

Chapter 4.12

Administrative Costs

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1. INTRODUCTION

The Water Framework Directive (WFD) presents a unique regulatory challenge in terms of the long-term management of water resources in England and Wales. This is due to the manner in which the Directive attempts a holistic integration of targeted current and future legislation to ensure sustainable water management and use. This integration is to be achieved by the competent authority (the Environment Agency (EA) with the guidance of Department for Environment, Food and Rural Affairs (Defra)) by liaising with and effectively incorporating the needs of the water industry, agriculture and other industries, non-governmental organisations (NGOs) such as the Royal Society for the Protection of Birds (RSPB) and World Wildlife Fund (WWF), government organisations like Natural England and the Countryside Council of Wales, and the public.

There is therefore an obvious requirement for a balance to be struck between many conflicting needs in order to achieve the fundamental premise of the WFD. Sustainability, which underlies all of the efforts of this Directive, is the end goal, and Defra are approaching this through the economic balancing of costs and benefits and analysis of pressures and impacts, as directed by the Common Implementation Strategy (CIS) for Europe. Defra have commissioned an overall regulatory Impact Assessment (IA) in order to comply with the requirements of the CIS, by providing clear economic and technical guidance for the formulation and implementation of river basin management plans (RBMPs), while highlighting the pressures and impacts associated with WFD implementation.

One component of the IA is the requirement to assess the administrative and monitoring costs of enforcing the UK Technical Advisory Group (UKTAG) environmental standards and conditions¹ that underpin the implementation of the Directive, the costs to set up and implement RBMPs, as well as any additional costs (excluding compliance costs) the EA might incur in implementing the WFD.

The first phase of the UKTAG standards (Phase 1) was published in August 2006, and the second phase (Phase 2) was published in June 2007. Phase 2 standards comprise three separate reports: Proposals for Environmental Quality Standards for Annex VIII substances, UK Environmental Standards and Conditions (Phase 2), and Protocols for a Groundwater Classification System and its application in regulation. All four reports are available at http://www.wfduk.org/UK_Environmental_Standards/. Table 1 lists the standards and conditions for Phases 1 and 2 by water body type.

Table 1 Phase 1 and 2 UKTAG Standards and Conditions by water body type

| Standard | 2006 (Phase 1) | 2007 (Phase 2) |
|---|----------------|---------------------------|
| General water quality: RIVERS | | |
| Biochemical Oxygen Demand (BOD) and Dissolved Oxygen (DO) | 3 | |
| Ammonia | 3 | |
| pH | 3 | |
| Nutrient phosphorus (P) | 3 | |
| Temperature | | 3 (standard) |
| Suspended solids | | 3 ('management approach') |
| General water quality: LAKES | | |
| Dissolved Oxygen (DO) | 3 | |
| Salinity | 3 | |
| Acidification | 3 | |
| Nutrient phosphorus (P) | 3 | 3 (standard) |

¹ These encompass the words in Annex V of the Directive – values, concentrations and Environmental Quality Standards.

| Standard | 2006 (Phase 1) | 2007 (Phase 2) |
|--|-----------------------|---|
| Temperature | | 3 (standard) |
| Suspended solids | | 3 ('management approach') |
| General water quality: TRANSITIONAL AND COASTAL | | |
| Dissolved Oxygen (DO) | 3 | |
| Nutrient nitrogen (N) | 3 | 3 (standard) |
| Temperature | | 3 (standard) |
| Suspended solids | | 3 ('management approach') |
| Water resources: RIVERS | | |
| Change from natural flow conditions | 3 | |
| Managed flows | | 3 ('management approach' with condition limits) |
| Water resources: LAKES | | |
| Change in the outflow from the lake | 3 | |
| Water resources: TRANSITIONAL AND COASTAL | | |
| Freshwater flow to estuaries | | 3 ('management approach' with condition limits) |
| Physical structure and condition of bed, banks and shore (morphological elements): RIVERS | | |
| Type and degree of physical alteration | 3 (condition limits) | |
| Physical structure and condition of bed, banks and shore (morphological elements): LAKES | | |
| Type and degree of physical alteration | | 3 ('management approach' with condition limits) |
| Physical structure and condition of bed, banks and shore (morphological elements): TRANSITIONAL AND COASTAL | | |
| Type and degree of physical alteration | | 3 ('management approach' with condition limits) |
| Chemical pollutants: RIVERS, LAKES, TRANSITIONAL AND COASTAL | | |
| Toxic pollutants (specific pollutants) – standards for pollutants discharged in significant quantities | | 3 |
| Groundwater: | | |
| Groundwater classification system (water balance and water levels; and water quality) | | 3 ('management approach') |

2. METHODOLOGY

The costs of measures for meeting the Phase 1 UKTAG standards for the WFD by 2015 are reported in the 2006 partial Regulatory Impact Assessment (RIA) (Defra, 2006). The costs for nutrients (P for Lakes and N for Transitional and Coastal (TraC) water bodies) were not included in the RIA, but have been captured in the revised pCEA nutrients chapter.

The costs of measures for closing the gap to meet the Phase 2 standards for Specific Pollutants and Temperature (for Rivers, Lakes and TraC) and P for Lakes and N for TraC are captured in the revised pCEA chemicals and nutrient chapters respectively.

For the purposes of this report, two main sets of costs were collected; EA administration and monitoring costs and policy implementation costs for the EA. Each is discussed in turn below.

2.1 Environment Agency administration and monitoring costs

The requirement of the Directive to monitor ecological quality requires new sampling and monitoring techniques and methods of analysis. Further, the Directive requires that economic analysis be carried out for the selection of measures to establish whether measures are cost effective or disproportionately costly. Two sets of costs are applicable here:

1. WFD business case costs which include the costs to set up, implement and run RBMPs in accordance with the statutory guidance on River Basin Planning (RBP).
2. Extra planning costs which include the costs of Registration, Evaluation and Authorisation of Chemicals (REACH) analysis, further investigative monitoring (including the 'management approach' costs (see Sections 2.1.1 to 2.1.4)) and strategic water body IT solution costs.

The number of sites assumed for *monitoring* should be based on the number of water bodies predicted as failing the proposed standard for Lakes. For Rivers, it should be based on an estimate of either the number of sampling points associated with failures, or the number of river kilometres associated with failures and the average number of monitoring sites per river kilometre (to allow calculation of the number of sites associated with the length of failing river). The length of failing river will vary across the options to be considered for the assessment, depending on the timing of the introduction of measures and hence the level of action taken to reduce failures. Costs include surveillance monitoring, operational monitoring and site investigations. Surveillance monitoring costs for the UKTAG standards (listed below) will start in 2009 and take place for three years, and thereafter will be repeated for each RBMP. Operational monitoring will start in 2015 for three years, followed by a break until the start of the next RBMP cycle (i.e. 2021).

The standards for monitoring will include (at least):

- Biological Oxygen Demand (BOD) (Rivers);
- Dissolved Oxygen (DO) (Rivers, Lakes and TraC waters);
- Ammonia (Rivers);
- Nutrient P (Rivers and Lakes);
- Salinity (Lakes);
- Acidification (Rivers and Lakes);
- Nutrient N (TraC);
- 10 Specific Pollutants (freshwater and saltwater); and
- Temperature (Rivers and TraC waters).

It may be that one sample covers more than one determinand (e.g. BOD, DO, ammonia, acidification and temperature sampled at the same time), while for Lakes sampling may occur at more than one location.

Part of the monitoring cost involves estimating site investigation costs for the following:

- Investigations regarding diffuse sources;
- Consent reviews for point sources; and
- Consent appeals for point sources where a consent has been revised.

To assess site investigation costs it is necessary to determine the percentage of the failures associated with point sources or diffuse sources and the percentage of the point source

failures addressed through revisions to discharge consents (i.e. a consent review). It is also necessary to estimate the percentage of the consents that are downward-varied (or otherwise modified) that would be subject to appeals.

A list of questions was sent to the EA for the monitoring costs. These questions are presented in Annex A. The cost information obtained is presented in Section 3 below.

The 'management approach' costs refer to the costs of implementing the following four classification systems or screening tools:

- the groundwater classification system;
- the suspended solids screening tool;
- freshwater flows to estuaries and managed flows in Rivers screening tool; and
- the type and degree of physical alteration in Lakes and TraC screening tools.

It is instructive to note that these are not standards, but 'management approaches', some with condition limits (Table 1). This means that at present there are no compliance costs, only 'management approach' costs to the Agency. A list of questions was sent to the EA for each of the 'management approaches' to estimate implementation costs. These are presented in the Annexes B to E. A brief description of each of the 'management approaches' is given below

2.1.1 Groundwater classification system

The groundwater classification system has been developed, in part,² to meet the requirements of the WFD and will be used to derive environmental standards for the chemical status of groundwater bodies. Threshold values will be used as triggers for further investigation to determine whether the conditions for good chemical status are met. This will allow for the development of environmental standards and actions to achieve good status to be published for consultation in 2008 in the draft RBMP.

2.1.2 Suspended solids

There are no environmental standards for suspended solids. However UKTAG, in response to WFD requirements, has developed a 'management approach' to deal with suspended solids. This includes a proposal for assessing the damage caused by sediments being washed into environmental waters from land by heavy rain, and consideration of approaches to control suspended solids.

2.1.3 Freshwater flows to estuaries and managed flows in Rivers (water resources)

The WFD requires the UK to manage hydrological change. There are, however, no standards to assess whether alterations to freshwater flows to estuaries have ecological impacts, nor are there standards to assess changes in flow downstream of a reservoir or impoundment³ (i.e. managed flows in Rivers). In the absence of 'evidence-based' standards, condition limits have been developed that make use of assessments of hydrological pressures to determine risks to ecology. These will be used for screening purposes to assess whether there is a risk that a particular ecological status may not be achieved. Water bodies that are subject to significant impacts will be subject to further investigations that examine the need for action.

2.1.4 Type and degree of physical alteration (morphology)

There are no environmental standards to assess where alterations to the morphology of Lakes and TraC waters have an ecological impact. However UKTAG, in response to WFD requirements, has developed three tools to determine whether changes to morphology pose a risk to ecology, and whether there would be deterioration in status. These risk assessment tools, River-MImAS, Lake-MImAS and TraC-MImAS, are intended to help determine whether proposals to alter morphological features could threaten the objectives of the WFD. These tools will not replace the use of expert judgment or case-specific assessments of impact;

² Groundwater classification is partly driven by the requirements in the Groundwater Daughter Directive (GWD).

³ Current regulation is based largely on expert judgement.

they will be used to complement these activities and provide guidance to inform regulatory activities.

2.2 Policy implementation costs for the Environment Agency

The EA will incur a number of additional costs in implementing the WFD. These costs can be broken down into WFD new duty costs, further actions on diffuse pollution, changes in flood risk management and measures to deal with alien pressures. Only the WFD new duty costs are reported here, as the further actions to reduce pollution are considered in the pCEA nutrients chapter, the changes in flood risk management in the pCEA morphology and biodiversity chapter, and the measures to deal with alien species in the pCEA fisheries and alien species chapter. The costs presented here have been provided by the EA.

3. RESULTS

3.1 Environment Agency administration and monitoring costs

Two sets of results are presented below (Table 2), WFD business case costs and WFD extra planning costs. Costs are presented as one-off and on-going costs.

3.1.1 WFD business case costs

The Agency provided a summary of their main cost areas in implementing the WFD since 2006/07 and on an on-going basis to 2027 (Table 2). These costs include the costs to set up, implement and run RBMP in accordance with the statutory guidance on RBP.

3.1.2 WFD extra planning costs

The Agency provided the extra planning costs. These include costs of further REACH analysis (£8.6 m/year), more investigative monitoring (£2.0 m/year) (including the four 'management approach' costs – groundwater classification system (£3.0 m/year), suspended solids (£0.75 m/year), water resources (£0.1 m/year) and morphology (£2.0 m/year)) and strategic water body IT solution costs (£3.0 m/year).

Table 2 Summary of administrative and monitoring costs for the EA for implementing the WFD for England and Wales

| Item | 2004/5 £ k | 2005/6 £ k | 2006/7 £ k | 2007/8 £ k | 2008/9 £ k | 2009/10 £ k | 2010/11 £ k | £ k/year On-going |
|---|---------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------------|
| WFD business case costs | | | 10 200 | 10 200 | 8 400 | 8 400 | 8 400 | 8 400 |
| WFD extra planning costs⁴ | 120 | 255 | 718 | 503 | 6 150 | 16 470 | 21 470 | 19 470 |
| TOTAL | | | 10 918 | 10 703 | 14 550 | 24 870 | 29 870 | 27 870 |

The costs for the four 'management approaches' are broken down further below.

A groundwater monitoring network has been developed by the Agency over the last 7 years to be compliant with the WFD. This will be utilised for the Groundwater classification system.

⁴ Costs for 2004/05 to 2007/08 are one-off costs for setting up the groundwater classification system.

The Agency has provided costs for developing and applying the system (Table 3). The total costs incurred between 2004/05 and 2007/08 are ~£1.5 m, while it is estimated that the groundwater monitoring programme will cost ~£3.0 m/year (Table 3). It is instructive to note, however, that the total cost is closer to ~£3.8 m/year, as the Water Companies have their own monitoring programmes and provide monitoring data to the Agency free of charge. The benefits of the programme are, however, more broadly used than just the WFD. Other regulatory aspects to make use of the information are the GWD, Groundwater regulations, Waste Management Licensing Regulations, Landfill Regulations, PPC Regulation, Environment Act (Part IIA), Environment Act and European (non-WFD) reporting.

Table 3 Summary of costs for the Groundwater classification system for the WFD

| Item | 2004/5 £ k | 2005/6 £ k | 2006/7 £ k | 2007/8 £ k | On-going £ k/year |
|---|---------------|---------------|---------------|-----------------|----------------------|
| EA manpower costs to develop the GW classification system | 120 | 180 | 180 | | |
| GW classification consultancy costs for chemical and quantitative classification | | 75 | 85 | 98 | |
| Risk assessment for GW dependent terrestrial ecosystems | | | 60 | | |
| Classification of GW dependent terrestrial ecosystems | | | | 30 | |
| Wetland investigation project | | | 18 | 20 ⁵ | |
| GW quality monitoring network | | | 60 | 140 | |
| Operational costs for the initial chemical classification | | | 280 | 180 | |
| Operational costs for the quantitative GW classification | | | 35 | 35 | |
| Sub-total | 120 | 255 | 718 | 503 | |
| WFD monitoring costs for EA | | | | | |
| Operational costs | | | | | 958 |
| Sample analysis (NLS) | | | | | 1 831 |
| Head Office | | | | | 234 |
| TOTAL | | | | | 3 023 |

The suspended solids 'management approach' will require similar resources to those currently being utilised by the Agency. The Agency estimates that approximately 45 water bodies in England and 5 in Wales will be targeted annually to 2027. These will mainly be Rivers. It is estimated that each investigation would cost £10 k/year in Agency staff time. Approximately half of these investigations (i.e. 25) would require a further £10 k/year each to

⁵ Assumed.

negotiate remediation (Table 4). An additional cost of £100 k/year is estimated for a tool to bring together information on risk factors and monitoring to target a more proactive approach for RBMP 2 (Table 4).

Table 4 Summary of costs for the suspended sediment ‘management approach’ for the WFD

| Item | £ k/year for England | £ k/year for Wales |
|---|----------------------|--------------------|
| EA investigation costs | 450 | 50 |
| EA negotiation costs for remediation | 230 | 20 |
| TOTAL | 680 | 70 |
| TOTAL FOR ENGLAND AND WALES | | 750 |
| Investigation tool (one off) | | 100 |

The cost to the Agency of developing the water resource ‘management approach’ has been ~£1 m. This includes EA and consultancy time (River Basin Characterisation (RBC) analysis for water resources and further development for compliance assessment and data for the pCEA analysis). Much of the data that has been collected for WFD purposes has been collected as part of the Catchment Abstraction Management Strategies (CAMS) programme. The cost of CAMS is not included in the figures quoted in this report.

The cost to the Agency of applying the water resource ‘management approach’ is difficult to assess, given that separating out day-to-day operational water resource activities from items specific to the WFD is undefined. The Agency estimate, however, is that application of the ‘management approach’ will cost ~£100 k/year for TraC and Rivers (£50 k/year each), while screening for RBC and compliance assessment is likely to cost £30 k per screening (3 times per cycle) (Table 5).

Table 5 Summary of costs for the water resources ‘management approach’ for the WFD

| Item | £ k/year for England |
|--|----------------------|
| Application of screening tool to TraC | 50 |
| Application of screening tool to Rivers | 50 |
| TOTAL ANNUAL COST | 100 |
| Screening for RBC, compliance assessment etc. (per cycle) | 90 |

The Agency has provided the estimated costs of applying the morphology ‘management approach’ as ~£1.9 m/year (Table 6). This is based on the assumption that the Agency will need to process ~6 200 land drainage consent applications a year across all water bodies. This cost is broken down into Processing costs, Information System costs, Training costs, Data costs and Other costs (e.g. licences). The Agency considers this estimate to be low, as more baseline information would be required than previously thought. It is important to note that this cost does not include estimates of increased costs on Environmental Impact Assessments (EIA) and Strategic Environmental Assessments (SEA) which may be particularly relevant for TraC and Lakes. Nor does it include Article 4.7 costs.

The costs of developing the screening tools was low for the Agency (~£20 k/year) as this was funded largely by Scotland and Northern Island Forum for Environmental Research (SNIFFER) and managed by the Scottish Environmental Protection Agency (SEPA).

Table 6 Summary of costs for the type and degree of physical alteration (morphology) 'management approach' for the WFD for England⁶

| Item | £ k/year for England |
|------------------------------|----------------------|
| Processing cost | 1 600 |
| Training | 17 |
| Data collection and analysis | 70 |
| Other costs | 187 |
| TOTAL | 1 874 |

3.2 Policy implementation costs to the Environment Agency

In addition to the administration and monitoring costs listed in Section 3.1, the EA will also incur costs in policy implementation (implementation costs). The WFD new duty costs will be incurred from 2010 or 2011 onwards, depending on the measure. These costs include implementing and running new or extended measures to enable in the achievement of WFD objectives such as the English and Welsh Catchment Sensitive Farming Delivery Initiative (CSF DI), Water Protection Zones (WPZ), Codes of Good Agricultural Practice (COGAP), Sustainable Urban Drainage Systems (SuDs) duties, Article 4.7 duties and implementation of the GWD.

Table 7 Summary of EA implementation costs for the WFD for England and Wales

| Item | 2008/2009 | 2009/2010 | 2010/2011 | £ k/year |
|---------------------------------|---------------|---------------|---------------|---------------|
| | £ k | £ k | £ k | On-going |
| English CSF DI | 15 000 | 15 000 | 15 000 | 15 000 |
| Welsh CSF DI | 2 000 | 2 000 | 2 000 | 2 000 |
| GWD | 1 000 | 1 000 | 1 000 | 1 000 |
| WPZ | | 1 000 | 1 000 | 1 000 |
| COGAP | | 1 000 | 1 000 | 1 000 |
| SuDs | | 1 000 | 1 000 | 1 000 |
| Article 4.7 duties | | 1 000 | 1 000 | 1 000 |
| TOTAL WFD new duty costs | 18 000 | 22 000 | 22 000 | 22 000 |

3.3 Summary

A summary of the overall administration costs for the WFD are presented in Table 8. The costs are the equivalent annual value (EAV) costs based on a discount rate of 3.5% for 2009 to 2062. These costs have been assessed for two options to ensure consistency with the other pCEA results:

⁶ No figures for Wales given.

- Option 1: implement all measures immediately; and
- Option 2: phased implementation of the measures.

The monitoring and administration and implementation costs will apply equally to Option 1 and 2.

Table 8 Summary costs for Options 1 and 2 for the WFD

| Cost | £ k/year (Option 1) Equivalent Annual Value⁷ | £ k/year (Option 2) Equivalent Annual Value⁸ |
|--|--|--|
| Environment Agency administration and monitoring | 28 410 | 28 410 |
| Environment Agency policy implementation | 19 520 | 19 520 |
| TOTAL | 47 930 | 47 930 |

4. REFERENCE LIST

Defra, 2006: Regulatory Impact Assessment for Environmental Quality Standards for Implementation of the Water Framework Directive 2000/60/EC in the UK. Project Code WT0703WFD, Authored by Risk and Policy Analysts Ltd, ICF Consulting Ltd and MWH, 34pp.

⁷ 50 years.

⁸ 50 years.