

**INCREASING NAVIGATION ON GB ARTIFICIAL CANALS & NO  
DETERIORATION UNDER WFD**

**DRAFT DEFRA POLICY DISCUSSION PAPER FOR UK POLICY  
LEADS**

***Executive Summary***

1. The objective is to see whether WFD can be interpreted so that it does not unduly prevent or restrict navigation on artificial canals. The problem is that navigation could be regarded as an anthropogenic pressure which could be managed like any other.
2. Provided that a precautionary approach is taken, Defra considers it arguable that navigation (i.e. use by vessels) can be regarded as directly relevant to designation of a canal as an artificial water body ('AWB') and therefore the effects of navigation should be ignored as part of canal classification.
3. Those mitigation measures or programmes of measures ('PoMs') which are cost effective but do not have a significant effect on navigation must be taken.
4. The analysis is consistent with the no deterioration obligation. The proposed approach to classification would mean that, as navigation increases, there would be no deterioration in terms of ecological potential class, even though in absolute terms there would be a deterioration. This is because reference conditions would be adjusted to take account of the increase in navigation, and ecological potential class is assessed relative to reference conditions. An Article 4.7 defence is therefore not needed in relation to increases in navigation. However, as Article 4.7 is relevant for new developments, such as marinas, likely to result in an increase in navigation where the issue will be considered.

***Background – facts***

5. Inland waterways are water bodies that are or have been navigable. They can be a canal, river navigation, or occasionally a lake, broad, or reservoir. In this paper the term 'canal' means an artificial cut constructed for navigation where no water body previously existed. They are therefore likely to be designated AWB. Some waterways are often referred to as canals but are in fact canalised rivers, and are therefore likely to be designated

heavily modified water bodies ('HMWB'). These types of waterways are not analysed in this paper.

6. Canals are an attractive and assessable system which help biodiversity, conservation and fisheries. Government policy for inland waterways in England & Wales<sup>1</sup>, and in Scotland<sup>2</sup>, encourages navigation authorities to protect and conserve the waterways while at the same time encouraging their best and innovative use. This is to maximise the opportunities they offer for tourism, leisure and recreation, as a catalyst for urban and rural regeneration and for education and for freight transport. These activities have a relatively low carbon footprint.
7. Most GB canals are shallow and narrow. They were built this way partly to reduce their environmental impact. The gauge of most GB canal boats is designed to maximise the use of the shallow and narrow canals, leading to a high blockage factor.<sup>3</sup> In addition, the low water flows in canals result in sediment inputs accumulating on the canal bed. Dredging is required to maintain navigable depth, but this is only required periodically so there is always some sediment in a canal. These conditions result in passing vessels damaging ecology by physical disturbance (caused by vessel wash and water movement around the hull affecting water flow and by direct abrasion<sup>4</sup>) and by causing turbidity. In some cases, however, no vessel movement can be ecologically harmful because there is nothing to prevent the channel from being choked by common plants. In these cases, low levels of boat traffic can be ecologically beneficial.
8. GB canals were not designed to be havens of good ecology any more than roads are. They were built as part of our transport infrastructure during the industrial revolution. Initially completely barren, they would gradually have become populated with plants and animals from adjacent habitats. Their ecological quality since then will have varied over time, and from canal to canal, depending on level of use and associated maintenance and improvement works. Typically this would have started with a few decades of use by horse-drawn barge, with low-level maintenance. From the mid 19<sup>th</sup> century there followed a long period of neglect, in some cases leading to the loss of the canal through silting up or deliberate infilling. In other cases the canal

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<sup>1</sup> *Waterways for Tomorrow*, DETR, 2000.

<sup>2</sup> *Scotland's Canal: An Asset for the Future*. Scottish Executive, 2002

<sup>3</sup> The ratio of the cross sectional area of that part of the vessel at amidships that is under water to the cross sectional area of the canal.

<sup>4</sup> Where a plant is caught in a propeller, for example.

was kept in water through a low level of maintenance, sometimes resulting, entirely accidentally, in ideal conditions for wildlife. 'Undisturbed conditions' in canals therefore usually leads to complete loss of the canal as a water body. It would appear artificial to assess canals purely through a 21<sup>st</sup> century lens.

9. In recent decades the surviving canals have mostly become used for leisure boating, with levels of use now varying from intensive to very little. Use rates continue to increase. Levels of freight traffic are relatively low except in a few lengths, but governments in England & Wales and in Scotland have a freight policy which encourages modal shift of freight from road to water/rail, thereby gaining environmental benefits. During this period of rebirth, a few lengths have been designated as SSSIs, leading to the need to carefully manage the effects of vessel use and maintenance and improvement works
10. In existing high use canals, there is therefore already an impact on ecology. In other canals, with expected increasing navigation, there is a risk of deterioration in absolute terms.

### ***Designation as AWBs under Article 4.3***

11. The GB canals in question were created by human activity.<sup>5</sup> In such cases, there are no changes which could be made to achieve GES, so the test in Article 4.3(a) cannot apply as a matter of logic.<sup>6</sup> 'However, it is considered that the intent of Article 4.3(a) should apply to the process of AWB designation. This requires that restoration measures which result from the application of the designation process should not have a significant adverse effect on the specified use or on the wider environment';<sup>7</sup> 'specified use' includes navigation.<sup>8</sup> This supports our approach that WFD should not unduly prevent or restrict navigation on canals.
12. According to the CIS guidance, the next step is to consider the test in Article 4.3(b) and to assess whether the beneficial

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<sup>5</sup> See definition of AWBs in Article 2.8.

<sup>6</sup> See CIS guidance document no.4, *Identification and designation of HM & AWBs* ('CIS guidance'), at e.g. figure 1 on p. 20 and para 6.8.2 on p. 52.

<sup>7</sup> See CIS guidance at para 6.8.2 on p. 52.

<sup>8</sup> See Article 4.3(a)(ii) and CIS guidance at para 3.1.1 on p. 12. This would appear consistent with the approach suggested for designation of HMWBs in the CIS guidance at para 5.7 on p. 30-32: 'In Table 1, an overview of the main specified uses and the connected physical alterations and impacts on hydromorphology as well as on biology is given.' Table 1 includes navigation as a 'specified use' and notes that the effects of this will include, e.g., 'sediment transport' and 'direct mechanical damage to fauna/flora'.

objectives of navigation on canals cannot, for reasons of cost or feasibility, be achieved by ‘other means’ which are a significantly better environmental option.<sup>9</sup> ‘The designation test is applied in order to see whether there are “other means” to achieve a significantly better environmental option for example resulting in an improvement of the condition of the water body.’<sup>10</sup> The test in Article 4.3(b) is satisfied if any one of its constituent parts is not fulfilled; the ‘other means’ must be:

- technically feasible;
- not disproportionately expensive; and
- a significantly better environmental option.

13. The CIS guidance also says that ‘other means’ are not the same as ‘restoration measures’ considered under Article 4.3(a):

- **other means** ‘deliver the beneficial objectives of the modified characteristics of the water body and involve the replacement or displacement of the existing specified use’; and
- **restoration measures** ‘involve changes to the existing specified use in order to achieve GES’.<sup>11</sup>

14. An example given of ‘other means’ is switching navigation from a river to a canal.<sup>12</sup> The ‘other means’ in our case would mean reducing navigation on canals and encouraging other types leisure activity or freight transportation, for example. The analysis of this must be wide ranging and is yet to be done.<sup>13</sup> It will have to be summarised in RBMPs.<sup>14</sup>

15. The weakness of the CIS analysis is that it appears to ignore the words ‘hydromorphological characteristics’ in Article 4.3(a) and ‘artificial or modified characteristics’ in Article 4.3(b), and to

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<sup>9</sup> Article 4.3(b).

<sup>10</sup> See CIS guidance at para 6.8.3 on p. 52.

<sup>11</sup> See CIS guidance at para 6.5.1 on p. 43.

<sup>12</sup> See CIS guidance at para 6.5.1 on p. 44.

<sup>13</sup> See CIS guidance at para 6.5.2-8 and the overview of measures and cost considerations in the overall HMWB and AWB identification and designation process in table 4 on p. 65. How this is to be done in the UK has not yet been settled. It is probably best done as a national exercise with input from, amongst others, British Waterways.

<sup>14</sup> Article 4.3, final indent.

replace them with 'specified use'. However, in addition to referring to the CIS guidance, before a Court, Defra would also argue that 'hydromorphological characteristics' and 'artificial or modified characteristics' includes:

- channel shape and size; and
- navigation use, to the extent that this inevitably has an ecological effect (as set out in paragraph 7 above), given the approach taken to the construction of canals.

Assuming that the analysis referred to in paragraph 12 above supports this, Defra would then argue that the beneficial objectives of retaining the existing channel shape and size and not unduly preventing or restricting navigation cannot, for reasons of cost or feasibility, be achieved by means which are a significantly better environmental option. Defra would also argue that by adopting a precautionary approach to classification (see below), we would have minimised the damaging ecological effect of the hydromorphological characteristics of canals.

#### ***Classification under Annex V, para 1.2.5***

16. The CIS guidance states that MaxEP 'represents the maximum ecological quality that could be achieved for a HMWB or AWB once all mitigation measures, that do not have significant adverse effects on its specified use or on the wider environment, have been applied.'<sup>15</sup> This supports our approach that WFD should not unduly prevent or restrict navigation on canals but again appears to side step the words 'artificial...characteristics' and 'hydromorphological characteristics' in Annex V.
17. The definition of MaxEP for **biology** is 'the values of the relevant biological quality elements reflect, as far as possible, those associated with the closest comparable surface water body type, *given the physical conditions which result from the artificial...characteristics of the water body*' (emphasis added).
18. It is arguable that the physical effects of navigation (as set out in paragraph 7 above) should be regarded as part of these 'physical conditions' resulting from the 'artificial...characteristics' of a canal. This is on the basis of the approach in the CIS guidance which focuses on 'specified use', or on our analysis that navigation is part of the artificial hydromorphological characteristics which

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<sup>15</sup> See CIS guidance para 7.1 on p. 53.

resulted in the designation as an AWB in the first place. Therefore, the physical conditions navigation creates (including consequential damage to ecology) should be ignored when assessing MaxEP (and therefore GEP) for biology. This is because the damage ‘result[s] from’ the characteristics.

19. Similarly, navigation should be ignored when assessing MaxEP and GEP for **hydromorphology**. The definition for MaxEP is that the ‘hydromorphological conditions are consistent with the *only impacts on the surface water body being those resulting from the artificial...characteristics of the water body* once all mitigation measures have been taken to ensure the best approximation to ecological continuum...’ (emphasis added). Again, navigation should be ignored for the same reasons. The CIS guidance states:<sup>16</sup>

‘The hydromorphological conditions at M[ax]EP are the conditions that would exist if all hydromorphological mitigation measures were taken to ensure the best approximation to the ecological continuum. The mitigation measures for defining M[ax]EP should:

- (a) not have a significant adverse effect on the specified use (including maintenance and operation of the specified use...). This consideration includes an assessment of possible economic effects incurred by mitigation measures but not an assessment of disproportionate cost of the measures themselves or on the wider environment...;[<sup>17</sup>] and
- (b) ensure the best approximation to ecological continuum, in particular with respect to migration of fauna and appropriate spawning and breeding grounds... .’

20. The approach to classification suggested by the Stirling University research commissioned by SNIFFER<sup>18</sup> ignores the effects of navigation on ecological potential by adjusting the reference condition each time a canal waterbody is classified (i.e. when each RBMP is reviewed every 6 years)<sup>19</sup>. This approach sets the

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<sup>16</sup> See CIS guidance para 7.2.2 on p. 56.

<sup>17</sup> This is done at the objective setting stage.

<sup>18</sup> *Canal classification tool*, SNIFFER WFD 61; first draft of phase 1 report, July 2006.

<sup>19</sup> For example, in 2009, if the value of the relevant metric at reference condition for a canal water body with an annual level of vessel movement of x is computed from the Stirling model to be 10; the value for the canal when surveyed at that time was 9, so the ratio would be 0.9, which would put it in the GEP class. In 2015, annual vessel

reference condition for MaxEP for a canal water body at a value that is consistent with no pressures except for vessel movement. The reference condition is set at a value consistent with the level of vessel movement pertaining at the time of classification. This means the reference condition for a canal water body will vary across the canal network and with time as the level of vessel movement varies. This approach ensures that the highest physico-chemical, chemical and biological standards apply relative to navigation. It permits only the minimum necessary absolute decline in ecological potential without adversely affecting navigation.

21. An alternative approach to classification is being developed by AINA.<sup>20</sup> This is on the basis of the *Alternative methodology for defining the hydromorphological element of GEP for HMWB and AWB*<sup>21</sup>. Under this method, classification is based on mitigation measures and failure to meet an objective will be based on whether or not those mitigation measures specified have been done. This would appear to be less rigorous scientifically but may have a role whilst the science is uncertain.
22. A precautionary approach means that only the inevitable effects on ecology from navigation should be ignored under the alternative approach and all mitigation measures not having a significant adverse effect on use (e.g. navigation) and the wider environment and having more than a slight ecological benefit should be taken. For example:
  - in some cases, banks could be improved to make them more compatible with better ecology;
  - in some cases, increases in boat traffic in sensitive areas could be controlled indirectly through controls on developments such as moorings, or damage limited by, for example, applying appropriate speed limits;
  - there might be a case for encouraging modifications to the design of certain vessel hulls to reduce bow waves and water flow around them; or

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movement increases to x+y and the Stirling model shows that, at this level, the value of the metric at reference condition should be adjusted to 5; the value for the canal when resurveyed at that time is 4.5, so the ratio remains at 0.9, which still puts the canal in the GEP class.

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Association of Inland Navigation Authorities

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Annex II to the CIS document *WFD and hydromorphological pressures Technical report*, November 2006.

- in some cases, dredging might be considered to reduce sediment.
23. The definition of these mitigation measures is a critical task and is expected to be included in the UKTAG Mitigation Measures project<sup>22</sup> currently being funded by AINA.
24. Given the emphasis in CIS guidance on impacts on specified use, the Stirling University approach along side appropriate mitigation measures would be defensible before the ECJ. In addition, it appears from CIS documents that the alternative approach to classification based on mitigation measures may also be acceptable. In addition, some developments which promote increased vessel movement (e.g. some waterway restorations, some marinas) may result in deterioration due to the engineering works (e.g. river canalisation), and will therefore require use of Article 4.7 to justify deterioration. CIS guidance on Article 4.7<sup>23</sup> requires a prior assessment process with public participation (e.g. an environmental statement as required by the EIA Regulations as part of a planning application) to demonstrate that the tests for such an exemption are met. Such an assessment can include a consideration of the ecological effects of increased vessel movement, and an explanation that this will not result in deterioration as defined by the Article 4.7 guidance (i.e. no change of class).

### ***Programme of Measures under Article 11***

25. Other anthropogenic pressures, such as land based activities surrounding canals which create sedimentation should be controlled under Article 11 unless alternative objectives or defences apply under Article 4.4-4.6.

### ***No deterioration under Article 4.1(a) and 4.7***

26. Defra regards the Stirling University approach as consistent with the no-deterioration obligation. It is also possible that the alternative approach to classification based on mitigation measures could achieve the same.

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<sup>22</sup> *Management strategies and mitigation measures for inland navigation sector in relation to ecological potential for inland waterways*, UKTAG project started January 2007 by Royal Haskoning.

<sup>23</sup> Exemptions to the environmental objectives under the WFD allowed for new modifications or new sustainable human activities (WFD Article 4(7)). Policy Paper (draft) 2006.

27. The approach taken to classification proposed by the University of Stirling's report will result in a lowering of standards for reference conditions as navigation increases. Article 4.7 provides an opportunity to explain this when it is used, for other reasons, for new developments likely to result in an increase in navigation (see para 24). This would provide a legal framework, in these cases, for justifying deterioration in absolute terms.<sup>24</sup>
28. Article 4.7, 1<sup>st</sup> indent, arguably provides a defence in relation to navigation to the extent that this changes hydraulic conditions in the canal. It applies to 'new modifications to the physical characteristics of a surface water body' which would include transient changes to flow patterns and water levels, and associated turbidity, caused by the passage of vessels through the channel, as explained earlier (para 7).
29. To be able to rely on Article 4.7, 1<sup>st</sup> indent, the conditions in paragraphs (a) to (d) must be fulfilled, which are the taking of practicable mitigation measures, the demonstrating of societal benefits, and the ruling out of other ways to deliver those benefits. The reasoning would also have to be set out in the EIA or other prior assessment process, and recorded afterwards in the RBMP. It might be appropriate to produce a national plan for the entire GB canal network which could then be annexed to each relevant RBMP. It is likely that generic reasoning would apply to many canal developments. It is also likely that similar issues are going to arise when analysing designation, classification and no deterioration.
30. Article 4.7, 2<sup>nd</sup> indent is unlikely to be relevant because it appears to apply to deterioration from high to good ecological status rather than from MaxEP to GEP even though navigation could be classed as 'new sustainable human development activities'.

## **Defra - Water Quality, Inland Waterways**

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<sup>24</sup> In the unlikely event of a legal challenge to the Stirling University or alternative approach to classification based on mitigation measures, it would be possible to use the reasoning and evidence when applying Article 4.7 to, for example, a new marina development, to increases in navigation. This could be applied *ex post* if relying on Article 4.7 as a defence to a failure to avoid deterioration. This would have to be an 'in the alternative' argument because we would want to argue primarily that increases in navigation (or other specified uses) can be ignored when classifying and determining whether there has been deterioration.