

UK Technical Advisory Group on the Water Framework Directive

An overview of the identification and designation of Artificial and Heavily Modified Water Bodies under the Water Framework Directive

Overview of the operational methodology for the identification and designation of
HMWBs and AWBs.

(Draft – for UKTAG agreement)

This Guidance Paper is a working draft defined by 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 working draft amended accordingly.

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WFD Requirement:	Article (4(3), AWB, HMWB designation, rivers, lakes, marine	UKTAG Review:	Proposed 8 June 2004

1. Purpose of this Paper

- 1.1 This paper sets out UKTAG's **summary guidance** on the **approach to the provisional identification and subsequent designation of artificial and heavily modified water bodies** under the Water Framework Directive as set out in Article 4.3 of the Water Framework Directive (WFD) and further interpreted in the common implementation strategy guidance on the identification and designation of artificial and heavily modified water bodies (HMWBs).
- 1.2 It provides an overview of the approach adopted in the UK. Further guidance papers will describe the detail of this approach.

2. The Directive's Requirements

- 2.1. Article 4(3) and Annex II of the Directive identifies the requirement to identify and designate Artificial Water Bodies and Heavily Modified Water Bodies in each River Basin District.
- 2.2. The definition for these water bodies is outlined in the Directive and the Supporting CIS Guidance document on *"Identification and Designation of Heavily Modified and Artificial Water Bodies"*.
 - 2.2.1. An Artificial Water Body or AWB means: *a body of surface water created by human activity* (Article 2(8) of the Directive). The supporting CIS Guidance further defines an AWB as *"a surface water body which has been created in a location where no water body existed before and which has not been created by the direct physical alteration or movement or realignment of an existing water body. Note: this does not mean that there was only dry land present before. There may have been minor ponds, tributaries or ditches which were*

not regarded as a discrete and significant element of surface water and therefore not identified as a water body”.

- 2.2.2.A Heavily Modified Water Body means ‘*a body of surface water which as a result of physical alterations by human activity is substantially changed in character.*’ (Article 2(9) of the Directive).
- 2.3. An outline procedure for the identification and designation of AWBs and HMWBs has been described in the CIS document on “the identification and designation of artificial and heavily modified water bodies”.
- 2.4. The WFD requires AWBs and HMWBs to be designated in accordance with the designation tests outlined in article 4.3. However the supporting CIS Guidance identifies that only the second test may be of relevance to AWBs. If designated the water bodies are allocated an alternative objective of at least "Good Ecological Potential" (GEP). For chemical status the objective remains “Good Chemical Status”.
- 2.5. Member States must produce an initial list and/or map of provisionally identified AWBs and HMWBs as part of the first iteration of the process of characterisation by 22nd December 2004, and report the results to the Commission by 22 March 2005. Member states must then designate, risk assess and set appropriate objectives for these designated water bodies for the draft river basin management plan by Dec 2008.

3. Background & Relationship to other UKTAG Guidance Documents

3.1 This guidance is related to and should be read in association with, other guidance documents produced, specifically the following:

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| European Guidance | • Supporting CIS Guidance titled “ <i>Identification and Designation of Heavily Modified and Artificial Water Bodies</i> ”. |
| UKTAG Guidance | • TAG 2004 (01) An overview of the identification and designation of Artificial and Heavily Modified Water Bodies under the Water Framework Directive (<i>This guidance</i>) |
| | • TAG2004 (02) Defining and identifying Artificial Water Bodies under the Water Framework Directive. |
| | • TAG 2003 WP 3a (02) Identification of small surface water bodies (Final) 03-07-03 |

3.2 The methodology presented in this guidance is an integration of a number of more detailed reports including:

- *Heavily Modified Waters in Europe - England and Wales Case Studies: Draft guidelines on the identification, assessment and designation of rivers. Environment Agency R&D Project Record P2-260/3* (Environment Agency, 2003)
- *Methodology for the Provisional Identification and Formal Designation of Heavily Modified Water Bodies in UK Transitional and Coastal Waters under the EC Water Framework Directive*” (Environment Agency R&D Technical Report (Draft)
- “*The definition and identification of Provisional Artificial Water Bodies in England, Wales and Scotland under the EC Water Framework Directive (Draft)*”.
- “*Summary risk assessment methods: Risks from morphological pressures. Environment Agency internal documents (draft)*”
- *Heavily Modified Water Bodies in Scotland: Identification of provisional HMWB (pHMWB)*

3.3 This guidance has also been informed by work performed for the first iteration of characterisation and by the trialling of draft designation methodologies in England and Wales (4 riverine; 3 estuarine and 1 coastal case studies); Scotland (2 riverine and 2

estuarine case studies) and Northern Ireland (one case study covering a catchment with both riverine and transitional waters).

- 3.4 The approach described below has been developed as a distillation of the work described above in England, Wales, Scotland and Northern Ireland.

4. Content of this guidance

- 4.1. This guidance summarises the stepwise operational methodology for the identification and designation of artificial and heavily modified water bodies in the UK.
- 4.2. This guidance does not describe the approach in detail. This will be done through further development of this paper and/or through further UKTAG guidance documents.

5. Overview of the operational approach to the identification and designation of heavily modified and artificial water bodies

5.1. Introduction to methodology

- 5.1.1. The process that has been developed and summarised in this paper has been designed to ensure the AWB and HMWB identification and designation requirements of the WFD can be satisfied in a transparent, scientifically robust but operationally pragmatic way.
- 5.1.2. Essentially the approach is a tiered assessment which provides six identified opportunities to come to a decision as to whether a water body is not at significant risk from significant morphological pressures (i.e. not provisionally HMWB), at least one opportunity to decide whether a water body is provisionally AWB and two opportunities to formally designate as AWB or HMWB. The process ensures that a robust decision on designation, or non-designation, is reached as early as possible depending on the particular circumstances. This is important as available resources should be directed towards environmental improvement rather than on protracted designation assessments.
- 5.1.3. Currently much of the process works through collation of information on databases, spreadsheets and proformas and information presented on GIS. These record the information considered and the decisions that are made on the basis of this information. This ensures the decision-making process is entirely auditable by stakeholders and operators. In addition these systems are designed to take key information, required for later stages, through the designation process. This will ensure that decisions are robust and that the method is efficient in the way information is collated, analysed and utilised. Of particular note here is that the assessment of the capital and operational costs of rehabilitation measures (to reach GES/GEP) and of alternative means are assessed together because this is operationally efficient. However only the information on alternative means is used in decisions on designation. The costs of rehabilitation measures is used later in the process (post designation) when considering possibilities for derogation from Good Ecological Potential (consistent with CIS guidance).
- 5.1.4. There is significant scope for further refinement to improve and clarify the information management, visualisation and decision-making process in the approach. These aspects

and the possibility of the development of a decision support system are being explored at the moment.

5.2. Overview of the assessment levels

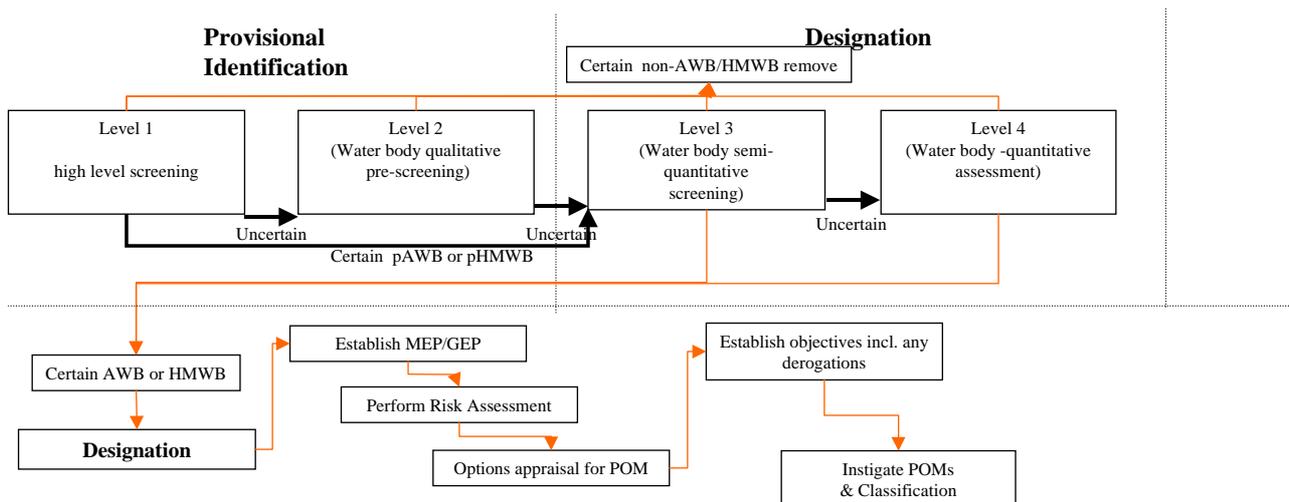
5.2.1. The methodology essentially comprises four main tiered levels of assessment:

- Level 1 – high level screening
 - Level 2 – site-specific qualitative screening
 - Level 3 – site-specific semi-quantitative assessment
 - Level 4 – site-specific quantitative assessment
- } Provisional identification
} Designation

5.2.2 Figure 1 below depicts the process with:

- Level 1 represents an initial high level national or district based screening exercise.
- Levels 2 to 4 follow the more detailed, more site-specific, assessment process set out in the CIS guidance.
- The designation tests 4(3(a)) and 4(3(b)) are applied in a semi-quantitative way in level 3 but in a more qualitative way, if necessary, in level 4.

Figure 1. Overview of designation process for AWBs and HMWBs



5.3. Overview of the step-wise approach within levels

5.4. The overall stepwise approach which operates within the 4 tiers of assessment is described below in summary form in box 1.

Box 1: Overview of the stepwise approach to the identification and designation of artificial and heavily modified water bodies.

Level 1 - High Level Screening
<ul style="list-style-type: none"> • Step 1 – identify typed water bodies (part of wider characterisation process in River Basin Management) • Step 2 – identify pAWBs • Step 3 – collate relevant screening data on morphological pressures (part of wider characterisation process in River Basin Management) • Step 4 – <u>screen out</u> water bodies not at significant morphological risk on the basis of available information; remaining water bodies to proceed, as pHMWBs to level 2 assessment.

<p>Level 2 – Site Specific Qualitative Screening</p> <ul style="list-style-type: none"> • Step 5 – identify all typed water bodies not screened out at level 1 • Step 6 – collate and summarise data on relevant morphological pressures in a standard format for subsequent use in the identification and designation phase (Proformas A1 and A2) • Step 7 – identify human uses which are support by the hydromorphological pressures • Step 8 – collate and summarise existing data on water ecology in a standard format. This includes the identification of reference conditions and the estimation of good ecological status and current status of the water body (Proforma B) • Step 9 – <u>screen out</u> water bodies not considered to be at significant risk. • Step 10 – Assess links between physical modifications and ecology (Proforma C) • Step 11 – Review water body boundaries; split/amalgamate water bodies as appropriate (Proforma D) • Step 12 – <u>screen out</u> water bodies that: <ul style="list-style-type: none"> -Are not at risk as a consequence of hydromorphological modifications; and/or -are not substantially changed in character <p>Remaining water bodies proceed to level 3.</p>
<p>Level 3 – Site Specific Semi-Quantitative Assessment</p> <ul style="list-style-type: none"> • Step 13 – suggest individual rehabilitation measures that would contribute to achieving Good Ecological Status (Proforma E) • Step 14 – identify package of rehabilitation measures that could achieve GES • Step 15 – qualitatively assess effects of rehabilitation measures on uses and/or the wider environment (Proforma F) • Step 16 – <u>screen out</u> water bodies that are likely to be able to achieve GES as measures do not affect use and water bodies should thus not be designated as HMWB. • Step 17 – Test for alternative options to deliver uses, where adverse effects may/would be significant. Semi-quantitatively identify technical feasibility, costs and environmental benefits of alternative means (Proforma G) • Step 18 – semi-quantitatively assess whether alternative means/rehabilitation is disproportionately costly (Proforma H) • Step 19 – identify those water bodies where alternative options are environmentally beneficial, and technically feasible and are not disproportionately costly. Identify water bodies that should be <u>screened out</u> because they are not at significant risk and those that should be <u>designated</u> at this stage. Where there is still uncertainty, proceed to step 18. • Step 20 – summarise measures carried forward – those measures whose impacts and/or costs need to be considered in more detail as it is not considered ‘robust’ to make a decision on the information available in Proformas E to G (i.e. uncertainty is too great) (Proforma I) • Step 21 – detail measures to be dropped – those that impact use or are clearly disproportionately costly (Proforma J)
<p>Level 4 – Site Specific Detailed Quantitative Assessment</p> <ul style="list-style-type: none"> • Step 22 – carry forward the alternative means (and rehabilitation measures*), and state the extent and nature of works required (Proforma J) • Step 23 – summarise capital costs of the alternatives (and rehabilitation measures*), and of the baseline (which could include capital costs if assets were near the end of their life) (Proforma K) • Step 24 – summarise operating costs of the alternatives (and rehabilitation measures*) and of the baseline (Proforma L) • Step 25 – summarise total costs (capital and operating) of the alternatives (and rehabilitation measures*) and baseline, discounted to present values (Proforma M) • Step 26 – summarise the total costs of the alternatives (and rehabilitation measures*) in terms of their comparative cost effectiveness (Proformas N1 and N2) • Step 27 – bring together more detailed estimates of priced costs and benefits with non-priced benefits (Proforma O) • Step 28 – decision on whether water body should be <u>screened out</u> or <u>designated</u> as HMWB <p><i>*the capital and operating costs of the rehabilitation measures are not used in decisions on designation. They are determined here for reasons of operational convenience and efficiency with regard to the methodological approach only. These costs are considered when establishing the technical feasibility and determining whether measures to reach GEP are disproportionately expensive in assessing the need for derogations from GEP. This would be post designation</i></p>

After Designation

- Step 29 – Define Maximum Ecological Potential (MEP) and Good Ecological Potential (GEP)
- Step 30 – Determine programme of measures to achieve GEP, assess whether these measures are technical feasible or disproportionally expensive (from level 3 and 4 work on the capital and operating costs of rehabilitation measures) and thus determine whether derogations from GEP are necessary and then set final objectives.

5.5. It is not always possible to do certain steps for various reasons such as lack of data (e.g. step 8).

5.6. At least level 1 has to be completed for the characterisation report for Dec 2004. It may be possible to progress parts of level 2 for this date. Levels 3 (& 4 if necessary) and the post designation steps have to be completed well in advance of production of the draft RBMP. The ultimate WFD deadline for a draft version of this is Dec 2004.