further work to be complete.</p>
<p>In determining backgrounds we need to note that the UK consists of different metallo-regions and that this needs to be taken into account when assessing backgrounds (references were provided) and that a single value may not be appropriate</p> <p>[Non Ferrous Alliance]</p>	<p>As discussed above, work is planned to define background concentrations for zinc and other metals. We are grateful for the references and comments provided which will be considered as part of this work.</p>

Methodology - BLM and Backgrounds	
Comments	Response
<p>The Specific Pollutants report outlines various approaches for defining background concentrations. However we need to have a defined approach as different methods and interpretations can lead to very different estimates of background.</p> <p>[ABP]</p> <p>The wording of Table 2.18 and the box on Page 22 should be revised to make it clear how to define the natural background for zinc.</p> <p>[Energy UK]</p>	<p>Assessing compliance for zinc requires a consideration of background concentrations. Possible approaches for deriving background concentrations for zinc that have been identified in the WFD EQS guidance were highlighted in the Specific Pollutants report.</p> <p>We need to develop definitive guidance on estimating backgrounds. We have commissioned work to determine the approach that will be used.</p> <p>Once a suitable approach has been defined and agreed this will be outlined in guidance and used in the assessment of compliance across the UK. This will ensure a single approach is applied and will avoid the potential for varying approaches and therefore varying results as a result of using different methods (as noted above).</p>
<p>Why is zinc the only metal for which an added risk approach has been applied?</p> <p>[The Coal Authority]</p> <p>Backgrounds will also be an issue for other metals.</p> <p>[Thames Water]</p>	<p>Zinc is the only metal for which background concentrations have been explicitly incorporated within the EQS. The reason is that the risk assessment on which the standard is based adopted this 'added risk' approach.</p> <p>It is correct to say that background levels of metals need to be taken into account for other metals as well and this will be a consideration when investigating non-compliances. As noted above, the UKTAG has initiated further work to set out definitive guidance on the estimation of metal backgrounds. This will be made available in 2013 along with our proposals for the zinc EQS.</p>

Methodology - Methodology for deriving standards	
Comments	Response
<p>The Safety Factors applied to the derivation of the standards could result in standards that are over precautionary this would have implications on costs for treatment etc. [Scottish Water]</p> <p>The principle of not proposing a standard where the available dataset leads to the use of an excessively high Safety Factor is supported, however even Safety Factors of 50 and 100 could lead to extremely precautionary standards and we therefore suggest that where Safety Factors above 10 are used in standard setting this is highlighted.</p> <p>A statement is required as to how regulatory authorities should take the magnitude of the Safety Factor into account when determining permit applications</p> <p>We are concerned that the consideration of exceedance of the proposed revised standards for some substances are not considered in light of observed/perceived biological issues.</p> <p>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. [Energy UK]</p>	<p>Standards are based on evidence of substances' toxicity to aquatic life. The derivation of standards involves the application of Assessment Factors (sometimes referred to as 'Safety factors') to account for uncertainties associated with the available data, e.g. the range of species for which data are available, or the relatively short periods of time over which ecotoxicity tests are performed.</p> <p>The approach used for the derivation of the proposed standards is in line with the WFD EQS guidance. This includes the Assessment Factors that we have applied.</p> <p>We noted in the consultation document, the size of the factors applied in the derivation have been considered in deciding whether to take forward a standard as a Specific Pollutant. If there was too much uncertainty, as shown by the use of large Assessment Factors, the standard was not taken forward into our proposals.</p> <p>When assessing compliance, a high confidence is required in the level of failure before action is taken.</p> <p>Failure of a standard will generally trigger an investigation. This will improve our understanding of the problem in terms of the confidence that the standard is breached and identifying reasons for the breach. This is taken to the point where appropriate actions and improvement measures can be assessed.</p> <p>The investigation may include additional investigative monitoring to provide information to improve confidence that there really is a problem to be solved or to determine the cause(s) of those problems</p> <p>For substances with Safety Factors of 100, for example, the saltwater standard for benzyl butyl phthalate, it is proposed that that supporting evidence of ecological damage should be obtained before committing to expensive action (Table 2.1, page 18)</p>

Methodology - Methodology for deriving standards	
Comments	Response
<p>Combining precautionary laboratory data with precautionary Safety Factors ranging between 10 and 50 and the precautionary use of the most sensitive indicators results in precautionary standards.</p> <p>[Thames Water]</p>	<p>The standards are based on evidence of a substance's toxicity to aquatic life either from laboratory tests on aquatic organisms or an analysis of field data (where we have coincident data on chemistry and biology). Those measurements of toxicity are experimental observations and no precautionary factors are applied to the summary statistics arising from such tests.</p> <p>Safety factors (called Assessment factors in EU EQS Technical guidance) are applied when we extrapolate from the available ecotoxicity data to a standard. Usually the range of species for which we have data represents only a small proportion of those known to occur in UK waters and so we have to allow for this gap in our knowledge. Uncertainties also arise if data on long-term effects are scarce.</p> <p>The factors we use are those recommended in Technical Guidance for the Derivation of standards under the WFD. Where data are limited, the Factors could be quite large (up to 1000) but the UKTAG has taken the view that we would not propose a standard where uncertainty was so high. This is to avoid the situation where highly precautionary standards (which could be costly to comply with) are introduced without good evidence.</p> <p>Where data are plentiful, more sophisticated modelling methods can be used to estimate the standard. These typically entail much smaller Assessment Factors (1-5) applied to the lower 5%ile of experimental no-effect concentrations. UKTAG utilise this modelling approach wherever the data allow.</p>

Methodology - Methodology for deriving standards	
Comments	Response
<p>Thames Water advocates that the standards derived should be indirect standards to mitigate against the above particularly where Safety Factors are applied.</p> <p>[Thames Water]</p> <p>It is imperative that the fate and behaviour of a substance in the environment should be considered when setting standards as in many cases the toxicity of a substance decreases after mixing in the environment due to interaction with the other substances and particulates in the water and that this leads to laboratory derived PNECs typically being inherently precautionary.</p> <p>[Thames Water]</p>	<p>We suggest that our proposed standards are well equipped to take decisions on whether to allow, for example, new discharges of substances to water that currently meet the standards.</p> <p>The use of an indirect approach means that the failure of a standard would not in itself trigger remedial action but that action will happen only when there is evidence of biological impact as well.</p> <p>The UKTAG takes the view that its proposals are sufficiently robust that high confidence of a breach of a standard is a sufficient reason to warrant investigation into the causes of the failure followed by action to remedy the problem, where this is feasible and proportionate.</p> <p>Where field data are available and have been used as part of the standard derivation then evidence of the risk actual biological impact on the environment has explicitly been taken into account. The technical reports on our website highlight where field data have been used.</p> <p>The derived EQSs are based on an assessment of the available toxicity data and reflect the toxicity of the individual substance. Fate is considered in terms of the potential to bioaccumulate where a PNEC relating to secondary poisoning may be more appropriate. The fate of a chemical is also important in interpreting ecotoxicity data correctly so that we ascribe the toxic effects to the correct concentration.</p> <p>In the environment it is possible that some substances will degrade or be lost by other mechanisms. These losses will be dealt with through information gathered by sampling and chemical monitoring. There is also potential for interaction between substances. However it is not possible to take this into account during the derivation of the PNEC as the exact chemicals present at a site and the concentrations are not known and therefore standards are derived based on knowledge of the toxicity of individual substances. When other water quality factors are known to interact with chemical toxicity e.g. metals and dissolved organic carbon, then these have been incorporated into the standard or how it is used.</p>
<p>Seek assurances that the standards derived have not been influenced by cost of measures.</p> <p>[Wildlife Link]</p>	<p>The proposed standards have been derived based on the available data and the scientific understanding of the impact of the chemical on the aquatic environment. The EU's Technical Guidance on derivation of EQSs has been used throughout. The derivation of the actual standards is therefore based on an assessment of the available data on the impact of the chemical and does not take into account costs of using the standards. That happens later.</p>

Methodology - Methodology for deriving standards	
Comments	Response
<p>Is it possible to obtain information on which proposals did not represent a consensus viewpoint from peer reviewers based on the comments in Page 17 of the Specific Pollutant report? [Wildlife Link]</p>	<p>Every new EQS proposal has been subject to review by UKTAG specialists and by independent peer reviewers. In situations where reviewers adopt different views, we seek to resolve this through discussion and, as a result, the final proposals represent the consensus arising from this process. Technical issues raised by peer reviewers are addressed in the background technical reports.</p>
<p>Issue of monitoring for pesticides and assessing compliance with an Annual Average. [Wildlife Link]</p>	<p>It is correct to highlight the possibility that some pesticides are more likely to occur in water bodies at some times of the year and not others.</p> <p>Annual averages and annual percentiles are designed to be correlated with the number and probability of rare events. They will, at least, come through as apparently random failures in one year and not the next in a group of sampling points. It is important to follow up such failures. It is also useful to look at a collection of data across a region.</p> <p>Nonetheless we may sometimes require a sampling regime that is targeted to particular uses or time of year in order to quantify the risks.</p> <p>The issue of the potential seasonality of the use of pesticides and the potential implications on assessing compliance has been recognised in the consultation report.</p>
<p>Note that there are technical difficulties in defining mean concentrations when results are reported as below detection and we suggest that mean is replaced by median. [Dounreay Site Restoration Ltd]</p>	<p>The mean (or a parametric calculation of percentiles) are preferred because their mode of calculation means they are correlated with peak values and the probability of these. The failure of an annual mean may be due to a single peak event in a group of samples. These would be missed altogether by a median.</p> <p>When measurements are below the LOD, the conventional approach is to avoid assumptions for these concentrations that would lead to a report of failure solely because of weaknesses in chemical analysis.</p>

Methodology - Individual Specific Pollutants	
Comments	Response
<p>Manganese - Industry were in support of the proposed standard – the only comment was that it would have been useful to have additional monitoring data to assess the implications.</p> <p>[International Manganese Institute]</p>	<p>Only limited monitoring data were available to consider the potential implications of the proposed standard for manganese on surface waters. We can only give a limited picture of the potential implications of the adoption of the standard.</p> <p>The dataset is limited because there has been no requirement to monitor manganese in the past. This, together with the fact that data on dissolved organic carbon (DOC), pH and calcium were not always available at those sites for which manganese data were available, means that the number of sites that could be included in the compliance assessment was limited.</p> <p>If adopted as a standard under the WFD, manganese will be included in the WFD monitoring programme. Monitoring will also be included for those parameters required to assess compliance with a bioavailable standard (DOC, pH and calcium). Monitoring frequency will be designed to ensure compliance can be determined with the required confidence.</p>
<p>There may be a need for further control of manganese in some areas due to potential failures from natural sources.</p> <p>[The Coal Authority]</p>	<p>It is recognised that metals can occur naturally and that levels depend on local geology. The possibility of ‘false positives’ due to backgrounds has been considered. Within the proposed tiered assessment approach for implementing the bioavailability based metal standards, the UKTAG recommends that further work is undertaken to investigate standard failures to include consideration of background concentrations.</p>
<p>Iron – The UK is out of step with most of Europe and North America in considering iron as a Specific Pollutant.</p> <p>There appears to be limited evidence of significant increases in total and dissolved iron concentrations across England downstream of Wastewater Treatment Works.</p> <p>There is no evidence of ecological harm downstream of such works and in many cases there is an increase in the number of sensitive ecological species present.</p> <p>There appears to be considerable uncertainty over the effect of iron on the aquatic environment and therefore the justification for a tighter standard is unclear. In fact there appears to be no evidence of significant ecological changes downstream of Wastewater Treatment Works.</p> <p>[Severn Trent Water]</p>	<p>New evidence has been made available through the consultation and we recognise that this presents opportunities to refine our proposals for iron.</p> <p>UKTAG notes the information relating levels of iron in receiving waters downstream of wastewater treatment works, and a lack of impact on biota. This is consistent with our understanding of iron toxicity at the concentrations described.</p> <p>Further details are given elsewhere in this document but it means we plan to withdraw the current proposals while work is undertaken to develop a more robust standard. In the meantime we propose that the current standard is retained.</p>

Methodology - Individual Specific Pollutants	
Comments	Response
<p>are data available on these factors that should be taken into consideration in the derivation of the standard.</p> <p>[Rio Tinto, Tata Steel]</p> <p>An initial assessment of the data indicates that consideration of other water quality parameters may reduce the rate of failure and that incorporation of DOC may have an influence.</p> <p>[Rio Tinto]</p> <p>Concerned that the derivation of the standard has not taken into account the work that has been undertaken by the iron industry to develop understanding of the relationship between iron toxicity and water chemistry.</p> <p>[Tata Steel]</p> <p>Feel that the standard proposed will be overprotective in many cases and could lead to excessive costs incurred in trying to achieve the standard.</p> <p>[Tata Steel]</p> <p>Note that iron is used in water treatment more widely than just the water industry and therefore this needs to be considered.</p> <p>[Energy UK]</p>	<p>We acknowledge these comments and refer to our response outlined above.</p>
<p>Triclosan – We questioned the size of the Safety Factors used to derive the standard for triclosan – this indicated that the size of the Safety Factors i.e. 5 and 10 was too high.</p> <p>Comment that the long term study on which the standard was based was only conducted over a 3 day period and therefore consider the study inadequate to develop a long term standard for this substance</p> <p>[Scottish Water]</p>	<p>The WFD EQS Technical Guidance recommends that an additional Assessment Factor of 10 is applied in the derivation of the saltwater standard where data are not available for additional marine taxonomic groups such as echinoderms. This takes into account the wider diversity of organisms in the marine environment and the associated uncertainties.</p> <p>For algal toxicity studies a NOEC arising from a three day study is accepted as a chronic study. This is documented in the WFD EQS Technical Guidance.</p>
<p>Dichlorophenol - Note that due to the strong evidence base for a tighter standard for 2, 4-DCP see no need for an additional high Safety Factor of 10.</p> <p>[Scottish Water]</p>	<p>The WFD EQS guidance recommends that an additional Safety Factor of 10 is applied in the derivation of the saltwater standard where data are not available for additional marine taxonomic groups such as echinoderms. This takes into account the wider diversity of organisms in the marine environment and the associated uncertainties.</p> <p>No data were available for additional marine taxonomic groups for dichlorophenol and so an additional Factor of 10 was required in the derivation of the saltwater standard.</p>

Methodology - Individual Specific Pollutants	
Comments	Response
<p>Permethrin - Comment that the long term standard should be 0.03ug/l and not 0.001ug/l which they note as being arbitrarily derived from the existing short term standard. [Scottish Water]</p>	<p>The lowest reliable chronic No Observed Effect Concentration for permethrin was 0.03ug/l for a study on the stonefly <i>Pteronarcys dorsata</i>. However the same study also reported effects on the caddisfly <i>Brachycentrus americanus</i> at concentrations of 0.03ug/l.</p> <p>The Predicted No-Effects Concentration (PNEC) proposed was 0.001ug/l. This was based on an acute study but took into account the chronic data noted above and also the data from mesocosm studies.</p> <p>These three lines of evidence led to the proposal of a PNEC of 0.001ug/l. Because adverse effects had been observed on the caddisfly at a concentration of 0.03ug/l it is not appropriate to set a threshold for protection of aquatic life at this concentration (it is likely that other species would be more sensitive). Hence a value of 0.001ug/l has been proposed.</p>
<p>The consequences of standard for glyphosate – widely used but also used for control of aquatic plants (potential conflict with alien species control) [Anonymous, Wessex Water, NFU]</p>	<p>The UKTAG suggests that dealing with this balance of risks is part of the process of river basin planning process.</p>
<p>How should this proposal be viewed in context of the recent and on-going review of cyanides under the WFD? [CEFIC]</p>	<p>Cyanide is not part of the current European Commission proposal on priority substances being considered for adoption by the Council and the European Parliament. However, we understand that the Commission is looking at cyanide and may come forward with a proposal to identify it as a priority substance at some point in the future. Any such proposal would also include an EQS. If a proposal is made and the Council and the Parliament adopt it, this would supersede any EQS for cyanide adopted at a national level for the UK. In the meantime, cyanide will continue to be treated as a specific pollutant and UKTAG will consider whether the existing EQS should be revised taking account of newly identified data.</p>
<p>Note that the standard is based on a dataset collated for 2007 but that there are additional data available which has been considered at EU level. [CEFIC]</p>	<p>As a result of the consultation, UKTAG have been made aware of further information that was not available when the cyanide EQS was developed. UKTAG think this will have a bearing on the determination of a robust EQS but there is insufficient time to take this forward so the standard will be withdrawn. The existing standard for cyanide will be retained.</p>
<p>The additional data indicate that a Species Sensitivity Distribution (SSD) approach can be used and this would be a preferred methodology. [CEFIC]</p>	<p>We acknowledge that where the available data are sufficient, it is preferable to derive a standard using a Species Sensitivity Distribution approach rather than using a deterministic approach.</p> <p>The dataset considered in the proposals put forward did not meet the data requirements for an SSD approach. However, if the UK reconsiders cyanide in the future we would review the available dataset and consider whether or not an SSD can be used.</p>

Methodology - Individual Specific Pollutants	
Comments	Response
<p>Note the issue of analytical capability for cyanide and that CMEP (Chemical Monitoring and Emerging Pollutants) has been asked to look into cyanide monitoring by EU WFD COM. [CEFIC]</p>	<p>The difficulties associated with analysing for free cyanide at the level of the proposed standard are recognised in the report documenting the proposed standard for cyanide and the background Specific Pollutant report included on our website.</p>
<p>Copper - Concerned that distilleries have been identified as one of the main reasons for breach of the existing copper standards. [Scottish Whisky Association]</p>	<p>The consultation document will be amended.</p>
<p>Concerned about the value of 1ug/l for copper being much lower than background concentrations in the majority of environments and suggest an assessment of the representativeness of the 'sensitive water' [European Copper Institute]</p>	<p>The generic value of 1ug/l has been derived based on conditions of pH, dissolved organic carbon, and calcium representative of the most vulnerable areas of the UK. Compliance assessment will take into account the local conditions and therefore compliance will not be assessed against this generic value but one corrected for bioavailability for the local conditions. In the event of failures after allowing for bioavailability, we will consider whether background levels of copper may be implicated. Detailed guidance on the estimation of backgrounds will be produced in 2013.</p>

Methodology - Individual Specific Pollutants	
Comments	Response
<p>Propose an alternative generic level for freshwater where lack of data on dissolved organic carbon, pH or calcium means the approach using the Biotic Ligand Model cannot be applied. [European Copper Institute]</p>	<p>The UKTAG has made a commitment to collect data on dissolved organic carbon, pH and calcium as part of the compliance assessment for bioavailable metals. We recognise that these data are essential to the correct implementation of bioavailability-based standards.</p>
<p>Background concentrations for copper should be considered where non-compliance occurs. [European Copper Institute]</p>	<p>A tiered approach has been proposed for the assessment of compliance with the bioavailable metal standards. Where there are failures of the copper standard it is proposed that the investigation of the failure should include a consideration of the background concentration of copper.</p>
<p>Marine standard – consideration of the use of a power model rather than a linear model when normalising the standard in relation to dissolved organic carbon (DOC). Marine standard – the longer term EC50-DOC relationship is considered more robust than the EC10-DOC relationship. [European Copper Institute]</p>	<p>We are grateful for the comments and new evidence that has been made available to the UKTAG. The additional data and comments received have been considered. For the DOC correction, UKTAG favours a correction based on EC10 values than one based on EC50 values as these are the endpoints used to derive EQSs. Because they are based on directly measured experimental data, EC10 data also avoid the need for a correction factor to extrapolate from an EC50. Both the power and linear interpolation models provide good descriptions of the ecotoxicity datasets but the linear model provides a slightly better fit to data in the data used to construct the species sensitivity distribution model. Also, in the absence of a strong technical reason for favouring one model over the other, the conceptually simplest model should prevail. For these reasons, UKTAG proposes to correct for the protective effects of DOC based on a linear model applied to EC10 data.</p>
<p>Zinc - Further clarification requested on how to implement the zinc standard if bioavailable parameters are not determined or values are outside the boundaries. [International Zinc Association]</p>	<p>Data on dissolved organic carbon, pH and calcium data will be collated in conjunction with dissolved zinc data to enable assessment of compliance with the bioavailable standard. Work being undertaken on the boundaries of the BLM sat an EU will be incorporated within the bioavailability approach.</p>
<p>We have concerns about the reliability of the proposed sediment value – proposed value has been taken from the Risk Assessment and is based on limited data. [International Zinc Association]</p>	<p>A sediment standard is not being proposed by the UKTAG – only the standard for the water column has been included. However, we will review the data that have been made available and make any changes to the technical background report accordingly.</p>

Methodology - Individual Specific Pollutants	
Comments	Response
<p>We consider the dataset for the marine environment do not support use of a Safety Factor of 2 and that the latter is overly conservative. A recent mesocosm study is available for zinc in the marine environment which has not been taken into account.</p> <p>[International Zinc Association]</p>	<p>We are grateful for the report describing the mesocosm study. Review of new mesocosm study data has shown that it is a high quality study and helps reduce uncertainty in the standard. The study therefore supports a reduction in the assessment factor applied in the derivation of the saltwater zinc standard and therefore a revision to the proposed EQS.</p> <p>Further work is also being undertaken to identify an approach for determining background concentrations for zinc which are required to implement the freshwater and saltwater zinc EQS. Once complete the recommendations for zinc including the EQS values and the background concentrations will be included in an updated report on the Specific Pollutants recommendations.</p>
<p>Silver and aluminium - What further evidence is being gathered on these pollutants and what is the timeline for action? We feel that although there is currently insufficient info to derive a standard it does not mean they do not represent a risk to the environment.</p> <p>[Wildlife and Countryside Link]</p>	<p>For silver, a PNEC (Predicted No Effect Concentration) was derived based on the available data. It was decided not to take the PNEC forward as a standard at this time because data from a monitoring programme indicated low exposure (and hence little risk). We recognise there is a need to consider the issue of nanosilver as more data become available. The proposed PNEC may be used as a guideline in the meantime.</p> <p>A significant amount of work has been done on the assessment of the impact of aluminium on the aquatic environment. The interpretation of ecotoxicity data is difficult because speciation of aluminium in surface waters is complex and strongly affected by local physico-chemical conditions. It is not always clear whether the available ecotoxicity data take proper account of these factors. For this reason UKTAG have not come forward with a proposal for aluminium as a Specific Pollutant. However, we maintain an interest in research on the understanding of aluminium fate and toxicity which might inform an EQS at some future date.</p>
<p>Pendimethalin - The limited monitoring data indicate limited concern – rather than proposing as a Specific Pollutant should additional monitoring be undertaken to investigate further.</p> <p>[BASF]</p>	<p>The derivation of the proposed standard for pendimethalin involved the collection of all available ecotoxicity data including both the active ingredient and formulations containing pendimethalin. The data collated was summarised within the report for information. However the proposed standard was based on toxicity studies on the active ingredient rather than a formulation. This is because these data more accurately reflects the exposure conditions in the environment (active ingredient and formulation ingredients are expected to follow different fates). This is noted in the background technical report. Although it does not influence the derivation of the EQS the formulation data collated is summarised in the background technical report for information and completeness.</p>

Methodology - Individual Specific Pollutants	
Comments	Response
<p>Pendimethalin: Comment on the need to include formulation data within the report on data assessment for the standard. [BASF]</p>	<p>The derivation of the proposed standard for pendimethalin involved the collection of all available ecotoxicity data including both the active ingredient and formulations containing pendimethalin. The data collated was summarised within the report for information. However the proposed standard was based on toxicity studies on the active ingredient rather than a formulation. This is because these data more accurately reflect the exposure conditions in the environment (active ingredient and formulation ingredients are expected to follow different fates). This is noted in the background technical report. Although it does not influence the derivation of the EQS the formulation data collated is summarised in the background technical report for information and completeness.</p>
<p>Pendimethalin: The available dataset supports the use of a lower assessment factor than 10 in the derivation of the water column standard based on the available aquatic toxicity data.</p>	<p>The comments received have been considered alongside the available dataset. Although data are available for algae which are anticipated to be among the most sensitive species to pendimethalin (given its mode of action) there are insufficient data to justify a lowering of the assessment factor to below 10.</p>
<p>Pendimethalin – propose a different toxicity study for use as the basis of the derivation of the secondary poisoning standard</p>	<p>The comments received have been considered alongside the available dataset. Although it is acknowledged that the study proposed by BASF is a relevant study there is no reason to disregard the data used in the derivation of the secondary poisoning standard. This is a valid study and is indeed the basis for the WHO drinking water standard. Other studies show a similar result to the study used which adds additional support to the use of this study. It is therefore proposed to retain the current proposal for the secondary poisoning standard.</p>
<p>Pendimethalin – question the use of the BCF of 5100 rather than 1000 in the back calculation of a water standard from the secondary poisoning value</p>	<p>Consideration has been given to the use of the BCF of 1000 rather than 5100. It is proposed to retain the use of the BCF of 5100. Although the mesocosm study from which the BCF of 1000 has been derived is a valid study, the use characteristics of pendimethalin as a pre-emergence herbicide mean exposure in the environment may not follow that modelled in the mesocosm study, i.e. a one-off exposure. The BCF of 5100 is therefore applied to take this into account.</p>

Methodology - Individual Specific Pollutants	
Comments	Response
<p>We note that the acronym TCE is used to refer to tetrachloroethane on p20. In the groundwater industry, this acronym is used for trichloroethene - thus there is the potential for confusion. Tetrachloroethane has two isomers, 1,1,2,2- and 1,1,1,2-. Which isomer is intended to be the subject of control?</p> <p>[Dounreay Restoration Ltd]</p>	<p>The term TCE can be used for both tetrachloroethane and trichloroethene and there is the potential for confusion. Tetrachloroethane is referred to in full in the title of the report on the standard and the acronym is explained in the report.</p> <p>Tetrachloroethane is also referred to in full in the consultation document. To avoid confusion, we will need to ensure that tetrachloroethane is referred to in full with the acronym in brackets in any future legislation as was done in the consultation document.</p> <p>There are two isomers of tetrachloroethane and both were considered in the derivation of the standard. The majority of the available aquatic toxicity data however relates to 1,1,2,2-tetrachloroethane. The available toxicity data suggest the two isomers have similar toxicity so the standard relates to tetrachloroethane as a whole, i.e. the sum of the two isomers.</p>

Details for Chapter 3: Groundwater

Comments on technical aspects of the report

Methodology – Chapter 3: Groundwater	
Comments	Responses
General	
<p>In general, 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.</p> <p>The methodology for deriving threshold values for groundwater to assess risks to associated surface waters is clear.</p> <p>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.</p> <p>As the UKTAG also proposes to reduce the limit values for a number of existing Specific Pollutants (copper, cyanide and zinc), the combined effects on groundwater of these simultaneous changes are unclear.</p> <p>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.</p> <p>[Energy UK]</p> <p>Tightening of threshold risk assessment for ground water believed to impact on surface water quality (page 44) will prompt more groundwater investigations.</p> <p>[United Utilities]</p>	<p>The UKTAG's response to these comments is covered elsewhere in terms of the development of the proposed standards and conditions and their planned progress through the processes of the river basin management plans.</p> <p>These will supply the added data and assessments required to establish the standards within a full framework for taking decisions. This involves the assessment of costs, benefits and apportionment.</p> <p>We note that the effect of surface water standards on the need for action groundwater is a topic that will require careful attention.</p> <p>It may be that for certain standards the Administration decide that prior to the processes within river basin planning, that some sort of national and overarching assessment is required.</p> <p>The UKTAG agrees that there will need to be more investigations.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Nitrate threshold value for wetlands	

Methodology – Chapter 3: Groundwater	
Comments	Responses
General	
<p>In general terms, the proposed nitrate threshold values for assessing risks to wetlands are clear ... [Energy UK]</p> <p>We support the proposed tightening of nitrate thresholds for water dependent wetlands. This may improve the case for catchment management if wetlands are in the same water body or catchment as impacted sources of drinking water. [Anglian Water].</p>	<p>The UKTAG notes the support for its recommended nitrate threshold values for wetlands.</p>
<p>Are these wetlands that are directly fed by groundwaters? [Workshop of May, 2012]</p>	<p>Yes, the new threshold values are derived for wetlands that could be directly fed by groundwater. However, many wetlands rely on different water sources throughout the year, and that is why site specific investigations are important.</p>
<p>We are concerned that (a) the level of evidence that is required to conclude ‘poor groundwater status due to significant damage to a Groundwater Dependent Terrestrial Ecosystem (GWDTE) after the threshold value has been triggered is too high and (b) the data and methodology to define the GWDTE threshold values is not sound. [NFU].</p>	<p>The UKTAG remains of the view that high confidence of poor status requires sufficient data from hydrogeological and ecological monitoring to: (i) confirm that the wetland is significantly damaged; and (ii) validate a suitable conceptual model showing how nitrate in the groundwater is contributing significantly to that damage.</p> <p>The UKTAG does consider that its recommendations that all lines of evidence must agree before we declare high confidence of good status could be read as creating an unnecessarily high bar if "all" is interpreted as “every possible indication”. Consequently, we have revised the recommendation to make it clear that high confidence depends on the overall weight of evidence.</p> <p>We maintain our view that the method we applied is scientifically robust. The proposed thresholds are based upon (a) statistical analysis of the best available evidence in the UK, (b) the results of detailed site investigations by UK environment agencies, (c) a review of the latest scientific literature and (d) expert wetland knowledge of the combined UK environment agencies and conservation agencies.</p> <p>The work has been peer reviewed by two leading UK academics with specific knowledge on wetlands; Professor A.J. Davy of UEA, Norwich, and Profession M. Acreman of CEH in Wallingford.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
General	
<p>The UKTAG indicates that modelled estimates can be used to indicate a breach of a threshold value. The Groundwater Daughter Directive indicates that whilst such estimation techniques can be used in the investigation that follows a breach of a threshold value, the initial breach that triggers an investigation must be based on data from a monitoring point.</p> <p>[Tony Marsland].</p>	<p>The monitoring of groundwater can never be comprehensive given the spatial scale of the resource. Consequently, the UKTAG believes that the use of modelling, validated as necessary by targeted monitoring, is not only the most cost-effective way to manage groundwater resources but also the only practical way.</p>
<p>We are concerned that investigation is only triggered where there is damage to a wetland and a threshold value is breached. This ignores:</p> <ol style="list-style-type: none"> 1. The potential for more than one pressure to be causing damage to a wetland. 2. The likely time-lag between breach of the standard and ecological impacts. This means that, by definition, the UKTAG will be recommending that deterioration is allowed to occur before triggering exceedance. <p>[Joint Links]</p>	<p>The UKTAG acknowledges that the consultation could be read as implying that nitrate from groundwater must be the sole cause of the significant damage to the wetland. Our recommendation has been revised to make it clear that the assessment is aimed at identifying where groundwater nitrate concentrations are at least a significant contributory cause.</p> <p>The criteria described in the consultation are the criteria for the classification of status. These criteria result in classification as poor status only where adverse impacts are present. The consultation also outlines the role of good status criteria and associated threshold values in protecting wetlands from deterioration.</p> <p>The UKTAG has modified the wording of this chapter to make clearer how the threshold values are taken into account in this context.</p> <p>Further details of our recommendations on managing the risk of deterioration can be found on our website in: UKTAG (2011) Characterisation of Risks to Groundwaters for the 2nd River Basin Cycle; 14 March 2011.</p>
<p>With regard to the programme of investigations of groundwater bodies at poor status, will these be delivered by 2015 or after?</p> <p>[Workshop in May, 2012]</p>	<p>There are two types of investigation, the investigations of bodies identified as being at poor status in the first river basin management plan; these will deliver outputs by the end of 2012 or the end of 2014 (depending on the confidence in the status assessment). There may well be additional investigations needed after this period. The 'further investigation' following a threshold breach is part of classification and so will be delivered in time for the publication of the river basin management plan in 2015.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Nitrate threshold value: General and drinking water abstraction	
<p>The initial 31mg/l [threshold for nitrate in groundwater] may have been very conservative due to limited long-term representative groundwater sampling for the purposes of the Water Framework Directive. However, once a groundwater body has been impacted by nitrate pollution, in general, the water body takes a long time to recover.</p> <p>With regard to the requirement of the WFD to prevent deterioration in the status of a water body, we believe there must be an early warning system in place in the form of a trigger value, to highlight where nitrate levels may be increasing.</p> <p>Work could then be undertaken to avoid a future breach of the 50mg/l standard. We consider that a trigger value of 37.5 mg/l is too high since at this stage, significant pollution of water bodies may have occurred</p> <p>[Scottish Water].</p>	<p>The UKTAG agrees that preventing deterioration is important and acknowledges that the consultation did not explain how the criteria for good status and the associated threshold values are expected to be used in managing the risk of deterioration of status. The final report will be revised to make this clear.</p> <p>The recommended revised criteria for good status will be taken into account in assessing the risk of deterioration. For example, if an upward trend in concentration is predicted to cause failure of any one of the criteria for good status within 12 years, the UKTAG recommends that the water body is identified as at risk of deterioration and appropriate and prioritised action taken with the aim of reversing the trend.</p> <p>The UKTAG's existing recommendations on identifying risks of deterioration provide further details. These are available on our website.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Nitrate threshold value: General and drinking water abstraction	
<p>We also support the proposed tightening of nitrate threshold levels for groundwaters used for human consumption. This will help address elevated nitrate levels at drinking water sources. Feedback and potential changes to the Nitrate Regulations as a result of the recent Defra consultation should be taken into account to ensure objectives and aspirations are aligned.</p> <p>[Anglian Water]</p> <p>We welcome the threshold recommended for nitrate in groundwater to protect drinking waters, especially since there is no surface water standard to relate nitrate to in our groundwater fed catchments.</p> <p>[Wessex Water].</p>	<p>The UKTAG notes the support for its recommended nitrate threshold values.</p> <p>Action programmes established under the Nitrates Directive are expected to reduce pollution by agricultural nitrates. Designation of Nitrate Vulnerable Zones (NVZs) in Scotland, England and Wales is a matter for the relevant Government administrations. The UKTAG's recommended revision to the nitrate threshold value is not expected to have an impact on these designations.</p>
<p>With reference to monitoring groundwaters for human consumption, clarity is required regarding what would be considered an appropriately representative monitoring point, and the required density of monitoring points over a water body.</p> <p>Justification of the use of an average of all monitoring points across a water body is required. With large groundwater bodies it is common to have different groundwater conditions in different parts of the aquifer.</p> <p>Part of the groundwater body could be unconfined and suffer from elevated nitrate as a result of diffuse pollution whereas other parts could be confined and have reduced groundwater conditions and no nitrate problem. The question arises as to what is the average and what is appropriate.</p> <p>[Anglian Water]</p>	<p>We have published recommendations on both the delineation of a groundwater body [UKTAG (2012) Defining and Reporting on Groundwater Bodies; 30 March 2012] and groundwater monitoring (UKTAG (2007) UKTAG Task 12(a) Guidance on Monitoring Groundwater (Groundwater Task Team); 25 May 2007).</p> <p>The former recommends that the delineation of groundwater bodies should distinguish areas of groundwater whose underlying status is significantly different. The monitoring report provides guidance on identifying representative monitoring points.</p> <p>We believe that overall, this guidance can help ensure that an average is representative of a particular part of groundwater.</p>
<p>In the absence of a robust case for moving to 37.5 mg/l, the NFU considers that the appropriate approach is to use the current figure for reasons of consistency of approach within England. There are no advantages to be gained for England in changing its standard for reasons of cross-border consistency.</p> <p>Whereas we have been party to the development of the 42 mg/l standard in England, we have not been party to the other standards in use in Scotland and Northern Ireland and do not accept their validity as equal to the established figure for England.</p> <p>[NFU]</p>	<p>The UKTAG analysed data across each member country of the UK and found no technical argument for a difference in threshold. For the benefit of consistency and transparency, the UKTAG is recommending a single threshold.</p> <p>Our report explains how the threshold is taken into account in the classification process. A breach of the threshold value at a monitoring point is used as a trigger for further investigation. The investigation may lead to a decision to classify the status of the water body as poor or to classify it as good.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Threshold values for associated surface waters	
<p>Concerning the threshold value for risks to associated surface waters, in line with the above comments, we support the greater level of protection that this will offer given that issues will be identified at an earlier stage.</p> <p>[Scottish Water]</p>	<p>We note the support for our recommended methods for calculating threshold values.</p>
<p>There is the suggestion that further investigations on the levels of phosphate within groundwater will be required. Recent Wessex Water investigations indicate that certain geologies produce elevated levels of phosphorus within groundwater which can contribute to failing freshwater systems.</p> <p>We would welcome further work in this area and a consideration in the forthcoming phosphate standards.</p> <p>[Wessex Water]</p>	<p>Our report identified that the recommended revised method for deriving threshold values for assessing risks to associated surface waters may increase the number of investigations on phosphorus concentrations in groundwater.</p> <p>Any changes that the UKTAG recommends to the existing phosphorus standards for surface waters also have the potential to affect the number of these investigations.</p> <p>The investigations should help the agencies identify the relative contributions of different sources of phosphorus to adverse impacts on surface waters. This will help in identifying cost-effective combinations of measures. Whilst the increased number of investigations will require costs, the UKTAG expects this to be offset by the benefits of better targeting of measures.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Revised criteria for good status classification	
<p>With reference to plumes of pollution in a groundwater, plumes are normally associated with point source pollution, whereas nitrate in some aquifers can be more related to diffuse sources. Also the density of monitoring boreholes required to be specific about the dimensions of a plume needs to be considered. Clarification is required on the definition of groundwater bodies where there is a perched water table in a small superficially thin and laterally impersistent minor aquifer. For example, if a discharge is to a pocket of Glacial Sand and Gravel over Boulder Clay over the Chalk water body this would have a low significance.</p> <p>[Anglian Water]</p>	<p>As recorded above, the UKTAG has published recommendations on the delineation of a groundwater body [UKTAG (2012) Defining and Reporting on Groundwater Bodies; 30 March 2012].</p> <p>Where an impact of a plume is compromising the achievement of good groundwater status, the WFD allows for the local costs and benefits of remedial action to be taken into account when setting an improvement objective. All this will vary for different bodies of groundwater, and for the individual features of plumes of pollution.</p>
<p>The first bullet point on page 43 seems to imply that a groundwater body that would otherwise meet the criteria for poor status could be deemed good if only one sample does not exceed the drinking water standard – is this correct? It does not seem to be consistent with the explanation of the implications under “Changes to further investigation criteria” at the bottom of page 43.</p> <p>[Tony Marsland]</p>	<p>The final report will be revised to make it clear that a body of groundwater should not be classed as good status if both (a) and (b) apply:</p> <p>(a) The average of all the monitoring results from all the monitoring points representative of the risk to the quality of the groundwater exceeds the threshold value (this is the existing UKTAG recommended criterion).</p> <p>(b) The concentration of the pollutant to which the threshold value applies exceeds the maximum concentration allowed for it in drinking water in at least one sample from an appropriately representative monitoring point.</p>
<p>We are not clear whether this provision would apply to pollutants from diffuse sources, such as nitrate, which do not create a plume as such. If it did apply, we would criticise the relevance of an absolute area of contamination, unless account is also taken of the size of the water body. Some groundwater bodies are very large, and 2 sq. km would be a tiny percentage of the resource.</p> <p>We propose that there should be an additional criterion related to the proportion of the water body at less than good status before the entire water body is classed as poor status.</p> <p>Similarly, the criterion of at least one sample exceeding the maximum concentration in drinking water regardless of the size or number of monitoring points in a water body is insufficient. There should also be a minimum requirement in terms of the proportion of samples exceeding the drinking water MAC, such as 5% as for surface water.</p> <p>[NFU]</p>	<p>On the question of requiring a proportion of the water body to be at less than good status, we note that as a rule, the quality of groundwater is nothing like so variable as surface water. The result of single sample, taken properly at a representative site, and analysed precisely, would tend to be a sure sign that that a value was exceeded for (much) more than 5 per cent of the time in the section of ground water assessed by the monitoring point. It is also likely that the monitoring point is representative of a significant proportion of the groundwater body.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Standards for hazardous substances	
<p>With regard to the Minimum Reporting Values in the section on land contamination, the UKTAG fails to mention the 2008 revised minimum reporting values issued by the Environment Agency.</p> <p>[Dounreay Site Restoration Ltd]</p> <p>The UKTAG proposes Minimum Reporting Values based on those set out in the Environment Agency's hydrogeological risk assessment on landfill (2003). It should be noted that the Agency has subsequently issued revised MRVs for a subset of those compounds (EA, 2008), which the UKTAG guidance fails to reference or take into account:</p> <p>http://www.environment-agency.gov.uk/static/documents/Business/mrv_factsheet_v1_2031927.pdf</p> <p>[Shell Global Solutions]</p>	<p>The UKTAG agrees that it would be helpful to include the standards that apply where groundwater is too turbid to achieve the limits of detection necessary to apply the recommended standards.</p> <p>The recommendations have been revised to include the standards proposed in 2008 by the Environment Agency for such circumstances.</p>
<p>The UKTAG's guidance states that Minimum Reporting Values (MRV) apply as groundwater standards. This is not the purpose for which the MRVs were developed.</p> <p>Notwithstanding this important difference, the UKTAG also state that they should be compared with water quality immediately above the water table. DEFRA (2010) states a series of possible compliance scenarios (section 4.18), which include in-groundwater measurement immediately down-gradient of the discharge zone.</p> <p>Clearly the draft UKTAG guidance is inconsistent with, and more onerous than, both the DEFRA and European Commission guidance on this matter.</p> <p>[Shell Global Solutions]</p>	<p>Our consultation report did not provide clarity about where the standards for hazardous substances are applied. Details were contained in an associated technical report available on the website. The UKTAG will add these details to its final summary report.</p>
<p>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 cyanide is not included within Table 12.</p> <p>To provide clarity and to avoid any doubt, we strongly recommend that, should this list not represent a definitive list of Hazardous Substances, the list should then be displayed on an appropriate website, which is updated when new Hazardous Substances are determined and the appropriate standard provided.</p> <p>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.</p> <p>[Energy UK]</p>	<p>The consultation did not provide background information on the selection of hazardous substances and where the full lists can be found. The UKTAG agrees that this information would be helpful and has made additions to its report accordingly.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Standards for hazardous substances	
<p>Thames Water has concerns about setting standards based on laboratory routine limits of quantification. The limit of quantification will vary depending on the sample characteristics and over time as new analytical techniques are developed, with some techniques entailing significant cost in terms of the implication for a tighter standard.</p> <p>This approach leads to a standard that is neither based on science nor linked to risk, but is variable, hard to regulate and potentially unnecessarily expensive. A BATNEEC approach may mitigate the impacts of this latter point, although it would be eminently more sensible for the UKTAG to recommend pragmatic interim values in the absence of formal standards.</p> <p>[Thames Water]</p> <p>We also have concerns about limits of quantification (LOQs) being used as the standards for hazardous substances in groundwater, to assess if measures to meet objectives are being met (page 45). Not least because as analytical techniques continue to develop, LOQs will continue to decrease, which will lead to tighter standards being applied for hazardous substances, without any scientific rationale, other than it can be detected at these lower levels.</p> <p>We suggest that standards for hazardous substances in groundwater should be based on a more scientific approach for example, on their impact on the environment or human health.</p> <p>[Agricultural Industries association]</p>	<p>Limits of quantification (LOQs) provide the basis for determining whether or not actions taken to prevent inputs of hazardous substances will be, or have been, effective. The use of LOQs is recommended for pragmatic reasons: standards cannot be based on concentrations too low to be measured or detected. However, the UKTAG acknowledges that the approach means that the standard will vary with analytical capabilities.</p> <p>For this reason, the UKTAG is planning to undertake a comprehensive review. This will include a consideration of alternative options for setting standards. In the interim, the UKTAG recommends that the LOQ approach continues to be used.</p>
<p>Is prevent and limit work is related to distance from the site when there is drilling or fracking?</p> <p>[Workshop of May, 2012]</p>	<p>This is looked at on a site specific basis which takes into consideration the depth of the activity. For deep activities there are procedures in place. This is relevant to all deep activities, not just fracking.</p>
<p>When tests are applied to samples at the bottom of the bore hole there will be a time delay; how do you build this into the process?</p> <p>[Workshop of May, 2012]</p>	<p>This is one of the reasons for further investigations. Also there are monitoring points at different depths which show the different timescales of pollution events. "Prevent and limit", however, looks at current events not historic ones.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Hazardous substances implications	
<p>The recommendations acknowledge the cost of the remediation of contaminated land in two sentences on pp. 46-47, and the possibility of exemption. We would welcome, as a matter of urgency, guidance from the UKTAG on the grounds for exemption.</p> <p>Practical experience is that exemptions are difficult to achieve, and it is not clear that there is a robust mechanism for granting them in Scotland.</p> <p>[Dounreay Restoration services Ltd]</p>	<p>The UKTAG notes the suggestion that it should develop technical guidance on the Groundwater Directive's exemption criteria for inputs of hazardous substances. The UKTAG will discuss this with its member agencies and with the UK administrations.</p> <p>With respect to the mechanisms for granting exemptions, this is a matter for the individual agencies in the context of their particular regulatory systems. In raising this view with the UKTAG, it has been brought to the attention of the various agencies contributing to the UKTAG.</p>
<p>The text does not explicitly explain how the standards will be used, in that as I understand it, if you have sample or predicted concentrations below these values then the prevent objective has been met without further assessment. On the other hand, if sample concentrations are above these values further assessment is required (which in England and Wales involves the procedure set out in the EPR Groundwater Activities guidance).</p> <p>[Tony Marsland]</p>	<p>Our report did not make clear what considerations are involved in deciding if action is necessary where a sample concentration exceeds a standard for a hazardous substance. The considerations were described in the section on non-hazardous pollutants but it was not made explicit that these considerations apply to a breach of a standard for a hazardous pollutant as well as to a breach of a standard for a non-hazardous pollutant. This will be made clear in the final report.</p>
<p>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.</p> <p>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.</p> <p>[Energy UK]</p>	<p>The UKTAG believes that its proposals provide a sound means of assessing achievement of the "prevent and limit" objectives of the WFD and the 2006 Groundwater Directive. The objective of preventing inputs of hazardous pollutants is a demanding objective. However, the Groundwater Directive provides for a range of exemptions.</p> <p>As noted above, our report did not make clear what considerations are involved in deciding if action is necessary where a standard for a hazardous substance is exceeded. Our recommendations will be made clearer in the final report.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Hazardous substances implications	
<p>The UKTAG's guidance takes a very rigid approach to the interpretation of 'prevent, which is inconsistent with both the ECs and DEFRA's stated advice, and is non-workable in practice. [Dounreay Site Restoration Ltd]</p>	<p>The UKTAG's recommendations are concerned with identifying standards for assessing whether or not hazardous pollutants have been prevented from entering groundwater. The action needed to prevent inputs will depend on the circumstances, including the applicability of a range of exemptions provided for in the 2006 Groundwater Directive. As set out above in our response to the question raised by Tony Marsland, the final report will make this clearer. The UKTAG has not suggested that the process extends to removing hazardous pollutants already in groundwater. In this case the objective is limited to tackling further inputs.</p>
<p>Did the work take into consideration the recent report from Professor Chambers which focused on Zinc and Copper found within manure heaps? [Workshop of May, 2012]</p>	<p>This work was not included but we shall get the reference and look into it.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Non-hazardous substances - standards	
<p>It is technically incorrect to say that other uses are protected by applying standards derived to protect water used for human consumption (drinking water standards) –and an unnecessary restriction. [Tony Marsland]</p>	<p>The UKTAG agrees in principle that protection of uses of groundwater other than for human consumption may require different standards to those suitable for protecting water for human consumption.</p> <p>We remain of the view that, in practice, standards suitable for protecting water for human consumption will normally help protect other uses and are the most appropriate standards to use when protecting groundwater resources for future uses.</p> <p>The UKTAG will amend its final report to make clear that alternative standards may sometimes be necessary to protect other existing uses. The need for such standards will have to be considered on a case-by-case basis.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Hazardous substances implications	
<p>With regard to the approach for non-hazardous pollutants, we are also concerned about the proposal to apply drinking water standards to groundwater, where groundwater is to be protected for uses other than human consumption (page 48).</p> <p>EU standards for drinking water at tap (0.1 micrograms/ litre) are based on a surrogate zero and have no scientific basis, as they are not related to the chemical properties of the active substance. Therefore the AIC favours option (b) so that standards are specified by the World Health Organisation. We believe these have a more scientific basis.</p> <p>[Agricultural Industries Association]</p>	<p>UKTAG proposes using WHO standards in the absence of a standard established under EU legislation. Where a standard has been set under EU legislation for drinking water, UKTAG recommends that these are applied.</p> <p>Like all standards, scientific advances may lead to proposals for revised drinking water standards. The UKTAG's recommendations allow for that.</p>

Methodology – Chapter 3: Groundwater	
Comments	Responses
Non-hazardous pollutants - assessment procedures	
<p>For non-hazardous pollutants, we note that the UKTAG is recommending the point of compliance to be between 50m and 250m from the source of the pollutant in the direction of the groundwater flow for all aquifers, regardless of their hydraulic properties and catchment characteristics or the type of pollutant.</p> <p>This prescriptive approach is unlikely to reflect the true risk adequately and Thames Water advocates that UKTAG develops a risk-based approach for setting the distance at which compliance is measured.</p> <p>[Thames Water]</p> <p>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.</p> <p>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.</p> <p>[Energy UK]</p>	<p>The consultation identified that the objective of limiting inputs of pollutants is to avoid increases in pollutant concentrations that would pose significant risk of adverse impacts on surface waters, wetlands, or existing uses and potential future uses of groundwater.</p> <p>The spatial thresholds apply only in relation to managing risks of the latter of these impacts - the effect on potential future uses. They are designed to address the risk of cumulative hotspots of pollution undermining the long-term value of the groundwater resource.</p> <p>Existing UKTAG guidance (referred to in the consultation) explains how risks of the other impacts are assessed and how they take account of factors such as dilution and attenuation between the source and the surface water, wetland or abstraction.</p>
<p>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.</p> <p>[Energy UK]</p>	<p>The consultation gave examples of where, even though a standard is breached, additional controls may not be necessary.</p> <p>These examples did not include circumstances where the breach is due to natural background concentrations in the groundwater. The UKTAG will add this principle to the final report.</p>

Details for Chapter 4: Alien species

Comments on technical aspects of the report

Methodology – Chapter 4: Alien species	
Comments	Response
<p>Northern Ireland is not covered by the Great Britain Non Native Species Secretariat (GBNNS). Rather, the NIEA, working with Invasive Species Ireland, performs equivalent functions. Both organisations are represented on the relevant UKTAG committee.</p> <p>It is our understanding that the approach to risk assessment that is adopted for England and Wales is not similarly applied in Northern Ireland. Rather a 'prioritisation schedule' is used, with only the highest ranking priority species undergoing a 'risk assessment'. Similarly, the use of 'uncertainty' levels is not applied in a similar manner.</p> <p>We would request that better harmonisation with the GB NNS through greater use of risk assessments combined with certainty ratings, the application of a more precautionary approach for relevant species and, finally, that the information is made public for transparency.</p> <p>[NI Task Force]</p>	<p>Work on alien species in Northern Ireland is more closely linked with similar work in the Republic of Ireland – it is more appropriate to consider problems of alien species in the island of Ireland as a whole rather than from a UK (i.e. GB + NI) perspective.</p> <p>Nevertheless, representatives from NI and the Republic of Ireland are actively involved in the work of the UKTAG Alien Species Group.</p> <p>With regard to the alignment of the GBNNS risk assessment work with similar work in Ireland, this is a matter best discussed between the NI Task Force and GBNNS.</p>
<p>GB NNS - Whilst we welcome the acknowledgement that alien species can displace or alter native communities, they can also contribute to the functioning of the aquatic ecosystem and may have role where climate change has altered the existing flora/fauna.</p> <p>We support the intention to identify high risk invasive so as to manage their impact quickly and to base the listings on an existing system; the GBNNS. The role of fish which are nationally native but outside of their normal range or environment seems to be increasingly important in terms of ecological impacts so we support the inclusion of this factor as a reason for investigation of freshwater sites with apparent eutrophication. Roach and carp have been shown to show impacts</p> <p>[Wessex Water]</p>	<p>We note the support and the points made.</p>

Methodology – Chapter 4: Alien species	
Comments	Response
<p>GBNNSS - The list of species with a UK Risk Assessment is not intended to be a comprehensive list of invasive alien species threatening this country – it is a pragmatic list with Risk Assessments (RA) being commissioned as issues arise.</p> <p>We urge the UKTAG to have regard to the assessment of levels of ‘uncertainty’ included in the RAs. As freshwater bodies and catchments are known to be particularly vulnerable to Invasive Non-native Species we feel an appropriate precautionary step would be to adopt the following approach: any species which has Medium response conclusion but with an uncertainty level higher than Low should be given High listing under the UKTAG process.</p> <p>For example, for Pacific oyster, on which the RA concludes a Medium overall response, the RA also concludes: “Environmental impacts are largely associated with loss of intertidal habitats, including mudflats and bivalve beds. Such impacts may affect habitats of high conservation value, including mudflats, estuaries, eelgrass beds and biogenic reefs. The loss of bird feeding grounds may also result in impacts on native bird populations.”</p> <p>The RA classifies Uncertainty levels as Medium. A High UKTAG listing seems the most appropriate. We believe that guidance needs to be given to the GBNNSS to ensure all aquatic pressures are fully examined in the context of impacts on WFD status.</p> <p>[Joint Links]</p>	<p>The UKTAG Alien Species Group (ASG) agreed the following procedure for deciding how to link GBNNSS risk assessments with UKTAG listing:</p> <p>Low impact, low confidence <input type="checkbox"/> unknown impact list</p> <p>Moderate impact, low confidence <input type="checkbox"/> moderate impact list</p> <p>High impact, low confidence <input type="checkbox"/> high impact list</p> <p>Low impact, medium or high confidence <input type="checkbox"/> low impact list</p> <p>Moderate impact, medium or high confidence <input type="checkbox"/> moderate impact list</p> <p>High impact, medium or high confidence <input type="checkbox"/> high impact list</p> <p>The comments from Wildlife and Countryside Link have rightly noted that the overall ‘response’ listed for the Pacific oyster risk assessment on the GBNNSS web-site is ‘medium’. However, the ASG protocol above concerns the ‘impact’ assessment and not the overall ‘response’.</p> <p>The risk assessment concludes that Pacific oyster has ‘moderate impact’ with ‘high certainty’. That is the reason for suggesting that Pacific oyster should be moved to the newly created ‘moderate impact’ list.</p> <p>Nevertheless, the concerns regarding this species are noted and will be discussed by the UKTAG.</p>
<p>Alien Species List – We agree with proposals to amend the alien species list. It is our view that there needs to be more research on the ways different Non-native Invasive Species are spread between water bodies, and their relative importance. At present the evidence is inadequate, and there is a risk of measures being proposed which are not justified, not cost-effective, or both.</p> <p>[Royal Yachting Association]</p>	<p>Comments noted.</p>
<p>Alien Species List - The idea of introducing a list of moderate impact species and an alert list is sensible and pragmatic. However, the concept of developing a locally absent species assessment as part of a classification system should be pursued cautiously to avoid confusing the impacts of alien species with other environmental pressures.</p> <p>[Thames Water]</p>	<p>Comments noted.</p>

Methodology – Chapter 4: Alien species	
Comments	Response
<p>Alert Species List - We also support the creation of an 'alert' list of alien species that are not yet listed but may pose a significant risk to the water environment. A list could inform contingency plans for dealing with potential threats, the lag phase prior to non-native species becoming invasive is not easy to predict and in any case rapid response is key to control and management. So identifying and setting out measures to deal with a potential threat makes sense.</p> <p>The concept of "locally absent" species and their impact on specific species, habitats or wider ecosystem is established in terrestrial environment e.g. hedgehogs or mink in the Hebrides. It is clear that such events can have a high impact at a local level.</p> <p>[Scottish Water]</p>	<p>Comments noted.</p>
<p>Will there be a new EC directive covering this topic? [Workshop of May, 2012]</p>	<p>The European Commission has been consulting on proposals for a new legislative approach to alien invasive species. The result of this consultation is awaited.</p>

Data Used – Chapter 4: Alien species	
Comments	Response
<p>GB NNSS - We are in agreement to the approach to align the high impact species with the GB Non-Native Species Secretariat (GBNNSS).</p> <p>However it is unclear why there are species listed which do not have a risk assessment from GBNNSS (for example <i>Hemimysis anomala</i> which we have at several sites). We would like this to be clarified.</p> <p>We recommend that GBNNSS should be encouraged to carry out updated risk assessments that are outstanding.</p> <p>[Anglian Water, United Utilities, Scottish Water, Joint Links]</p>	<p>The reason why some species are included without risk assessments was explained in the consultation. The UKTAG lists were originally drawn up before GBNNSS was formed and before risk assessments were carried out. This was essential in order to use data on alien species in WFD assessments. The original listing was made using expert judgement, taking account of scientific literature and other sources of information.</p> <p>It is intended that <u>all</u> species on the high-impact list will have risk assessments completed by GBNNSS as soon as possible. This is already happening.</p>
<p>Can you measure slight adverse impact? [Workshop of May, 2012]</p>	<p>It is difficult to quantify 'slight adverse impact'. In practice, when a high-impact alien species invades a new water body it is likely to become established and exert more than a slight adverse impact.</p>

Details for Chapter 5: River flow

Comments on technical aspects of the report

Methodology – Chapter 5: River flow	
Comments	Response
<p>Have you standardised reference periods for calculating natural low flows? How have you taken climate change into account?</p> <p>[Workshop of May, 2012]</p>	<p>UKTAG agrees that guidance on standardising the procedure for estimating natural flows is important and will take this forward as a priority in its on-going work programme.</p>
<p>How are parts of the UK using the standards differently; could a document be published outlining this?</p> <p>[Workshop of May, 2012]</p>	<p>River flow standards are designed to help the UK environment agencies assess the ecological risk of modifications to river flow caused by activities such as water abstraction.</p> <p>The principal difference in the use of these standards across the UK is in relation to the classification of ecological status. For the first cycle of river basin management plans, the biological methods recommended by UKTAG for use in assessing the status of river ecosystems had only limited ability to detect the ecological effects of changes to river flow. Furthermore, some of the methods were only designed for use in parts of the UK (e.g. the fish classification method). Because of this, UKTAG recommended that the agencies make use of all reasonably available and suitable information to estimate the status of water bodies. This included the results of risk assessments and any relevant biological data that may be available. UKTAG recommended that these risk assessments were informed by assessments of compliance with the hydromorphological environmental standards.</p> <p>The available information for use in these assessments varied across the UK because of different preceding roles with respect to water resource management. As a result, the extent to which the environmental standards for river flows were used to estimate ecological status also varied.</p> <p>UKTAG has prioritised the development of ecological methods responsive to the effect of modifications to river flow. UKTAG plans to consult on the first output of this work shortly.</p>

Methodology – Chapter 5: River flow	
Comments	Response
<p>The UKTAG concluded that there is no new quantitative information that can be used to refine the standards Could the UKTAG apply the same method to low flows? [Workshop of May, 2012]</p>	<p>UKTAG is recommending revisions to its moderate and poor standards for flows from Qn90 (a low flow, exceeded on average for around 328 days per year) to Qn5 (a very high flow). The need for the review was identified for a number of reasons, one of which was the lack of any indication of ecological impact in the results obtained from biological monitoring. The existing biological assessment methods were not designed to detect the ecological effects of flow modification. However, the greater the degree of biological damage, the more likely it is that they will pick up some indication of damage.</p> <p>Where low flow is not maintained, a river will dry up. The flow standards for moderate and poor at very low flows (< Qn95) describe the risk of the river drying as a result of abstractions.</p>
<p>Low flows - 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. [SSE, Energy UK]</p>	<p>The reasons for revising the standards for mid and high flows but not the standards for very low flows are discussed above, UKTAG undertook a review of the scientific evidence on the ecological effect of alterations to low flows. The available evidence was mixed, very little of it was quantitative and, where it was, it did not provide sufficient evidence to change the existing standards. UKTAG does agree that further work is important to improve understanding of how changes to flow affect ecological health. This is an ongoing an important work area for UKTAG.</p>

Methodology – Chapter 5: River flow	
Comments	Response
<p>Heavily Modified Water Bodies - More clarity and information is requested as to how the proposed revised standards would take into account some of the factors listed in UKTAG guidance on Heavily Modified Water Bodies.</p> <p>Other pressures - There will be circumstances where other pressures acting on a water body will mean that this change in flow is a significant in-combination impact.</p> <p>[Wessex Water]</p>	<p>UKTAG has published separate guidance on the classification of heavily modified water bodies, including rivers affected by water storage reservoirs for hydropower, public water supply or other uses. The guidance sets out a default list of mitigation measures, which, if in place, would enable achievement of good ecological potential. The mitigation of river flow-related impacts includes the provision of a low flow to the river. The magnitude required for this mitigation flow is specified in terms of a low (Qn95) flow standard.</p> <p>Where good ecological potential is not met, the agencies may estimate whether the water body is at moderate, poor or bad ecological potential. In Scotland, SEPA has used flow standards to help it do this. This is because existing UKTAG ecological assessment methods are not designed to detect the impact of flow modifications. Subject to the outcome of the forthcoming UKTAG consultation on biological standards and methods, UKTAG hopes that all parts of the UK will be able to detect major and severe impacts resulting from flow modifications using ecological assessments.</p> <p>The environment agencies take into account all pressures when applying the standards, and in making appropriate regulatory decisions.</p>
<p>The Wye and Usk are two heavily abstracted SAC rivers. There is an issue of whether the flows in these rivers are adequate to allow the proper migration of Atlantic Salmon and other Annex II species which include shad and lamprey.</p> <p>[Wye and Usk Foundation]</p>	<p>The existing recommendation is that flow standards are applied to all rivers. In England and Wales, where flows are not meeting those to support a good ecology, detailed investigations are undertaken to better understand the specific flow requirements of particular rivers and designated sites. This information, in addition to the UKTAG standards, is then used to inform regulatory decisions.</p>

Data Used – Chapter 5: River flow	
Comments	Response

<p>The absence of new quantitative information points to an abject failure on behalf of the statutory agencies to get to grips with this important issue. [Joint links]</p>	<p>UKTAG agrees that there is more work needed to fully understand the flow needs of healthy river ecosystems. Recent EU workshops on this topic suggest the position in the UK is ahead of that in most countries across Europe but all countries, including the UK, need to work to improve understanding.</p> <p>The ecological methods so far developed by UKTAG to assess ecological status were not designed to detect the effect of river flow modifications. UKTAG has prioritised work to close this gap and will consult on the first outputs of this work shortly. Better ecological data from such methods may help provide new quantitative information and so help inform future reviews of river flow standards.</p>
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Future ways of working – Chapter 5: River flow	
Comments	Response
<p>Hydropower - The response requests a review of hydropower guidance [NI Task Force]</p>	<p>The comments refer specifically to hydropower development. Each environment agency has produced its own hydropower guidance.</p> <p>UKTAG maintains that the recommended river flow standards are a suitable basis for assessing the risk to the water environment posed by any proposed modification to river flows, including those associated with hydropower developments.</p>
<p>Common methodology - We think that there should be a common methodology of deriving naturalised flows to ensure that flow standards are applied uniformly across the UK and would like the UKTAG to consider guidance on this issue. [Welsh Water]</p>	<p>UKTAG agrees that a common methodology is important. Work to this end has been prioritised within UKTAG's on-going work programme. .</p> <p>The aim is to produce a common framework for deriving naturalised flows.</p>

Implications – Chapter 5: River flow	
Comments	Response

<p>Relaxation of standards - We are concerned that the UKTAG is proposing to relax standards for all river types. Given emerging science and the absence of certainty, the UKTAG must adopt a precautionary approach and maintain and improve current levels of protection.</p> <p>[Ulster Angling Federation, Joint Links]</p>	<p>The revision of the standards has been driven by the evidence that the existing standards for moderate and poor over predict risks to ecology.</p> <p>We have now tested the proposed standards in a wider range of river types than was possible prior to consultation. In doing so, it has become clear that, particularly in rivers with relatively little flow variability due to a high proportion of their flow being from groundwater inflows, the proposed standards would theoretically allow for less flow to be left in the river ("the residual flow") when flow would naturally be a mid or high flow than when it would naturally be a low flow. This anomaly is also true of the existing standards. However, the effect would be more pronounced under our proposed revisions. To address this, we have modified our proposals (See final recommendations). This has resulted in the standards for moderate (the boundary between moderate and poor) being less relaxed compared with the existing standards than were our draft recommendations in the consultation. The amended proposals mean that, at times when flows would naturally be a mid or high flow, at bad status the residual flow would be very low with little or no variability. River habitats would be greatly miniaturised and likely to be of poor quality due to the lack of sufficient flow to properly drive natural channel maintenance processes. At poor status, there would be a slightly greater residual flow and, although there would be extended periods with little or no flow variability, when flows would naturally be high, flows in the river would be sufficiently elevated to prevent severe degradation of river habitat quality.</p> <p>Parallel recommendations on ecological indicators to help in assessing waters at poor and bad status will be described in more detail in a separate consultation planned for late 2012/early 2013.</p> <p>Our proposals do not affect the existing standards for high and good status.</p>
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<p>The document does not explain the implications for existing abstractions. Information is required in order to assess the impact or otherwise on abstractions for public water supply of adopting Mid and High flow standards. A few worked examples would be useful.</p> <p>[Anglian Water]</p>	<p>For water bodies that are at worse than good ecological status as a result of flow modifications, the existing river flow standards for good are designed to help in improvement planning. The agencies can use the standards to calculate the degree by which it is likely to be necessary to reduce pressures on river flows (i.e. water abstractions) so as to enable the achievement of good ecological status. This information allows an assessment of the costs of reaching good status. Costs and benefits are taken into account in deciding whether or not achieving good status is proportionate.</p> <p>The river flow standards for moderate and poor are only relevant in this context in so far as they indicate the scale of improvement needed to reach poor and moderate status, respectively. This can help in assessing the benefits of action where restoration to good status is disproportionately expensive or technically infeasible.</p> <p>In the absence of suitable biological data, river flow standards can be used to help estimate the ecological status of water bodies. They have been widely used in this way in Scotland. UKTAG plans to consult on ecological indicators of the impact of flow modifications in late 2012 or early 2013. These indicators would remove the need to rely on river flow standards for status classifications of poor and bad.</p>
<p>Do the river flow standards apply to Heavily Modified Water Bodies?</p> <p>[United Utilities]</p>	<p>Heavily modified water bodies are not expected to achieve good ecological status. Instead an objective of good ecological potential is normally applicable. UKTAG has published guidance on defining good ecological potential in terms of mitigation, including for flow-related impacts. This mitigation does not require achievement of a good ecological status flow regime.</p> <p>In some circumstances, river flow standards may be used to assess the additional risk posed by proposed new developments likely to affect flows in heavily modified rivers.</p>
<p>The recommendations in Sniffer WFD114 need to be incorporated by the UKTAG. This report includes a review of literature on run-of-river hydropower schemes, compares and contrasts regulatory frameworks, and provides recommendations for suitable mitigation and monitoring activities. The main recommendations of the Phase 1 Report are highly significant and it is now of the utmost importance that these are implemented.</p> <p>[Northern Ireland Task Force]</p>	<p>The work referred to is reviewing the mitigation expected for run-of-river hydropower schemes. The phase 1 literature review is being taken into account in phase 2 of the project. UKTAG will consider the outputs of the project in due course and may make recommendations accordingly. The river flow standards discussed in the consultation serve a different function to mitigation measures. They are used to assess the risk of significant adverse impacts.</p>

<p>Spatial criteria guidance (page 40) in classification guidance for surface waters should be revised to provide more protection to rivers. In practical terms, if the dewatered stretch is less than 1.5 km, the recommended percentage limits on abstraction are ignored. Even if the dewatered stretch is greater than 1.5 km, then it is licensed in NI.</p> <p>[The Ulster Angling Federation]</p>	<p>UKTAG's existing recommendations on spatial criteria are intended for use in classifying surface water status. In this context, they help ensure that action to improve water bodies is focused on significant impacts. UKTAG has not proposed any changes to these recommendations.</p> <p>The spatial criteria are separate from the standards for flows or for the concentrations of pollutants. This is to ensure the agencies can manage proposed new developments in a way that controls the risk of incremental, cumulative impact on the water environment.</p> <p>Uses of the water environment can provide significant benefits. Where a proposed new use offering significant benefits would result in deterioration of status, the regulatory agency will determine whether the conditions for allowing deterioration are met. Such decisions will take into account the positive and negative consequences. The outcome of these decisions may be to allow flow standards and associated spatial standards to be breached.</p>
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Details for Chapter 6: Water levels in lakes

Comments on technical aspects of the report

Methodology – Chapter 6: Water levels in lakes	
Comments	Response
<p>Lake Habitat Zone - With reference to water levels in lakes, whilst it is acknowledged that few lakes that are water company assets are likely to fall within this scope, being largely Heavily Modified Water Bodies, we welcome the sense in measuring change in habitat.</p> <p>However the light penetration assumed for sites with no field data seem very large for southern lowland lakes. These are typically more eutrophic. The estimation of the risk of impact seems complex and the Environment Agency rarely has bathymetric data.</p> <p>[Wessex Water]</p> <p>Are there enough resources within the Environment Agencies to look at bathymetry data?</p> <p>[Workshop of May, 2012]</p>	<p>The UKTAG welcomes the support for a standard that measures change in habitat. Following this comment the UKTAG has reviewed the maximum depth of light penetration and has changed the proposals to 2m (reduced from 5m) for peat lakes and 7m (reduced from 10m) for non peat lakes. These values are added to an additional 5m (reduced from 10m) for all lakes to cover any aphotic zone lake ecology.</p> <p>The depth of light penetration is highly variable and these figures are proposed for use in the absence of measured data. Where the environmental risk is deemed to be high, it is expected that the agencies would seek measured data to assess the impacts of variation in water level.</p> <p>The UKTAG recognises the increased complexity of the method but considers the move towards understanding the impacts of abstraction pressure on the littoral zone/lake surface area an important step forward in assisting the agencies in assessing ecological risk.</p> <p>In recognition of the increased complexity, we recommended a tiered, risk-based approach to the use of the new standards. In this, water bodies are screened based on existing abstraction pressure and whether the existing lake outflow standards for good status are being met.</p> <p>Yes. The UK is applying a risk based approach for this work.</p>

Methodology – Chapter 6: Water levels in lakes	
Comments	Response
<p>We are concerned at the additional complexity involved in assessing compliance with the standards and the increased investment that this may drive.</p> <p>The definition of lake surface area within Table 17 is not readily understandable and we are unclear on how this would be calculated. We support the approach to screening using the current methodology, to assess whether extra information is required.</p> <p>[Scottish Water]</p>	<p>The complexity will be mitigated by the use of screening, as mentioned above, plus a risk-based approach to data requirements. The agencies are developing tools for these assessments.</p> <p>The results will be used to trigger further work if required. A diagram to help clarify Table 17 will be produced.</p>
<p>How will the lake level standards be implemented, for example, on lakes with variable gradients?</p> <p>What the lake level reference conditions are for lakes designated as Heavily Modified Water Bodies which are abstracted from for public water supply?</p> <p>[United Utilities]</p>	<p>The new standards are designed to take account of the effect of variable lake shapes. The agencies are developing tools that produce modelled estimates of shape. Where the circumstances require more precise estimates, bathymetric surveys may be needed.</p> <p>The primary role of the proposed standards is for use in helping assess the risk posed by proposed new abstractions. New abstractions have the potential to cause deterioration of lakes whether or not they have been designated as heavily modified.</p> <p>If applied for this purpose to a heavily modified lake, UKTAG recommends the application would need to take account of the modified characteristics of the lake. One way to do this would be to "re-set" reference conditions to reflect the modified level regime. A similar approach may be suitable for raised lakes.</p>
<p>It is unsatisfactory that the peer review (p.62) identified other factors to be taken into account which have not been considered by the UKTAG.</p> <p>We would like further information on how this information will be taken into account when finalising this standard. There is a serious potential issue with fluctuating levels negatively affecting the nesting and feeding of divers nesting on lochs.</p> <p>[Joint Links]</p>	<p>The standards do not address directly the fluctuation of levels at a sub-daily time step but they do reflect level changes on an inter-day resolution if the fluctuation breaches the habitat area standards.</p> <p>The revised standards do not replace the need to actively manage lakes with designated habitats, or with protected species along the lake shoreline.</p> <p>The revised approach is an improvement and a step in the right direction. It will assist in the assessment of lake level fluctuations. We are unable to implement more detailed assessment of lake fluctuations due to lack of data, but work is ongoing to develop ecological indicators of lake impacts.</p>

Implications – Chapter 6: Water levels in lakes	
Comments	Response
<p>Lakes should be termed still water bodies. Standards should not apply to reservoirs. [Thames Water]</p>	<p>The lake level standards are not intended as improvement targets for heavily modified water bodies. The default objective for such water bodies is good ecological potential. This is defined in terms of mitigation measures that can be taken without a significant adverse impact on the uses causing the modifications.</p> <p>The standards can be applied to heavily modified water bodies to help assess the risk of further deterioration that may be posed by a proposed new abstraction.</p>

Details for Chapter 7: Intermittent discharges

Comments on the policy aspects relating to the stakeholder report content

Implications – Chapter 7: Intermittent discharges	
Comments	Response
<p>We are concerned about the potential use of the standards on a statutory basis for compliance assessment or as part of the statutory assessment scheme.</p> <p>Concerns raised that the standards could drive substantial investment to secure compliance</p> <p>[Thames Water]</p>	<p>There is no intention to use the standards in the assessment of compliance or the assignment of class. For statistical reasons the standards are unsuited for such a purpose except perhaps in special cases that warrant intensive or continuous monitoring.</p> <p>However, on average, failures of such standards would come through in the total numbers of failures of the 90-percentile standards (which are used for classification).</p> <p>The standards for intermittent discharges are intended to help in the design of action on intermittent discharges so that they complement and do not undermine the action taken on continuous discharges.</p> <p>Improvements to intermittent discharges will need to be considered where a water body is classified as less than the required status and where the intermittent discharges are shown to be a significant contributor.</p> <p>Within this there should be no change from past regimes, attributable to standards, in the balance of effort between continuous and intermittent discharges.</p>

Implications – Chapter 7: Intermittent discharges	
Comments	Response
<p>We are concerned about the implications that may arise as a result of the translation of the 99 percentile standards under the River Ecosystem system to the classes used for the Water Framework Directive and that this could drive tighter permit limits for final effluent discharges and/or require more storage for storm tanks.</p> <p>[Anglian Water]</p>	<p>The standards once used for River Ecosystem, and the ratios of 90 and 99-percentiles used for continuous and intermittent discharges respectively, have not changed in the processes of setting them up for use under the Water Framework Directive.</p> <p>Requirements may tighten only in the sense that the overall objectives, as expressed by, say, good or moderate status, might be higher than objectives that applied under the old regime. The link and trade-off between the relative impacts of continuous and intermittent discharges need not change.</p> <p>Following their proven use over 20 years, the River Ecosystem standards were effectively moved across into the standards for the Water Framework Directive. It is unlikely, for example, that a stretch of river that was only just meeting the RE2 standards for RE2 would require significant improvement to meet good status, so long as action continues to demand the 95% confidence of failure required for River Ecosystem.</p> <p>In developing and using their regulatory approaches the agencies need to ensure, before requiring investment, that there is confidence of any failure in the water body, and confidence in the apportionment of impact from particular discharges and inputs.</p> <p>The 99-percentiles are used in a context that may also use the Fundamental Intermittent Standards, to assess schemes for intermittent discharges. Dischargers are expected to follow the procedures of the Urban Pollution Manual (UPM) when assessing the impact of sources of pollution. This involves a catchment approach to identify the most cost effective solution.</p>
<p>We request more details on how the salmonid and cyprinid fishery FIS standards would apply although noted that most improvements to CSOs tend to use the more robust spill frequency standards.</p> <p>[Wessex Water]</p>	<p>The Freshwater Fish Directive (2006/44/EC) will be repealed in December 2013 and future improvements will be driven by the requirements of the WFD.</p> <p>In some cases this may require action over and above that which may have been required by the Freshwater Fish Directive. We estimate that there are 40 to 140 water bodies where the salmonid standards will now apply instead of the cyprinid standards.</p> <p>These are water bodies designated as cyprinid fishery under the Freshwater Fish Directive but which have a high expected prevalence of trout under the WFD.</p> <p>Within this, the FIS standards will continue to be used according to the procedures defined by the Urban Pollution Manual (UPM).</p>

Implications – Chapter 7: Intermittent discharges	
Comments	Response
<p>We highlight that changes to the 99 percentiles will in some cases force more attention and investment on continuous discharges.</p> <p>[United Utilities]</p>	<p>Some of the responses to the above questions are also relevant here.</p> <p>The changes to the 99 percentile standards align them with the 90 percentile standards now used for the Water Framework Directive (which in turn were based on the 90-percentile standards used in the former regime). As noted above the ratios of the 90 to 99 percentiles are the same as those used for the old objectives set under the regime of River Ecosystem. This means that there need be no change in the balance of pressure between continuous and intermittent discharges as a result of the 99-percentiles.</p> <p>No changes to the FIS are thought to be necessary.</p> <p>We noted above the role the Urban Pollution Manual (UPM).</p>
<p>We considered the Fundamental Intermittent Standards to be a ‘measure’ rather than a ‘standard’ to be achieved and that existing standards for BOD and ammonia are sufficient.</p> <p>[Welsh Water]</p>	<p>We use the term “measure” to define actions or interventions that are carried out to meet a standard. The standards used in the context of intermittent discharges are used to help design “measures” for intermittent discharges. As noted above they are not used for classification.</p> <p>The Fundamental Intermittent Standards have been derived to protect all stages of aquatic life. We do not believe that they are precautionary. In reviewing them relatively low Safety Factors have been applied.</p> <p>The assessment of action is expected to follow the procedures of Urban Pollution Manual (UPM). These take an approach of cost-effectiveness.</p>

Impact assessments – Chapter 7: Intermittent discharges	
Comments	Response
<p>We support the existing 99-percentile for River Ecosystem (RE) being adjusted slightly for the new Directive and its typologies however believe that an Environmental Impact Assessment would need to be undertaken.</p> <p>We believe that there must be a very high degree of confidence (95%) that a water body is impacted before investment is made to achieve good status.</p> <p>[Scottish Water]</p>	<p>The support for the changes to the 99 percentiles is welcomed.</p> <p>We are considering further whether an Environmental Impact Assessment is necessary. As noted above, the 90-percentiles are well and long established, and in setting up the 99-percentiles, there is no change in the long-used ratios between the 90 and 99-percentiles.</p> <p>In terms of 95% confidence, we advise that In developing their regulatory approaches for action at a particular site the agencies need to ensure both confidence in the reported failure in a water body, and confidence in the calculated apportionment of impacts. This is a pre-requisite of requiring the investment.</p> <p>The cost of extra monitoring required needed to demonstrate 95% confidence of failure is nearly always trivial compared with the cost of investment and the subsequent risk, without such confidence, that investment turns out to have been wasted and better used elsewhere.</p>
<p>Will these 'standards' go through Regulatory Impact Assessment?</p> <p>[Workshop of May, 2012]</p>	<p>The requirement for a Regulatory Impact Assessment to support any changes to standards will be considered by the administrations.</p> <p>The review of standards for intermittent discharges has essentially concluded that the Urban Pollution Management standards that we have used for almost 15 years can continue to be used for the Water Framework Directive. The 1,000 to 2,000 km of rivers in England and Wales that has been identified in the UKTAG's consultation document as potentially being implicated is based on rivers that now do not meet good status but do meet their previous water quality objectives.</p> <p>These rivers are impacted by discharges from sewage treatment as well as by intermittent discharges. The actual implications of applying the intermittent standards in these rivers will need to be investigated further.</p>

Details for Chapter 8: Acidification

Comments on technical aspects of the report

Methodology – Chapter 8: Standards for acidification in rivers	
Comments	Response
<p>Pages 69-71 indicate that separate standards will exist for clear and humic waters. These will be defined according to the level of dissolved organic carbon (DOC).</p> <p>We question whether DOC monitoring is undertaken at sufficiently regular frequencies to ensure that the standard is still relevant. This is in view of the fact that DOC levels in Scottish rivers have approximately doubled in the last 20 years.</p> <p>[Joint Links]</p>	<p>By proposing standards that rely on DOC measurements, when using the standards the agencies would need to collect sufficient data in order to classify as humic or clear.</p>

ANNEX 2 – LIST OF RESPONDENTS

Organisation
Chemicals Regulation Directorate
Agricultural Industries Confederation
International Manganese Institute
Non-Ferrous Alliance
Tony Marsland
Anonymous
The Coal Authority
Ulster Angling Federation
Anglian Water
Association British Ports
Anonymous
Northern Ireland Task Force
Royal Yachting Association
Wessex Water
Shell Global Solutions
Rio Tinto on behalf of Iron Platform
Scottish Water
European Copper Institute
International Zinc Institute
Severn Trent Water
United Utilities
Tata Steel
Scotch Whisky Association
SSE
Energy UK
Thames Water
Wildlife and Countryside Link
Dounreay Site Restoration Ltd
National Farmers Union
Iron Platform Services Ltd
Anonymous
BASF
Wye and Usk Foundation
Welsh Water
Cefic/ Cyanides Sector Group

ANNEX 3 – REFERENCES PROVIDED BY RESPONDENTS

Topic	References	Respondent
10ao	Glass half full or half empty? Why 2009 Water Framework Directive classification results are over-optimistic about the state of rivers despite the One-Out, All-Out rule Rob Cunningham 2012	Joint Links
10ao	Statistical review of the one-out, all out rule for classifying water bodies. WRC November 2011	Joint Links
Fish	SNIFFER WFD 114, Impact of run-of-river hydro-schemes upon fish populations	Ulster Angling Federation and NI Task Force
Fish	Rizzo (1985)	NI Task Force
Fish	Salmon at Sea by Dr. Ken Whelan	Ulster Angling Federation
Zinc	Zinc resistance in <i>Chironamus riparius</i> – evidence in physiological and genetic components, Miller and Hendricks in J.N.Am.Benthol.Soc Vol 15, 2007	NFA
Zinc	Copper and zinc tolerance of tropical micro-algae after copper acclimation by Johnson et al in Environ.Toxicol. Vol 22 2007	NFA
Zinc	Multigenerational zinc acclimation and tolerance in daphnia magna by Muysen and Janssen in Env.Tox and Chem Vol 20,9, 2001	NFA
Zinc	Effects of stream water contaminated with zinc and cadmium to juvenile cut-throat trout by Harper et al in Arch.Envirn.Contam.Tox Vol 54 2008	NFA
Zinc	Importance of Acclimation to environmentally relevant zinc concentrations of sensitivity of daphnia magna to zinc- by Mussens and Janssen in Env.Toxicol.Chem Vol 24 2005	NFA
Zinc	Kinetics and mechanism of tolerance induction on acclimation of <i>Villorita cyprinoides</i> to copper and zinc-by Sathyanathan in J.Biosci Vol 21 1996	NFA
Zinc	Acclimation and response of algal communities from different sources of zinc toxicity -by Wang in Water, Air and Soil Pollution Vol 28 1986	NFA
Zinc	Plasma clearance of Cadmium and zinc in non-acclimated and acclimated trout- by Chourdhy et al in Aquatic Toxicology Vol 64 2003	NFA
Zinc	Metals in Water, Determining Natural Background Concentrations in Mineralized Areas' by Runnells, Shepherd and Angino in Environ.Sci.Technol 1992.	NFA
Zinc	Physico-chemical surface water conditions of catchments with metallogenic origin: A contribution to the establishment of the EC Water Framework Directive 2000/60/EG in Germany' by Neitzel,Schneider,Schlumprecht (2002)	NFA
Zinc	Huffmeyer, Klausmeir and Matthies in Science of the Total Environment, 2009 shows that of the zinc loading in the River Ruhr some 1/3rd originates from geochemical strata and former mines.	NFA

Topic	References	Respondent
Zinc	Mayes, Potter and Jarvis in Science of the Total Environment, Vol 408, 2010	NFA
Zinc	The range of zinc in UK top soils is shown in the Advanced Soil Geochemical Atlas of England and Wales by British Geological Survey 2012 on p220.	NFA
Zinc	Naturally contaminated waters are identified in 'Metals in Water: Determining natural background concentrations in mineralized areas' by Runnells, Shepherd and Angino in Environ.Sci.Technol 1992	NFA
Zinc	Predictions of river quality across NW England using catchment characteristics by Rothwell et al in Journal of Hydrology Vol 395 2010	NFA
Zinc	A spatial and seasonal assessment of river chemistry across NW England by Rothwell et al in Science of the Total Environment Vol 408 2010	NFA
Zinc	In Situ Speciation Measurement of Trace Metals in Headwater Streams' by Warke, Lawlor, Lofts, Tipping, Davison and Zhang in Environ. Sci. Technol. Vol 43 2009	NFA
Zinc	Chapman PM, Wang F, Adams W and Green A (1999). Appropriate Applications of Sediment Quality Values for Metals and Metalloids. Env. Sci. And Technology 33, 3937-3941.	International Zinc Association
Zinc	ECB (European Chemicals Bureau) - European Commission – Joint Research Centre, Institute for Health and Consumer Protection. 2008. European Union Risk Assessment Report Zinc metal, Volume 42. Final report. (S.J. Munn et al. eds.) 812 pp.	International Zinc Association
Zinc	Foekema EM, Kramer KJM, Kaag NHBM, Sneekes AC, Bierman S, Hoornsman G and Koelemij E. 2012. Determination of the biological effects and fate of dissolved zinc in outdoor marine mesocosms. IMARES, NL, draft report made for IZA, 78p.	International Zinc Association
Zinc	IZA 2010. Chemical safety report "Zinc metal". (REACH registration file, 394 pages) Lahermo et al. (1996).	International Zinc Association
Zinc	Geochemical atlas of Finland. Part 3: Environmental geochemistry – stream waters and sediments. Espoo: Geologian tutkimuskeskus. 1996. 149 pp. ISBN 951-690-678-8 (part 3) 951-690-374-6 (series).	International Zinc Association
Zinc	Landner L. and Lindström L. (1998). Zinc in society and in the environment. An account of the facts on fluxes, amounts and effects of zinc in Sweden. Swedish Environmental Research Group (MFG). 160 pp.	International Zinc Association
Zinc	Liber K., Call D., Markee TP, Schmude KL, Balcer MD, Whiteman FW and Ankley G (1996). Effects of acid-volatile sulfide on zinc bioavailability and toxicity to benthic macroinvertebrates: a spiked sediment field experiment. Env. Tox. and Chem. Vol. 15 No. 12: 2113-2125.	International Zinc Association

Topic	References	Respondent
Zinc	MacDonald DD, Ingersoll CG and Berger TA (2000) Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Arch. Environ. Contam. Toxicol. 39, 20–31	International Zinc Association
Zinc	Rand G, Hoang, TC, Brausch JM. 2011. Effects of zinc in freshwater microcosms. Final report of study made for IZA. Florida Int'l University, 131p. Rognerud et al. (1999). Landsomfattande undersokelser av metaller i innsjosedimenter.	International Zinc Association
Zinc	State Pollution Authority, Report 759/99. 74 pp.SCHER (2007). Scientific Committee on Health and Environmental Risks. SCHER opinion on the Risk Assessment Report on Zinc-Environmental Part. EU Commission publ. Brussels.	International Zinc Association
Zinc	Van de Meent, D. (1990). Desire for levels. Background study for the policy document 'Setting Environmental Quality Standards for Water and Soil'. RIVM report 670101002, Bilthoven, The Netherlands.	International Zinc Association
Zinc	Van Sprang PA, Verdonck FAM, Van Assche F, Regoli L and De Schampheleere KAC (2009). Environmental risk assessment of zinc in European freshwater: a critical appraisal. The Science of the Total Environment 407, 5373-5391.	International Zinc Association
Pendimethalin	Ayscough et al. 1997	BASF
Pendimethalin	Irvine 1990, cited in ESR review, May 1998	BASF
Iron	2011 UKWIR report reviewing the setting of iron limits for wastewater treatment works effluents UKWIR Report Ref. No. 11/WW/20/4	Wessex Water
Iron	Peters et al. 2011 BECT 86:591	Rio Tinto and the Iron Platform)
Iron	A review of the setting of iron limits for Wastewater Treatment Works Effluents, 2011)UKWIR 11/WW/20/4	Severn Trent Water
Iron	UKWIR report on iron (WW20)	Anglian Water
Iron	UKWIR report on iron (WW20)	Anglian Water
Triclosan	Chemical Investigations Programme (a collaborative UKWIR project)	Anglian Water/Scottish Water
Specific Pollutants	Work undertaken by UKWIR (EQ01 Chemical Investigations Programme, project Manager Brian Ellor) and regulators on the Chemicals Investigation	Wessex Water
Copper	http://weppi.gtk.fi/publ/foregsatlas/map_compare.html	European Copper Institute
Copper	http://echa.europa.eu/web/guest/information-on-chemicals/transitionalmeasures/voluntary-risk-assessment-reports	European Copper Institute
Copper	Merrington et al., 2009.	European Copper Institute

Topic	References	Respondent
Cyanide	Cyanides of Hydrogen, Sodium and Potassium, and Acetone Cyanohydrin (CAS No. 74-90-8, 143-33-9, 151- 50-8 and 75-86-5) JACC No. 53, (September 2007). ISSN-0773-6339-53. European Centre for Ecotoxicology and Toxicology of Chemicals, 4 Avenue E. Van Nieuwenhuyse (Bte 6), B-1160 Brussels, Belgium	Cefic Cyanides Group
Cyanide	Position paper on a refined SSD approach to derive EQS values for cyanides. 2011. Dr. U. Hommen, Fraunhofer-Institute for Molecular Biology and Applied Ecology (IME), 57377 Schmallenberg, Germany	Cefic Cyanides Group
Groundwater	European Commission guidance (CIS Guide 17 on 'prevent and limit'),	Shell Global Solutions
Groundwater	2008 MRVs available here: http://www.environment-agency.gov.uk/static/documents/Business/mrv_fact_sheet_v1_2031927.pdf	Shell Global Solutions
Groundwater	DEFRA Statutory Guidance on environmental permitting for groundwater activities (December 2010)	Shell Global Solutions
Groundwater	Recent Environment Agency consultation (GP3 Part 5),	Shell Global Solutions
Groundwater	EA hydrological risk assessment on landfill (2003)	Shell Global Solutions
Groundwater	DETR Statutory guidance for groundwater regulations (2001)	Shell Global Solutions
River Flow	Reducing the impact of abstraction on salmon in the river Wye. 23rd January 2012. John Lawson, The Wye and Usk Foundation	The Wye and Usk Foundation
Acidification	SEPA and Natural Scotland. Trends in organic carbon in Scottish rivers and lochs	Joint Links