

OPEN BOARD PAPER

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PAPER BY: DIRECTORS OF OPERATIONS & ENVIRONMENT PROTECTION

SUBJECT: WATER FRAMEWORK DIRECTIVE–FIRST ROUND AMBITIONS

ISSUES

The Board is asked to comment on:

- our proposals for using scenarios in the draft River Basin Management Plans due in December 2008;
- our approach to targeting action in the first round of river basin management planning;
- the delivery of improvements in the ecological status of water bodies by 2015, even if they do not result in many more waters being formally classified as good status; and
- the delivery of widespread achievement of good status by 2027.

1.0 INTRODUCTION

- 1.1 The Water Framework Directive (WFD) establishes a strategic river basin management approach to managing the water environment. It provides a common approach to setting environmental objectives for all groundwater, surface waters, estuaries and coastal waters within the European Community, and requires Member States to draw up plans for meeting those objectives in each River Basin District.
- 1.2 There are a series of default objectives in the WFD. The principal ones are:
- i) no deterioration in status (applies now); and
 - ii) aim to achieve good status by 2015.
- 1.3 The Directive is based on modern regulation approaches. It is risk-based and focused on achieving sustainable ecological outcomes. The Directive sets out a framework of analysis which allows extended deadlines and/or less stringent standards to be set as objectives when the solutions to reach the default objectives are not cost effective, technically feasible or are disproportionately expensive.
- 1.4 It is the disproportionately costly test that will exercise much of the debate on the level of ambition that we propose in the first round of River Basin Management Plans (RBMPs).

2.0 DISPROPORTIONATE COSTS–DEFRA’S IMPACT ASSESSMENT

- 2.1 The central importance of economics in the WFD means that cost and benefit analysis play an important part in ensuring we implement the Directive in the context of sustainable development. Defra’s revised impact assessment, completed at the end of 2007, provides a high-level analysis of this context. It has been prepared to accompany the revised statutory guidance on river basin planning and sets out, at an England and Wales level, the likely constraints on achieving the Directive’s aims by 2015.
- 2.2 The Impact Assessment looked at the costs and benefits of achieving WFD objectives by 2015 (Option A) or under a phased approach by 2027 (Option B). The headline figures for each option are shown below:
- i) Option A Costs = £2.4bn per annum, Benefits = £1.3bn per annum;
 - ii) Option B Costs = £0.9bn per annum, Benefits = £0.9bn per annum.
- 2.3 The figures in the analysis are annual values over a 43-year period from 2009 (implementation start) to 2052 (that is 25 years, the assumed asset-life of investments, after 2027, the endpoint of the third river basin management cycle). They *exclude* the costs and benefits of achieving compliance with existing Directives (such as Nitrates, Habitats and Urban Waste Water Treatment).
- 2.4 The costs for Option A are much higher because they represent the cost of taking blanket, untargeted action across England and Wales. Benefits are marginally higher too since good status would be achieved earlier. Option B works on the principle of progressively reducing uncertainty so that only necessary, targeted action is taken. In all cases, the costs and benefits are very much a first estimate and encompass quite significant ranges (typically around +/- 50% of the headline figure); the actual out-turn figures will be different.
- 2.5 Even with the caveat on estimates, the case for achieving good status everywhere by 2015 is clearly not supported on economic grounds. However, of more concern is the very tight cost-benefit outcome for the preferred option of phasing achievement of good status up to 2027. This has two significant consequences:
- i) there will be strong arguments for widespread use of less stringent objectives (aim to achieve less than good), not just extended deadlines (achieve good by 2027). This dilutes the overall ambition of the Directive even though it is legally justified; and
 - ii) just because a phased case can marginally be justified, it does not mean that the equivalent of £900m per year of funding will be made available. This means that the likelihood of achieving 100% good status even in a phased plan will be low.
- 2.6 The situation could in theory be ameliorated by bringing into the benefits appraisal an assessment of “non-monetised” benefits. These include wider benefits associated with regeneration or other ecosystem services. However, the Impact Assessment concludes that the evidence for widespread use of this approach is limited. We believe it will be appropriate to assess these wider benefits when improvements are connected to major regeneration projects, such as the Olympics.
- 2.7 Even where we are confident that benefits outweigh costs, there is another hurdle before justifying action. Many refer to this final justification as the affordability

argument. Affordability on its own is not accepted across Europe as a reason for not taking action. There is more agreement that action should be avoided where it has unacceptable impacts on vulnerable businesses or sectors of society. This is a difficult political judgement that will be addressed through the consultation on the draft RBMP, but we will not explicitly attempt to estimate what we think is affordable.

- 2.8 The economic analysis of implementing the Directive carried out by Defra will mean that it issues guidance to us to adopt a phased approach to achieving its aims by 2027. This means that we must use successive cycles of river basin planning to target action and progressively reduce the areas of uncertainty that lead to the estimated costs.

3.0 HANDLING UNCERTAINTY THROUGH TARGETED ACTION

- 3.1 Defra and Welsh Assembly Government issued statutory guidance to the Environment Agency on River Basin Planning in August 2006. They launched a consultation on an extension to this guidance in January 2008. The main content of the extended guidance relates to key planning assumptions for handling sources of uncertainty. In particular, it provides a steer on:

- i) levels of evidence required before considering action;
- ii) which mix of measures are likely to be cost effective, especially with regard to tackling pressures such as morphological change and diffuse pollution from agriculture; and
- iii) economic appraisal tests – for example, when to reject action because it would be disproportionately costly.

- 3.2 For statutory schemes, driven by existing Directives, the requirement for action is often absolute and the only discussion is around which solution is most cost effective. In contrast, action to achieve many of the WFD objectives must be feasible, proportionate and the benefits must be shown to outweigh its costs. If there is uncertainty that an outcome will be achieved, estimates of benefits must be reduced accordingly. The guidance has the effect of targeting actions in the RBMPs to those areas where:

- i) action is required because of existing Directives (irrespective of the next three points);
- ii) there is reasonable confidence that there is significant risk (including actual evidence) of ecological damage;
- iii) there is reasonable certainty between those risks and potential causes; and
- iv) there is reasonable certainty that a remedial measure would give the predicted positive effect.

- 3.3 These principles are well established in the way we justify action to tackle impacts from the most hazardous chemicals, discharge consents and abstraction licences. For these pressures, the first cycle of river basin management planning will have quite extensive improvement actions or a programme of more detailed investigations to identify a high probability of cause (principally with problems attributed to over-abstraction). Many of these actions will be driven by the requirements of existing

Directives, principally the Habitats, Birds and Urban Waste Water Treatment Directives.

3.4 The planning principles are less established with regard to actions necessary to tackle pressures from diffuse pollution, physical modification and alien species. For these pressures there is more uncertainty and we are less able to justify expensive action in the first cycle. Our responses in the first cycle are more likely to be based around further investigation and pilots. There will be some cases where we take extensive action (e.g. water protection zones) but this is likely to be limited.

3.5 We have developed a simple four-box model to illustrate how we will handle uncertainty to target action in waters not achieving WFD objectives or at risk of failing them. When assessing our understanding of the problem, our prime focus is on evidence of failure to reach the biological components of good ecological status rather than simple deviation away from those chemical standards which may not have a very strong correlation to biological response. Section 5.3 explores our approach to identifying priority waters in more detail.



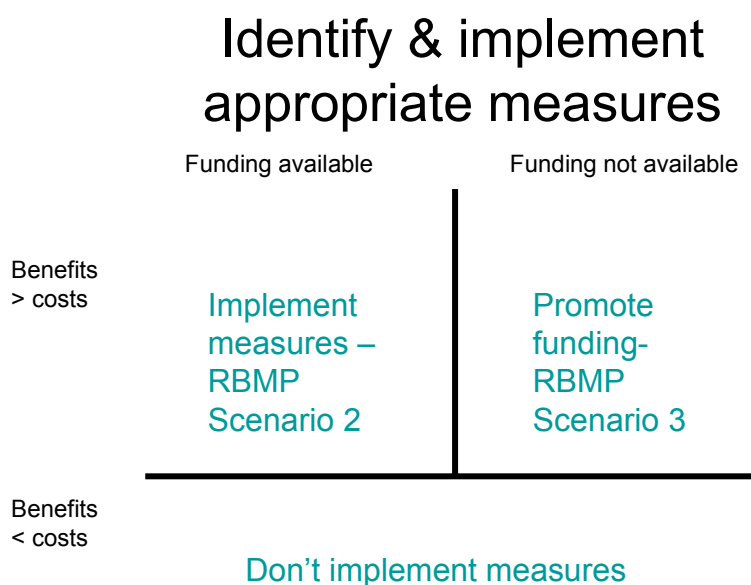
3.6 The draft Ministerial Guidance is not explicit in setting out an ambition or clear priority for tackling improvements to the water environment. However, the rules it puts in place around appraisal and handling certainty before action means that significant achievement of additional water bodies with good ecological status in the first cycle of river basin management will be constrained. This is a position that has recently been accepted by several other European Member States (including Germany, Austria, France and Portugal) and was reported to the European Water Directors at the end of November 2007.

4.0 USING SCENARIOS IN RIVER BASIN PLANNING TO STRETCH AMBITION

4.1 The requirement for us to take the above approach means there is a risk that environmental organisations will believe that RBMPs are insufficiently ambitious. We propose to address this by analysing three scenarios in each plan, as follows:

- i) Scenario 1 – what we would achieve in 2015 with existing measures (e.g. PR04 schemes), new measures for existing Directives (e.g. new Nitrate Vulnerable Zones and statutory PR09 schemes) and new national level actions for the Water Framework Directive (e.g. a potential ban on phosphates in detergents). This scenario also includes a range of actions to prevent deterioration, which, given major pressures from growth, represents a major challenge;
- ii) Scenario 2 – where we would get from baseline with Scenario 1 plus local “no regrets measures” and additional measures justified in River Basin Districts on cost/benefit grounds, only including measures where we are confident of a potential funding source;
- iii) Scenario 3 – as for Scenario 2, economically justified but with greater costs. Some of these costs might not have clear funding sources for the period of the plan.

4.2 Scenario 1 is a major programme of work – we have previously estimated that around 80% of total expenditure in the first cycle will be committed here. The figure below illustrates how the assessment of measures will be carried out to identify actions and objectives that should be included in Scenario 2 or 3 of the draft RBMPs. We are due to release the draft RBMPs for consultation in December 2008.



4.3 Scenario 2 is a pragmatic estimate of what we think can be achieved. Scenario 3 is what we think we could achieve with an optimistic, but still economically justified, position. This latter position may not be achievable in full but it is where we can demonstrate our ambition as a champion of the environment. For both scenarios we expect there to be debate on the potential for proposals to have negative distributional

consequences (unacceptable impacts on vulnerable sectors that cannot be corrected by changes to funding support) which may also reduce the proposal put forward in the final plan.

5.0 THE SIZE OF THE CHALLENGE

- 5.1 The classification of waters under the WFD will present a more negative picture of water quality than that indicated by our previous classification systems. This is driven by the more extensive set of elements that are being monitored and the requirement to combine these elements in a “one out, all out” way. If one quality element fails to reach the good status level then the whole water is formally classed as less than good. We are looking at ways of best presenting the data to demonstrate that failure to achieve good overall status might be down to only one element.
- 5.2 Although not yet legally adopted, our approach to defining good ecological status in terms of the biology, chemistry and other supporting elements (e.g. flow and morphology) has been widely publicised and given general support by Government as the basis for us to carry out planning. Standards for the chemistry and supporting elements have been developed and consulted on through the UK Technical Advisory Group (UKTAG) on WFD. The forthcoming Government consultation on further river basin planning guidance will formally secure the statutory status of these standards. For the biological standards, there are two different routes to formalisation. We await European sign-off of the standards and thresholds for the tools that have been through the EU inter-calibration process. This is due in March. For the biological tools which have been developed at a national level, we have developed clear standards and methodologies through UKTAG and we expect to have formalisation of these through statutory direction by July 2008. In the meantime, we are confident in the robustness of our methodologies and standards and have been given assurance by Government to use them as the basis for our draft classifications which are due at about the same time.
- 5.3 We are also working on the classification process for heavily modified and artificial water bodies. The requirement for these is to reach good ecological potential. This is defined in terms of the presence of all feasible effective mitigation measures and achievement of supporting standards (e.g. chemical standards) not affected by the use that led to designation. In practice this will mean that the clear majority of standards applied to natural water bodies will still apply to heavily modified and artificial water bodies. In addition, protected area objectives (e.g. the objectives of the Habitats and Birds Directives) must also still be met. Proposals on how we will assess good ecological potential will be published through UKTAG in February but these have been developed in close co-ordination with a variety of stakeholders.
- 5.4 Based on risk maps and initial assessments of our monitoring data against WFD standards, we would say that only 20% of waters have high confidence of meeting all requirements to be at good status or better. 80% of waters requiring action is a major programme of work, so a clear approach to prioritisation is needed. We intend to use strength of evidence of ecological failure as the prime driver for action. The first draft biological classification of waters using our WFD monitoring tools and networks is not due for completion until July 2008. However, we do have a range of existing data, including fish and invertebrate data, that we are using now. An

overview of our prioritisation philosophy for surface waters is shown in the text box below:

1. **No deterioration** – this means from now, no deterioration in status, plus ongoing implementation of our current functional policies on no deterioration.
2. **Life in all waters** – this means improving water bodies that are likely to be classified as bad status for the biological components, macro invertebrates and fish. This is for rivers, lakes, estuaries and coastal waters. The degree of improvement will be determined by the need to ensure that benefits are greater than costs. This is one of a series of principles that will be used to underpin the river basin planning process.
3. **Protected areas** – measures to achieve protected area objectives would be achieved even if there was no WFD. Through river basin planning we need to provide additional measures for Natura 2000 sites. We will need to work with Natural England and the Countryside Council for Wales to understand specific requirements and objectives. We will also need to provide drinking water protected area requirements – these are largely no deterioration.
4. **Improve the worst water first**–this also means tackling quality elements and uses of the water environment that are most valued by people, for example, those close to where people live.

In addition:

- **Cessation and limiting inputs of priority substances** – this applies to programmes and plans affecting releases into groundwaters, rivers, lakes, estuaries and coastal waters.
- **All sectors to make some contribution in the first round.**

- 5.5 The process of assessing where we will get to by 2015 is one of the main tasks of the RBMP process. The revised Impact Assessment for WFD strongly indicates that progress towards achieving good status will have to be phased up to 2027, and in some cases less stringent objectives will have to be set. The case of phosphate can be used to illustrate these points, and highlight the importance of ecological impacts as a means of targeting action.
- 5.6 Standards for the concentrations of phosphate in lakes and rivers have been set for all status classes. However, we do not have absolute confidence that the standards perfectly reflect the ecological responses in all situations. There are some waters where the phosphate levels exceed the standards but where we do not have confidence that the ecology sensitive to phosphate has been impacted. Because we do not have confidence that there is an ecological impact, some waters with failing phosphate standards will be low priorities for action because we may not see any benefit from reducing the levels of phosphate: consequently, we will not necessarily promote action purely because of phosphate standard failure on its own.
- 5.7 However, some measures to reduce phosphate levels across England and Wales will be introduced even though there is a lack of confidence that there is site specific evidence of impact. This is because of actions we are required to take under the

Urban Waste Water Treatment Directive and because other types of general action on point sources have been shown to be cost effective (outlined below). A potential ban on phosphates in detergents has also been shown to be cost effective: a consultation on this measure is expected in January 2008.

- 5.8 In addition, Defra has proposed a series of catchment sensitive farming measures that are assumed to achieve a 48% reduction in the inputs to water bodies of agricultural pollutants, primarily nutrients, sediments and faecal indicator organisms. However, there are practical difficulties in establishing and maintaining some of these new measures. The extent of funding to support the provision of these mechanisms will be challenging, and the evidence base will come under particular scrutiny.
- 5.9 All this action will lead to a reduction in the levels of phosphate in water which should then result in general improvement in ecology. However, the sum total of these actions will not bring all waters affected by phosphate up to good status.
- 5.10 Even if a 48% reduction in diffuse phosphate loading from agriculture is achieved, we will only see an increase from 64% to 68% in the lengths of river that meet the good standard for phosphate. The addition of a ban on phosphates in detergent (still under debate) and a major programme of improvements at sewage treatment works (with a net present value of some £7 billion, indicated as cost effective in Defra's impact assessment work) would increase this compliance to 75%.
- 5.11 The current best available technique standard for phosphate emissions from sewage treatment works is generally accepted to be 1 mg/l. Even if it were technically feasible to impose a "zero" standard for phosphate emissions on all sewage treatment works, the level of compliance with the phosphate standard would only increase to 83%. Other sources of phosphate would remain, but are too difficult to attribute to a source to provide a cost effective solution.
- 5.12 The above example is for a situation where we have a relatively strong understanding of cause-effect relationships, a good understanding of sources of the pressure and clear mechanisms to deal with the problem. For flow and morphology pressures some of these relationships are less clearly understood.
- 5.13 The actions we will plan for in the first round of RBMP will improve the ecological quality of waters. But the one-out, all-out principle will mean that we do not see significant increases in waters achieving good ecological status. However, there will be significant improvements in the quality of protected areas and we will see more waters achieving good status in individual quality elements which are currently at moderate or worse.
- 5.14 The challenge of preventing deterioration will be significant even before considering the scale of improvements that we are striving for. Diffuse pollution and morphological change are problems that have taken many decades and even centuries to arise. We will continue to build confidence in the solutions that are needed in these areas but we are expecting this to be a difficult task involving many players.

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22 January 2008