

Waste disposal and pollution control

This briefing paper addresses the quality of the aquatic environment. It concentrates on the control of pollution of coastal waters and does not cover in detail inland waters or extend to wider issues relating to water resource management such as land drainage or flood defence, although it is acknowledged that these issues impact upon water quality. Further information on these issues can be found in the briefing on *Coastal Defence and Shoreline Management*. The main focus is on marine pollution caused by discharges from land-based sources – regulatory measures to control pollution from ships, offshore developments and aquaculture activities are covered elsewhere in this series.

Legislation to control the discharge of sewage and trade effluent to coastal waters and estuaries was established later than for inland waters in the UK. The Clean Rivers (Estuaries and Tidal Waters) Act 1960 extended the requirement of the Rivers (Prevention of Pollution) Act 1951 for consent, to cover new discharges to specified tidal and estuarine waters. Discharges made before 1960 still escaped regulation, and control over sewage effluents was also compromised because of local authorities' control of the river authorities¹. The Control of Pollution Act (COPA) 1974 extended the coverage of the controls to include all new and existing discharges to tidal and coastal waters out to the 'three-mile limit' and introduced consent limits for sewage and trade effluent.

The introduction of this legislative framework, however, could not of itself prevent degradation of the marine environment, and it has become clear that concerted action at the international and European levels is essential. Subsequent legislation including numerous EC directives on water quality have further tightened controls over discharges. The recent Water Framework Directive is also likely to have a significant impact upon the coastal environment in coming years.

INTERNATIONAL AND REGIONAL LEGISLATION

International law has mostly been concerned with international marine waters, rather than coastal water quality at national level. Compared with EC law, its impact has been less dramatic, although there are instances where EC standards and policy originate in 'hard' and 'soft' international law. Important international / regional agreements to which the UK is committed include:

- The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention) – in force 1975; the 1996 Protocol which adds to the existing provision that Parties shall, where practicable, eliminate pollution caused by dumping or incineration at sea of wastes or other matter is expected to enter into force later in 2005 and will replace the LC.
- The Convention for the Protection of the Marine Environment of the North-East Atlantic (Oslo and Paris Conventions) – adopted 1974, revised and combined into OSPAR Convention in 1992, in force 1998; Annex V to the Convention on the protection and conservation of the ecosystems and biological diversity of the maritime area was agreed at the first ministerial meeting of the OSPAR Commission in Sintra in 1998.
- The International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 (MARPOL 73/78) – see Briefing on *Ports, Shipping and Navigation*.

There are also general provisions in the 1982 United Nations Convention on the Law of the Sea (UNCLOS) on preventing, reducing and controlling pollution of the marine environment from land-based sources (art.207) and similar obligations from installations such as oil rigs and from seabed mining (art.208). There are also rules relating to pollution from dumping (art.210), although as with many provisions of UNCLOS in this area, States are encouraged to seek regional solutions, for example through OSPAR.

The work of the OSPAR Commission is organised under six strategies (box 1) agreed at the 1998 Ministerial meeting and applies the ecosystem approach to the management of human activities. The OSPAR Hazardous Substances Strategy sets the objective of preventing pollution by continuously reducing discharges, emissions and losses of prioritised hazardous substances, with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring substances, and close to zero for man-made synthetic substances.

Box 1 Work strategies under the OSPAR Convention

- Protection and conservation of marine biodiversity and ecosystems;
- Eutrophication;
- Hazardous substances;
- Offshore oil and gas industry;
- Radioactive substances;
- Joint assessment and monitoring programme.

European Legislation

The EC is party to various international conventions aimed at protecting the marine environment, including the above-mentioned OSPAR Convention. However, the EC has had an enormous impact in its own right on marine pollution law and policy over the years, and has issued numerous Directives since the First Action Programme on the Environment identified water pollution as a priority matter in 1973. These

have addressed various topics including bathing water quality, nitrates in water, reduction of pollution from dangerous substances, and water quality for fish farms and shellfish culture.

Generally, EC Directives on water quality adopt one of two basic approaches:

- Emission standards, which are mainly used for reducing concentrations of dangerous substances (e.g. Dangerous Substances in Water Directive 76/464/EEC and Nitrates Directive 91/676/EEC); and
- Water quality objectives, set according to the use that is to be made of waters (e.g. Bathing Waters Directive 76/160/EEC and the Shellfish Waters Directive 79/923/EEC).

The main EC Directives relating to waste disposal and pollution control in the marine environment are outlined in box 2.

Box 2 European marine pollution legislation in force

- Council Directive 76/160/EEC concerning the quality of bathing water (Bathing Water Directive)
- Council Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (Dangerous Substances in Water Directive).
Framework Directive implemented through subsidiary daughter Directives, e.g. Cadmium (83/513/EEC); Mercury (82/176/EEC and 84/156/EEC).
- Council Resolution of 26 June 1978 setting up an action programme of the European Communities on the control and reduction of pollution caused by hydrocarbons discharged at sea
- Council Directive 79/923/EEC on the quality required of shellfish waters (Shellfish Waters Directive)
- Council Directive 86/280/EEC on limit values and quality objectives for discharges of certain dangerous substances included in List I of the Annex to Directive 76/464/EEC
- Council Directive 88/347/EEC amending Annex II to Directive 86/280/EEC on limit values and quality objectives for discharges of certain dangerous substances included in List I of the Annex to Directive 76/464/EEC
- Council Resolution of 19 June 1990 on the prevention of accidents causing marine pollution
- Council Directive 91/271/EEC concerning urban waste water treatment (Urban Waste Water Treatment Directive)
- Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources (Nitrates Directive)
- Council Directive 96/61/EC concerning integrated pollution prevention and control (IPPC Directive)
- Decision No.2850/2000/EC setting up a Community framework for co-operation in the field of accidental or deliberate marine pollution
- Directive 2000/60/EC establishing a framework for Community action in the field of water policy (Water Framework Directive)
- Regulation (EC) No.2099/2002 establishing a Committee on Safe Seas and the Prevention of Pollution from Ships (COSS) and amending the Regulations on maritime safety and the prevention of pollution from ships
- Regulation (EC) No.782/2003 on the prohibition of organotin compounds on ships

Water Framework Directive 2000/60/EC

The Water Framework Directive (WFD) establishes a strategic framework for managing the water environment, and is the most substantial piece of EC water legislation to date. It provides for a common approach to protecting and setting environmental objectives for all groundwaters and surface waters (defined as rivers, canals, lakes, reservoirs, estuaries and coastal waters up to one mile from the shore) within the Community. The Directive harmonises existing EU legislation on water management, removing many inconsistencies and gaps. The WFD came into force on 22 December 2000, and

requires all inland and coastal waters to reach “good status” by 2015. This will be achieved by producing strategic management plans (River Basin Management Plans – RBMPs) for each river basin district (RBD) within which demanding environmental objectives will be set including, for the first time, ecological quality objectives for surface waters. It is expected that more detailed plans will underpin the summary RBMPsⁱⁱ.

A risk assessment of pressures and their impacts upon water bodies will inform the river basin planning process, which takes place on a 6-year cycle. Where this risk assessment shows that water bodies are not meeting their environmental objectives, a cost effective ‘Programme of Measures’ (PoM) must be identified and put in place to achieve those objectives. The WFD will, in some cases, replace some of the existing Directives (e.g. Dangerous Substances Directive, Shellfish Waters Directive and the Groundwater Directive by 2013) while other will be used as statutory measures within the PoM designed to bring the water body up to the required status.

Box 3 Timetable for implementation of the WFDⁱⁱⁱ

Year	Requirement
2003	Transpose Directive into domestic law (art.24). Identify river basin districts (RBDs) and the competent authorities (art.3) that will be empowered to implement the Directive.
2004	Complete first characterisation (art.5), and assessment of impacts on, RBDs. Complete first economic analysis of water use. Establish a register of protected areas in each RBD (art.6&7).
2005	Identify significant upward trends in Groundwater and establish trend reversal (art.17).
2006	Establish environmental monitoring programmes (art.8). Publish a work programme for producing the first RBMPs (art.14). Establish environmental quality standards for priority substances and controls on principle sources (art.16).
2007	Publish an interim overview of the significant water management issues in each RBD for general consultation (art.14).
2008	Publish draft RBMPs for consultation (art.14).
2009	Finalise and publish first RBMPs (art.13). Finalise programme of measures to meet objectives (art.11).
2010	Ensure water pricing policies are in place (art.9).
2012	Ensure all measures are fully operational (art.11). Publish timetable and work programme for second RBMPs. Report progress in implementing measures (art.15).
2013	Review characterisation and impact assessment for RBDs. Review economic analysis of water use. Publish an interim overview of the significant water management issues.
2014	Publish second draft RBMPs for consultation.
2015	Achieve environmental objectives specified in first RBMPs (art.4). Finalise and publish second RBMPs with revised Programme of Measures.
2021	Achieve environmental objectives specified in second RBMPs. Publish third RBMPs.
2027	Achieve environmental objectives specified in third RBMPs. Publish fourth RBMPs.

The aim of the WFD in relation to pollutants is to achieve compliance with Environmental Quality Standards (EQSs) for ‘priority substances’, eliminate ‘priority hazardous substances’ and contribute to achieving concentrations in the aquatic environment of near-background values for naturally occurring substances (e.g. nutrients, organic materials and sediments). This will be achieved through the combined approach of emission controls for pollutant sources and EQSs for the receiving environment^{iv}. The UK already has EQSs for many of the Directive’s priority substances, but work is required to ensure that their derivation is compliant with the WFD

methodology. Similarly, emission controls established under existing Community legislation (e.g. IPPC) will be reviewed to assess whether they are sufficient to meet the requirements of the WFD. Possible controls include prohibition, prior regulation, emission limit values, Best Available Technology (BAT), Best Environmental Practice (BEP), general binding rules and voluntary agreements.

It should be noted, however, that the WFD’s provisions do not relate merely to standards of water protection, but also to organisational and procedural aspects of water management, as reflected in box 3. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003^v implement the Directive in RBDs in England and Wales.

UK LEGISLATION AND REGULATORY SYSTEM

Disposal at Sea

Part II of the Food and Environment Protection Act (FEPA) 1985 requires that a licence be obtained from the licensing authority^{vi} to deposit any articles or substances in the sea or under the seabed. The primary objectives are to protect the marine ecosystem and human health, and to minimise interference and nuisance to others. It is the licensing authorities’ policy that no waste be disposed of at sea if there is a safe and practicable land-based alternative. Since 1998, most forms of disposal at sea have been prohibited, the only significant exception being material dredged from ports and harbours. Even this is strictly controlled and only allowed where the material cannot be used beneficially (e.g. for beach replenishment).

FEPA provides the necessary statutory means to meet the UK’s obligations under both the OSPAR and London Conventions. It has been amended or extended several times since its introduction, most notably by the Environmental Protection Act 1990^{vii} and the Waste Management Licensing Regulations 1994^{viii}, which brought the Act into line with the provisions of the Waste Framework Directive 91/156/EEC and extended the Act to include UK controlled waters. Operations involving the disposal of any material at sea or under the seabed (below MHWS) will not normally require a waste management licence from the Environment Agency (EA) provided they are covered by a FEPA licence or are exempt from such control by virtue of the Deposits in the Sea (Exemptions) Order 1985^{ix}, as amended by the 1994 Regulations and the Offshore Chemicals Regulations 2002^x.

The Act is described as “an effective piece of legislation with respect to protecting the marine environment” in the JNCC recent review of marine environmental legislation undertaken for the Irish Sea Pilot^{xi}.

Discharge Consent System

The regulatory approach to combating marine pollution is not confined simply to preventing or controlling unwanted or harmful substances from entering the marine environment, since many substances can have a damaging impact on water quality in sufficient quantities. Regulatory controls therefore extend to substances which are not inherently toxic or harmful, but may have a deleterious effect depending on the quantity and location of the discharge. Legislation, therefore, tends to aim to ensure a particular quality of water for specific purposes (e.g. bathing or supporting fish life), rather than just preventing or minimising the entry of ‘pollutants’ (although some standards are clearly set to eliminate certain substances from certain waters)^{xii}. This is reflected in the

approach to regulating individual discharges through discharge consents issued by the EA.

The Water Resources Act (WRA) 1991, Part III, provides for the implementation of the requirements of OSPAR and the EC Directives on bathing water (76/160/EC), dangerous substances (76/464/EEC), shellfish waters (79/923/EEC), and urban waste water treatment (91/271/EEC). The discharge consent system and water pollution offences established under the Act apply to “controlled waters”^{xiii}. A consent is required from the EA for:

- Any discharge of trade or sewage effluent into controlled waters;
- Any discharge of trade or sewage effluent through a pipe from land into the sea outside the limits of controlled waters;
- Any discharge where a prohibition is in force.

A consent is required for each individual discharge, even if originating from the same premises or installation.

There is also a general offence under s.85(1) of the WRA of causing or knowingly permitting any poisonous, noxious or polluting matter or any solid waste to enter controlled waters. This general offence complements the more specific offence of discharging trade or sewage effluent without consent. It also covers accidental and non-routine escapes of trade or sewage effluent because, whilst the specific offence requires a “discharge”, the general offence only requires an “entry”. In addition, non-point discharges, such as agricultural run-off, are potentially covered by the general offence^{xiv}.

Integrated Pollution Prevention and Control

Part I of the Environmental Protection Act (EPA) 1990 established the system of Integrated Pollution Control (IPC), under which discharges to air, land and water from prescribed industrial processes are subject to authorisation by the EA. The Pollution Prevention and Control Act 1999 and the Pollution Prevention and Control (England and Wales) Regulations 2000^{xv}, which provide for the implementation of EC Directive 96/61/EC on Integrated Pollution Prevention and Control (IPPC), introduced a new regime that will eventually replace existing legislation under the EPA. The Regulations apply to England and Wales and are applicable to territorial waters.

The IPPC Directive requires a range of industrial installations to be regulated by a system of integrated pollution control (i.e. a system in which emissions to air, water and land, plus other environmental effects, are considered together and conditions set so as to achieve a high level of protection for the environment as a whole). The list of controlled activities includes energy installations, production and processing of metals, the mineral and chemical industries, waste management and other potentially polluting activities. Permit conditions must be based on the use of “Best Available Techniques” (BAT), which is designed to provide for a flexible, case-by-case approach to regulation which balances cost with environmental benefit. The provisions of the 1999 Act are wide ranging even for environmental legislation and enable wide-ranging regulations to be made for the purpose of meeting the requirements of the Directive and for other measures to prevent and control pollution.

ADMINISTRATION

Under the Government of Wales Act 1998, responsibility for water pollution is a devolved matter for the National

Assembly for Wales (NAW), although the Assembly cannot amend primary legislation. Most matters concerning EC water law and policy also remain the preserve of UK central government. The EA has general responsibility for water quality in England and Wales, although the Secretary of State / Assembly has a general, an very wide, power under s.40 of the Environment Act 1995 to issue directions of a general or specific nature to the EA in relation to pollution control, amongst other matters. These provisions arise due to the fact that significant policy-making powers have effectively been delegated to the EA, making some mechanism for central control desirable.

The EA was created in April 1996 under the Environment Act 1995. For many years prior to the creation of the EA, the number of different agencies involved in environmental protection reflected the fragmented nature of policy and law enforcement in this area. The EA is an independent corporate body, organised on a regional basis. Arguments in favour of creating separate agencies for England and Wales were rejected on the basis that there were geographical (e.g. river catchments) and institutional overlaps which facilitated integrated management across national boundaries.

In discharging its functions the EA is required to protect or enhance the environment, taken as a whole, so as to attain the objective of achieving sustainable development. As part of this overarching duty, the EA is responsible for consenting to any proposed discharge of trade effluent or sewage effluent into coastal waters of England and Wales; for monitoring water quality for compliance with the relevant standards; and for dealing with pollution incidents. In Wales the EA is required to consult the Assembly about applications for consents to discharge to coastal waters, and copies of applications may also be sent to the relevant Sea Fisheries Committee. The Agency is also responsible for authorising large industrial processes, such as oil refineries and power stations (which frequently occur on the coast), as part of its IPC / IPPC commitments. The EA is the sole competent authority charged with the implementation of the WFD in England and Wales.

Local authorities have wide-ranging powers under Part IV of EPA 1990 in relation to litter and Part III with respect to statutory nuisance. Case law has demonstrated that this latter category includes discharges of sewage on beaches^{xvi}. In relation to discharges to sewers, the licensing body is the statutory sewerage undertaker, which grants trade effluent consents. Some effluents (e.g. those containing dangerous substances) will also be subject to prior authorisation by the EA. In such cases, the most stringent limits of either regulator will always apply. Any effluents not permitted to be discharged to foul sewer will be classified as *waste* or *special waste* and must be handled and disposed of according to the Environmental Protection (Duty of Care) Regulations 1991 and the Special Waste Regulations 1996.

ISSUES ARISING

The deficiencies in the current legislative framework relating to inputs of contaminants into the marine environment has been addressed as part of the Irish Sea Pilot^{xvii}, and the reader is referred to this report for an analysis of waste disposal and pollution control legislation. The emphasis here is upon the more general policy issues arising from the legislation and the influence of new international and European measures, most notably the WFD.

Initially, it is worth noting that the legal nature of discharge consents, which act as a defence to any charge of polluting water, has some important implications. Most notably, the

adoption of process-based standards such as BATs to minimise pollution had not generally been incorporated into the setting of consents prior to IPPC. In the context of quality standards, such an approach could lead to over-regulation and inefficiencies. Consequently, it can be argued that discharge consents do not necessarily encourage a progressive tightening of standards^{xviii}.

Arguably, however, the most significant regulatory problem is the increasing contribution of diffuse sources, such as agricultural run-off and pollution from urban development, to reduction in water quality. Some non-point sources of pollution cannot readily be controlled by discharge consents and have been addressed through a combination of policy and legal mechanisms. Diffuse pollution is specifically mentioned in the WFD, which requires the application of “basic” and, where necessary, “supplemental” measures to control it. European and domestic legislation fall within ‘basic measures’, while ‘supplementary measures’ include negotiated agreements, educational projects, and promotion of Sustainable Drainage Systems (SUDS). However, the EA acknowledges that at present it does not possess sufficient powers to control diffuse pollution and that an incentive approach to changing behaviour, in addition to direct regulation, is essential to deliver environmental improvement^{xix}.

Although the implementation of the above PoMs is likely to be at a local scale, the Programme will be co-ordinated at the RBD level. Although the concept of river basin planning and management is well understood, many aspects relating to its practical implementation have yet to be determined. However, it is likely that the summary RBMPs will be underpinned by more detailed operational management plans addressing sub-basins, industry sectors or particular issues. Other issues relevant to the development and implementation of RBMPs include:

- Identification of derogations (exceptions to the need to reach the “good” status of the WFD), based on technical infeasibility or disproportionate cost. The Assembly will have a key role in approving RBMPs, with powers to require modifications, or to reject them^{xx}.
- Interaction between RBMPs and other key cross-cutting regulatory measures such as the Strategic Environmental Assessment (SEA) Directive and the Environmental Liability Directive; and links between the WFD and the Wales Spatial Plan (WSP) and land use planning legislation and policy.
- Implications for cross-border RBDs, which transcend administrative and political water management boundaries. The Severn and Dee RBDs straddle the border between England and Wales, although there can be only one competent authority for ‘shared’ RBDs.

The WFD will clearly impact upon all those who have an interest in the management and use of water in England and Wales – the water industry; local authorities; all businesses that hold discharge consents, trade effluent licences or abstraction licences; ports and navigation authorities; and industry, agriculture and fisheries more generally. The Directive requires a new strategic framework to be superimposed upon an existing body of diverse and complex legislation, much of which is heavily influenced by earlier EC measures (some of which will be repealed or integrated into the WFD in a phased approach). Existing regulatory powers used to control direct discharges may need to be used to tighten standards for discharge consents and some rules may need to be re-orientated or supplemented in order to deliver the Directive’s environmental objectives^{xxi}. In

particular, new regulatory powers are expected to be required in some areas of water quality, notably diffuse pollution, to implement the provisions of the WFD. However, in many cases the nature of such changes cannot be readily identified in detail until earlier, preparatory implementation steps have been taken^{xxii}.

There is not expected to be a significant impact on activities that take place beyond the 1 nautical mile limit of the Directive, e.g. offshore renewable energy generation, oil and gas exploration and exploitation, and offshore aggregate dredging. However, action taken to meet the WFD objectives should generally contribute to protection of marine and coastal waters, particularly in relation to hazardous substances and nutrients. Although the WFD does not set objectives for marine waters, measures aimed at the progressive reduction of priority substances under Art.16 of the Directive, will provide the basis for the phasing out of discharges, emissions and losses of these hazardous substances, which will be to the benefit of marine as well as inland and coastal waters.

References

- ⁱ EA (1999) *The state of the environment of England and Wales: coasts*. The Environment Agency. The Stationary Office Ltd., London, p.25.
- ⁱⁱ EA (2004) *River basin planning and the Water Framework Directive*. Briefing note. Environment Agency, Bristol, February 2004.
- ⁱⁱⁱ EA (2003) *General introduction to the Water Framework Directive*. Briefing note. Environment Agency, Bristol, July 2003.
- ^{iv} EA (2004) *Priority and other specific polluting substances and the Water Framework Directive*. Briefing note. Environment Agency, Bristol, February 2004.
- ^v SI 2003/3242, entered into force 2nd January 2004.
- ^{vi} Defra or WAG, administered on their behalf by the Marine Consents and Environment Unit (MCEU).
- ^{vii} s.146-147, s.162, and Sch.16.
- ^{viii} SI 1994/1056.
- ^{ix} SI 1985/1699.
- ^x SI 2002/1355.
- ^{xi} Boyes, S. *et al.* (2003) *Deficiencies in the current legislation relevant to nature conservation in the marine environment in the United Kingdom*. Report to JNCC by the Institute of Estuarine and Coastal Studies, University of Hull, pp.45-46.
- ^{xii} Bell, S. & McGillivray, D. (2000) *Environmental law – the law and policy relating to the protection of the environment*. 5th edition. Blackstone Press Ltd., London, p.562.
- ^{xiii} These are defined in s.104 of the Act and include virtually all inland and coastal waters. Controlled waters are made up of four sub-categories, including relevant territorial waters (i.e. the sea within a line 3 miles out from the territorial sea baselines, despite the extension of the territorial limit to 12 miles in the Territorial Sea Act 1987), and coastal waters (i.e. the sea within those baselines up to the line of the highest tide, and tidal waters up to the fresh water limit).
- ^{xiv} *op cit.* ref (xii), p.588.
- ^{xv} SI 2000/1973 as amended.
- ^{xvi} Gibson, J. (2003) *UK coastal zone law notes (6): pollution from land-based sources*. Web resource, updated 06/03/03. Available at: <http://web.uct.ac.za/depts/pbl/jgibson/tczm/notes/note6.htm>
- ^{xvii} *op cit.* ref (xi), pp.106-112.
- ^{xviii} *op cit.* ref (xii), p.580.
- ^{xix} EA (2004) *Diffuse pollution and the Water Framework Directive*. Briefing note. Environment Agency, Bristol, February 2004.
- ^{xx} *op cit.* ref (ii).
- ^{xxi} Defra / WAG (2004) *Final Regulatory Impact Assessment (RIA) of the Water Framework Directive 2000/60/EC*. March 2004.
- ^{xxii} Defra / WAG (2004) *Transposition of the Water Framework Directive (2000/60/EC)*. Transposition notes, available at: <http://www.defra.gov.uk/corporate/regulat/tn/index.htm>