# UK Technical Advisory Group (UKTAG) on the Water Framework Directive

## Environmental standards for use in classification and the Programme of Measures for the Water Framework Directive (Public Working Draft)

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| **This Guidance Paper is a working draft for the UKTAG. It documents the principles to be adopted by agencies responsible for implementing the Water Framework Directive (WFD) in the UK. This method will evolve as it is tested, with this draft being amended accordingly.** | | | |
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### 1. Purpose

1.1 This paper explains how environmental standards (and classification schemes) will support the design and implementation of Programmes of Measures.

### 2. Introduction

2.1 The Programmes of Measures will be designed to support and achieve the objectives of the Water Framework Directive (WFD). In the first instance the programme of measures will aim to achieve good status and prevent deterioration in status and achieve other priorities under WFD (e.g. Protected Areas obligations). It will be based on environmental standards developed for assessing water quality and hydromorphology which support protecting the biology.

2.2 This paper should be read in context of UKTAG Guidance 11a(i) Classification Schemes in River Basin Planning: An Overview which explains the framework for the emerging classification schemes and how they may be applied in the river basin planning cycle. Worked examples will be produced to illustrate how the classification schemes and environmental standards will be applied in practice.

### 3. Status objectives under the Water Framework Directive

*Surface waters*

3.1 Surface water bodies are classified according to their chemical and ecological status. The WFD Annex V normative definitions provide the basis upon which ecological status is defined. Measures of biology are a key component of ecological status. Consequently the Agencies[1] are developing classification schemes based upon the normative definitions in Annex V of the Directive. UKTAG Task Teams (covering rivers, lakes, and tidal waters) are developing the biological schemes that will define: high, good, moderate, poor and bad status for the biological quality elements in each surface water body type.

3.2 The biology of a water body is supported by three components of the environment:

- Morphology (physical structure);
- Hydrology (flow and water levels); and
- Chemistry including *general water quality* (physico-chemical measurements) and *chemical pollutants*.

Annex V of the WFD identifies these components as 'elements supporting the biology' for surface waters.

[1] Agencies mean the Countryside and Environment Agencies

3.3 For each category of surface water body, environmental standards are required which support the biology. These include:

- Morphology standards;
- Hydrology standards;
- Water quality standards e.g. levels for general physico-chemical elements; and
- Chemical pollutants standards, e.g. limits for pollutants as defined by Environmental Quality Standards (EQSs) under Annexes VIII, IX and X of the WFD and other community legislation. EQSs for Specific Pollutants under Annex VIII are established by Member States.

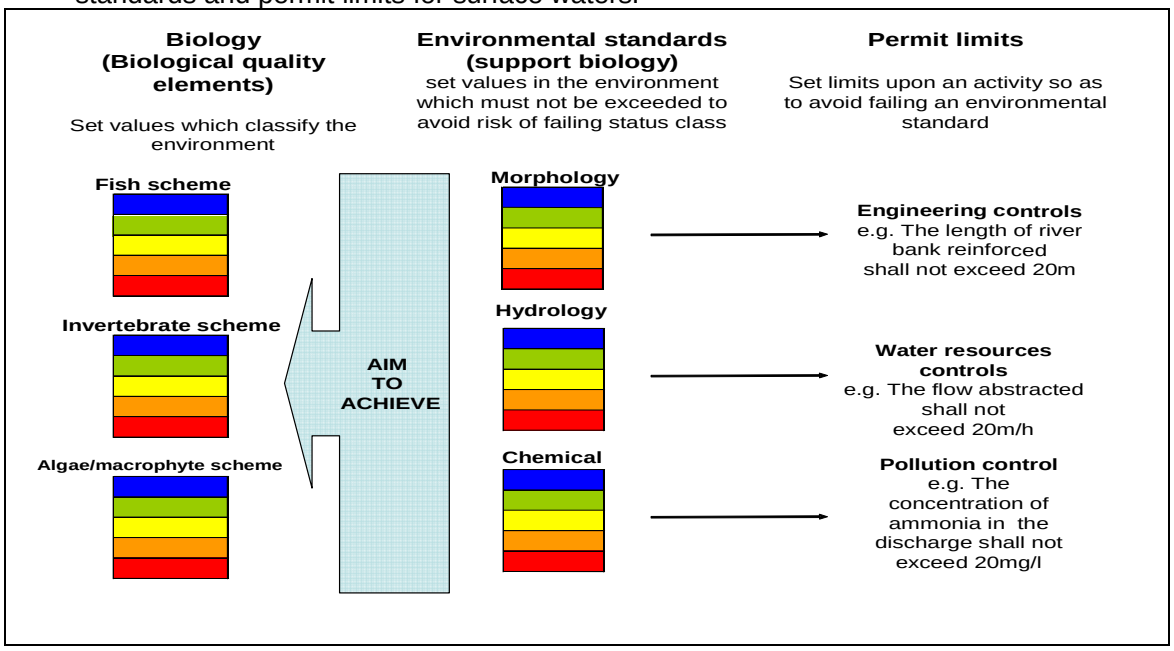
3.4 The standards *will be defined for the relevant status class boundaries,* and will mirror the *biological quality elements* for surface waters. This will ensure that the agencies can aim to achieve good status and prevent deterioration of status. Figure 1 explains the relationship between the biology and the environmental standards and permit limits.

3.5 Environmental standards also support setting ecological status classification scheme providing standards for:

- Physico-chemical elements (used for assessing high and good status)
- Specific pollutants; and
- Hydromorphological quality elements (only used in assessing high status in ecological status.

***Note: Controlling impacts***
*The agencies cannot protect water bodies by setting standards in permits based upon biological quality elements such as the composition and abundance of species. The biology responds to the physico-chemical and hydromorphological components of the environment. The agencies need to develop measures to protect or improve these supporting components. These environmental standards will be set to "aim to achieve" the Directives objectives. Permit conditions can be modelled from these environmental standards.*

**Figure 1.** Explanation of relationship between biological standards and environmental standards and permit limits for surface waters.



*Groundwater*

3.5 Groundwater bodies are classified according to both their quantitative and chemical status, but have only two status classes (good or poor). Good status under Annex V of the WFD is defined in terms of: (1) its impact upon surface waters and terrestrial ecosystems; (2) avoidance of risks of saline and other intrusions; (3) exceedence of the available resource as evidenced by changes in groundwater levels; and (4) compliance with standards in EU legislation or derived from Article 17.

3.6 Therefore, groundwater environmental standards for classification as well as controlling impacts will include:

- Limits for saline or other chemical intrusions from other water sources into groundwater bodies, including values for conductivity;
- Levels (and associated limits) expressing the water balance;
- Thresholds of impact on ecology or status of dependent surface waters and terrestrial ecosystems; and
- Other chemical standards defined under Article 17 of the WFD (proposed Groundwater Daughter Directive). Early indications are that these are likely to include common EU standards for nitrates and pesticides, together with threshold values, defined at Member State level (down to groundwater body level) to protect a wide range of receptors, including those noted above.

Note: groundwater environmental standards may also be used in the assessment of pollution and the quantitative condition of groundwater resources. (Refer to *UKTAG Guidance 11b) Outline of groundwater classification for the purpose of Water Framework Directive* for more information*).*

## 4. Environmental permitting systems and control of damaging activities

4.1 Many activities which have the potential to harm the water environment are controlled by the use of permits. These permits include discharge consents, abstraction licences and Pollution Prevention Control (PPC) authorisations.

4.2 ***Permit limits*** control activities which have the potential to damage morphology, hydrology and water quality. These permit limits are derived from the *environmental standards to* protect these components of the environment. These limits may also determine action by Codes of Practice, General Binding Rules, or other forms of national or community legislation. In this way, the environment is protected. The effectiveness of these measures in improving the environment is monitored relative to the environmental standards.

## 5. Setting WFD compliant environmental standards

5.1 Presently the classification schemes and environmental standards have some differences across England, Northern Ireland, Scotland and Wales. The UKTAG environmental standards will be developed on a UK basis and will be compliant with the WFD and other directives. The approach to their implementation and adoption will be administration-specific, depending on existing and proposed legislative and policy regimes.

5.2 Existing environmental standards will be reviewed so that they can be demonstrated 'to aim to achieve environmental objectives under WFD'. This will ensure that the programme of measures is designed so that the environmental objectives for a river basin district can be met.

5.3 The biological classification tools that will underpin the surface water classification scheme are being developed under a collaborative partnership across the UK and in close co-operation with the Republic of Ireland. The environmental standards are being developed at the same time drawing on the increased understanding of the biological classification, information arising from intercalibration and comparison against international best practice. Standards will also be subject to scientific review.

5.4 The manner in which the environmental standards will be used to support setting permit conditions will depend on the standard, the pollutant or damaging activity, the water body category and the level of confidence in the environmental standard itself.

5.5 Where the pressure and/or impact on the water body is well understood, the environmental standards will correspond to impacts on surface water status as measured by the biological classification schemes.

5.6 In the first river basin planning cycle, where knowledge is more limited, the environmental standards will be set on best available knowledge for managing the environment. For example, a set of best-practice decision rules may be defined to manage engineering impacts on biology or damage from groundwater pollutants on wetlands.

**Note: A phased approach to development of environmental standards**
UK environmental standards will be developed during 2005-2006. It is anticipated that timing of the release of the standards will be phased. The environmental standards for water quality, morphology and water resources for surface waters as well as water resources for groundwater are anticipated to be released early 2006. Future phases will include: development of environmental standards for groundwater water quality as well as EQSs for specific pollutants as required under Annex VIII.

*Form of environmental standards*

5.7 The form of surface water environmental standards for:

- Physico-chemical elements and pollutants - numeric values will be used which have been referenced to ecology;
- Hydrological impacts - numeric values supported by modelling will be used, based upon the best available understanding of links to ecology; and
- Morphological impacts – a decision framework will be developed based on best available knowledge supported by numeric thresholds.

5.8 For groundwater, environmental standards drawn from a variety of sources will contribute to the definition of good groundwater status and will be used to control impacts. For quantitative status the standards will be water levels supported by other limits such as a recharge balance. For chemical status it is probable that the standards will be numeric values that will act as triggers for investigation to determine whether the conditions for good status have been met.

***Note: Groundwater environmental standards***
*Member States are required to ensure that the control regimes for groundwater take account of the protection requirements (i.e. environmental standards) for associated surface waters and groundwater dependent terrestrial ecosystems. As these standards become available, they can be incorporated into a new framework for setting groundwater standards which support achieving good groundwater status.*

*The Groundwater Daughter Directive (GWDD), if agreed, will clarify the requirements for good chemical status and may impose EU-wide groundwater quality standards as well as adding to or developing the status assessment criteria. In the absence of a new Directive, Member States must develop their own criteria by December 2005. Recognising the WFD deadlines, work will be progressed where possible and adapted when the GWDD is agreed. This is anticipated to occur late 2005.*

5.9 Other environmental standards may be used for groundwater in meeting the 'prevent or limit' and 'trend assessment' requirements of the WFD. These are aimed at preventing pollution for receptors and will need to consider standards for human health, amenities, damage to material property and other legitimate uses of the environment.

## 6. Use of environmental standards under Programme of Measures' activities

6.1 The environmental standards will support delivery of the following operational requirements:

- Preventing deterioration by providing the basis of making decisions on new applications for permitting potentially hazardous activities;
- Improving the water environment by providing standards which form the basis of deciding what level of change is necessary to deliver good status and will form the basis of a review of permits of existing activities; and
- Provide the basis by which multiple pressures can be separated and managed appropriately.

6.2 The environmental standards for physico-chemical, morphology and hydrology based upon the best available scientific information will be available during early 2006 (as per Figure 2) so that they can be used to support:

(i) Enhanced assessment of the water environment under further characterisation activities. The standards will input to those activities completed by mid 2007 to provide input to the report on the "Significant Water Management Issues";

(ii) Plan the monitoring programme and its implementation (e.g. training staff, finalising monitoring protocols, etc) by the end of 2006; and

*(iii)* Development of the draft RBMP by the end of 2008. The standards will need to undertake the gap analysis as part of the definition of the programme of measures from 2006 onwards, recognising the time-frames required to undertake the work and also support public participation.

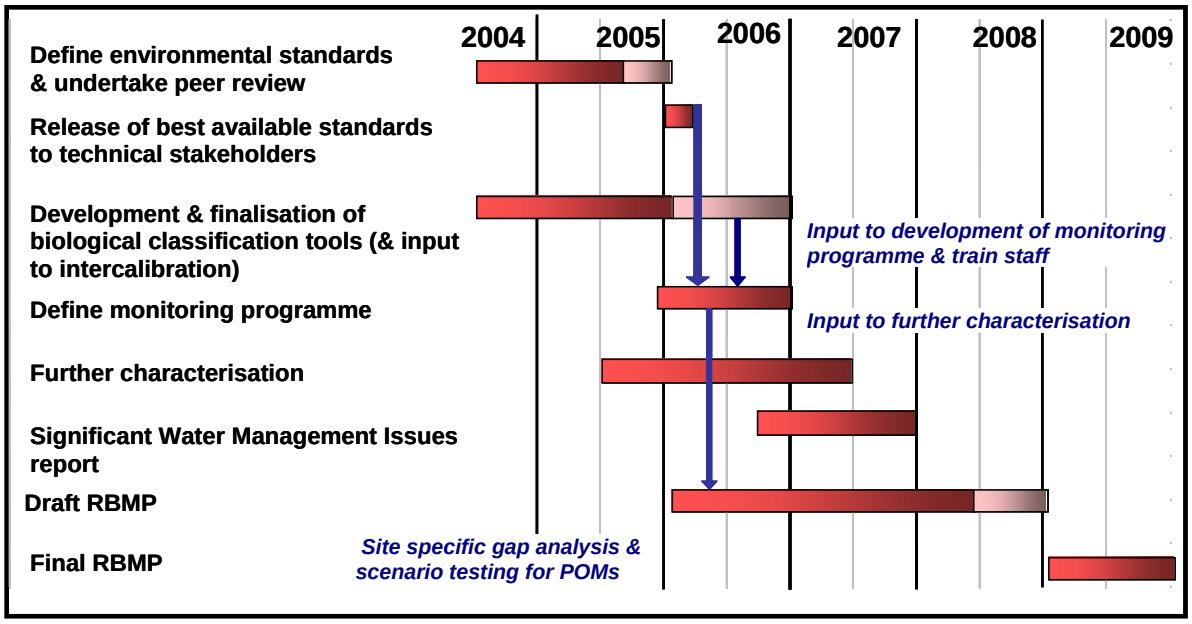
*For example, the current Asset Management Planning (AMP) process for the water sector in England and Wales took two and a half years to deliver: a gap analysis comparing current environmental quality against the environmental standards; the definition of the measures required to address failure to meet the standards; costing of the measures and undertaking the cost-benefit assessment; and prioritising the investment requirements.*

6.3 The best view of the standards is anticipated to be completed during early 2006 as described in Figure 2. It is recognised that the standards may need to be updated if differences emerge from intercalibration and finalisation of the tools during 2006.

6.4 Member States are required to derive EQSs for specific pollutants in accordance with Annex V (1.2.6) of 2000/60/EC. EQSs for substances listed under Annex VIII are concerned only with the protection of aquatic life and must be set to take account of risks to aquatic life from the contamination of sediments and prey. The process for development of the standards must be subject to peer review and public consultation.

(Note. EQSs for other chemical pollutants under Annex IX and X of the Directive will be defined at a European level)

**Figure 2.** Milestones for development of environmental standards for critical physico-chemical and hydromorphological supporting elements.*




** this timetable excludes any standards set under European proposed Priority Substances and Groundwater Daughter Directives.*

## 7. Formal review of environmental standards

7.1 The environmental standards will be reviewed when:

- Sufficient information is available from the application of the biological classification tools to allow further assessment of the relationship between biology and environmental standards; and
- The environmental results from the programme of measures have been assessed allowing confirmation of whether the standards supported the design of measures which delivered the defined status objectives.

7.2 The most likely period for the first review of the environmental standards will be in 2010 when at least three years of classification data should be available and the agencies will be preparing for the second characterisation report. This will inform the preparation for the second RBMP in 2015 (refer Figure 3 below for a description of the process).

**Figure 3.** Process for review of environmental standards for surface waters as part of first river basin planning cycle.