



Environment
Agency
Asiantaeth yr
Amgylchedd

Water for life and livelihoods

River Basin Management Plan
Severn River Basin District

Annex F: Mechanisms for action

Annex F: Mechanisms for action

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F.1 Introduction

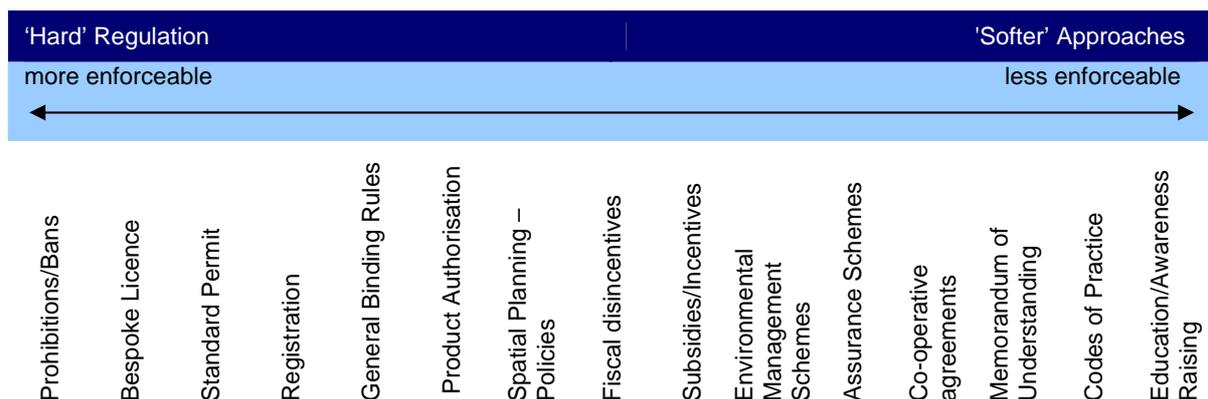
To achieve the objectives on the ground actions (also known as measures) need to be set out along with the mechanism that can be used to carry out that action.

A 'mechanism' means the policy, legal and financial tools that are used to bring about particular actions. Mechanisms have often been put in place to implement European directives, which have been established to deal with problems that exist in common with other countries in the European Union. Others have been set up to manage the way that particular problems occur in England and Wales.

For this plan 'measures' mean the on the ground actions that apply mechanisms at a particular place or to deal with a particular issue. So, for example, a legislative mechanism enables a particular permit that controls emissions to be put in place, and this is what protects or improves the environment.

A range of mechanisms can be used, from hard regulation to softer approaches, which together can be very successful in achieving the outcomes needed for protecting and improving the water environment. Figure F.1 illustrates the types of approaches:

Figure F.1: Types of approaches for mechanisms



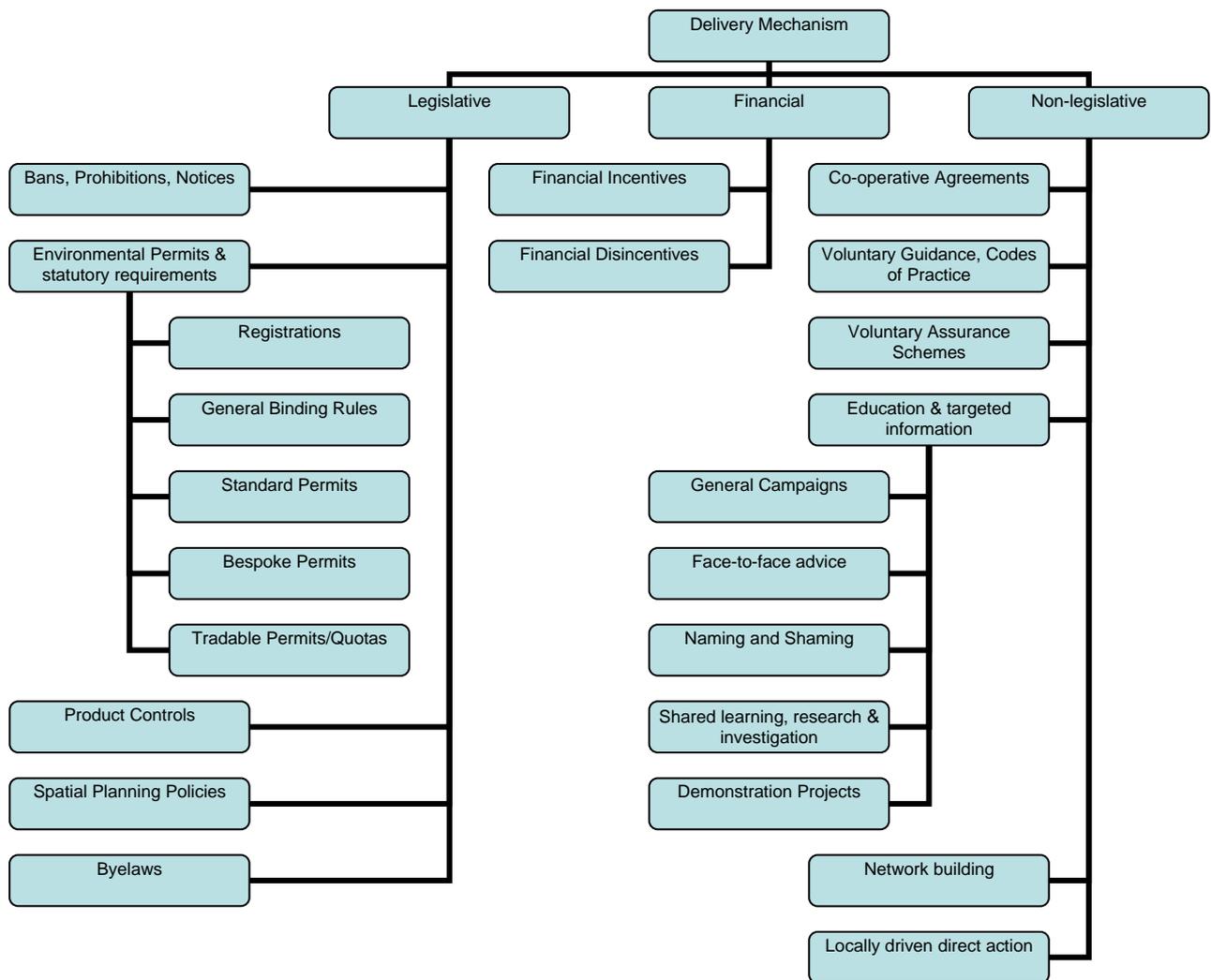
These mechanisms are already used to apply many of the so-called 'basic' measures to protect waters and the dependent ecology. These measures have helped achieve greatly improved standards and represent a considerable amount of activity and investment. They need to continue in order to prevent deterioration.

Arrangements are also in place to make further use of these mechanisms, which will happen irrespective of the Water Framework Directive, and to establish further, 'supplementary' measures where these are needed to help achieve the Water Framework Directive's objectives.

This annex provides a general description of mechanisms that are available. It notes how these mechanisms can be used to put new actions in place where more needs to be done to achieve the Water Framework Directive's objectives. It also considers where new mechanisms might be available in the future to support actions in place.

Figure F.2 shows how different mechanisms may be related to each other.

Figure F.2: A summary of types of mechanisms



Annex C summarises the particular actions that will be put in place in the Severn River Basin District to help meet the Directive's objectives.

Annex E describes how the available mechanisms have been reviewed to identify the most suitable actions to deal with the pressures in the River Basin District and meet the objectives.

Other plans and programmes

As well as distinct mechanisms, this annex notes the various plans, programmes and strategies of the Environment Agency and other organisations that can be used to promote actions. Annex J (Other plans and processes) discusses in further detail how river basin planning and management can be better integrated with these at a strategic, policy and operational level so that multiple-benefits and sustainable outcomes can be achieved. It also sets out information to other public bodies as co-deliverers on what the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 require them to do.

In particular it looks at:

- Building, town and country planning and regeneration
- Rural planning and agriculture

- Forestry management
- Flood and coastal erosion risk management
- Marine issues

F.2 Implementing European Union legislation for protecting water

This section describes how European directives have been implemented in England and Wales.

i) Bathing Water Directive

The Bathing Water Directive (76/160/EEC) sets out microbiological and chemical standards to protect public health at designated bathing waters (coastal and inland). Since its implementation European Union member states have monitored bathing waters throughout the bathing season in order to assess and report water quality against the mandatory and guideline standards in the Bathing Water Directive.

A revised Bathing Water Directive (2006/7/EC) is now in force but some member states, including the UK, will continue reporting under the current Directive until 2015. The revised Bathing Water Directive (2006/7/EC) includes tighter microbiological standards and a requirement to provide information about bathing waters on signs at beaches and online. The revised Directive classifies waters into four categories - excellent, good, sufficient and poor. Apart from limited exceptions, bathing waters must be classified as at least a 'sufficient' standard by 2015.

How this Directive is implemented

Both Directives are implemented through the Bathing Water Regulations 2008. The current Directive is implemented by the Environment Agency through the designation of bathing waters under the Bathing Waters (Classification) Regulations, Notice and Direction 1991. The revised Directive is implemented through the Bathing Water Regulations 2008. The Environment Agency is the competent authority under the Regulations.

These regulations are supported by other mechanisms that control pollution from particular points or from more widespread, or diffuse, sources (see F.6 and F.7 below).

There have been significant improvements in bathing water quality by improving water company discharges from sewage works and the sewerage infrastructure. These improvements have been funded through the periodic review of water companies' spending, which includes environmental investments.

Annex D shows for the location of designated bathing waters in the Severn River Basin District, their compliance with the repealed Directive's objectives and their predicted compliance under the revised Directive. The revised Directive was transposed into domestic law in 2008 and the requirements are being phased in during the period to 2015.

You can find further information on the Environment Agency's website at: <http://www.environment-agency.gov.uk/business/regulation/107017.aspx>.

ii) Biocidal Products Directive

The Directive 98/8/EC on biocidal products concerns substances that are used to destroy or prevent the action of harmful organisms by chemical or biological means, and has three main objectives:

- To harmonise the European market for biocidal products, their active substances and product authorisation.
- To provide a high level of protection for people, animals and the environment from the use of biocidal products, through risk assessment. This requires the submission and evaluation of data on chemistry of the substances concerned, their toxicity to humans, and their toxicity and fate in the environment.
- To ensure products are sufficiently effective against the target species.

How this Directive is implemented

The Health and Safety Executive is the competent authority for the Directive, which is implemented through the Biocidal Products Regulations 2001 (as amended). The regulations are enforced by both the Health and Safety Executive and local authority inspectors and trading standards officers.

There are 23 different biocidal product types covering disinfectants, preservatives, pest control and speciality biocides such as antifouling products and embalming and taxidermist fluids.

You can find further information on the Health and Safety Executive's website - <http://www.hse.gov.uk/biocides/bpd/index.htm>

iii) Birds Directive

The Council Directive on the conservation of wild birds (79/409/EEC) aims to control the hunting and killing of wild birds, and to protect their eggs and nests. European Union member states must also preserve, maintain or re-establish habitats (Special Protection Areas) to maintain the population of all species.

How this Directive is implemented

The Directive is implemented through the Wildlife and Countryside Act 1981 and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). These are supported by a range of mechanisms, including:

- Direct action by Natural England or Countryside Council for Wales, or by serving management notices or implementing management agreements under the Wildlife and Countryside Act 1981 to preserve, maintain and re-establish habitats and related environmental conditions for wild birds.
- This may be directed by Coastal Habitat Management Plans (CHaMPs) in some coastal sites.
- Conservation Regulations 1994 (Natural Habitats & Conservation) through designation of Special Protection Areas. There are 5 SPAs in the Severn River Basin District (see annex D): Severn Estuary, Chew Valley Lake and Walmore Common, Elenydd – Mallaen and Berwyn.

You can find further information on the Joint Nature Conservation Committee's website at: <http://www.jncc.gov.uk/page-1373>

iv) Dangerous Substances Directive

The Directive 2006/11/EC (replacing repealed Directive 76/464/EEC) on pollution caused by certain substances discharged into the water environment aims to reduce pollution of surface waters by these dangerous substances, which have been selected mainly on the basis of how toxic or persistent they are, including how much they may accumulate in organisms.

The Directive requires the control of discharges that are liable to contain substances defined in List I or List II of the Dangerous Substances Directive and any other substances determined as hazardous by the Environment Agency.

- List I covers those substances that are particularly toxic, persistent and accumulate in the environment. Actions must be introduced to eliminate pollution by these substances.
- List II covers substances whose effects are less severe. Actions must be introduced to reduce pollution by these substances.

The Directive has a number of daughter directives which set emission limit values and quality objectives, including:

- Directive 82/176/EEC concerning mercury discharged by the chloralkali electrolysis industry;
- Directive 84/156/EEC concerning mercury discharged by other industrial sectors;
- Directive 83/513/EEC concerning cadmium discharges;
- Directive 84/491/EEC concerning hexachlorocyclohexane discharges;
- Directive 86/280/EEC concerning DDT, carbon tetrachloride and pentachlorophenol;
- Directive 88/347/EEC concerning aldrin, dieldrin, endrin, isodrin, hexachlorobenzene, hexachlorobutadiene and chloroform;
- Directive 90/415/EEC concerning 1,2-dichloroethane, trichloroethane, perchloroethane and trichlorobenzene.

Article 6 (List I substances) of the Dangerous Substances Directive was repealed on entry into force of the Water Framework Directive. The remainder of the Directive will be fully repealed in 2013, after which controls under the Water Framework Directive will be used to provide at least the same level of protection.

How this Directive is implemented

The Environmental Quality Standards for List I substances are statutory standards under:

- The Surface Waters (Dangerous Substances) (Classification) Regulations 1989 (SI 1989/2286) and the Surface Waters (Dangerous Substances) Direction 1990;
- The Surface Waters (Dangerous Substances) (Classification) Regulations 1998 (SI 1992/337) and the Surface Waters (Dangerous Substances) Direction 1993.

National Environmental Quality Standards for Candidate List I and List II substances are set under:

- The Surface Waters (Dangerous Substances) (Classification) Regulation 1997 (SI 1997/2560);
- The Surface Waters (Dangerous Substances) (Classification) Regulations (SI 1998/389).

Non-statutory Environmental Quality Standards are set in the Department of the Environment Circular 7/89 "The Implementation of European Community Directives on Pollution caused by Certain Dangerous Substances discharged to the Aquatic Environment".

You can find further information on the Environment Agency's website at: <http://www.environment-agency.gov.uk/business/regulation/31937.aspx>

v) Drinking Water Directive

The Drinking Water Directive (80/778/EEC), as amended by Directive (98/83/EC), aims to protect the health of consumers and make sure that the water is wholesome and clean. It sets standards for the quality of water intended for drinking or for use in food and drink manufacture to protect human health. A total of 48 microbiological and chemical water quality standards must be complied with and these are monitored mainly at the tap inside private and public premises. EU Member Countries can include additional and higher standards in their national regulations that implement the Directive, but must not set lower standards. This Directive also helps to protect the environment, as sources of drinking water must be free enough from contamination to allow inexpensive water treatment.

How this Directive is implemented

The Directive is implemented by the Drinking Water Inspectorate and water undertakers through the Water Supply (Water Quality) Regulations 2000, as amended, and in Wales by the Drinking Water Inspectorate through the Water Supply (Water Quality) Regulations 1989, as amended (2001), by the Welsh Ministers and provisions of the Water Industry Act 1991.

These regulations are supported by other mechanisms that control pollution from point and diffuse sources (see F.6 and F.7 below).

There are 243 public and private water supply abstractions in the Severn River Basin District.

You can find further information, including data on how drinking water complies with the standards, on the Drinking Water Inspectorate's website at <http://www.dwi.gov.uk/>

vi) The Eel Regulation

The European Commission published Council Regulation 1100/2007 in September 2007, which aims to establish measures for the recovery of the stock of European eel. The Regulation requires Member States to develop and implement Eel Management Plans (EMPs) with the objective of reducing anthropogenic mortalities so as to permit with high probability the escapement to the sea of at least 40% of the silver eel biomass relative to the best estimate of escapement that would have existed if no anthropogenic influences had impacted the stock.

How this Regulation is implemented

The Environment Agency, on behalf of Defra and the Welsh Assembly Government, have produced 11 Eel Management plans for the ten River Basin Districts in England and Wales plus the cross-border Solway Tweed River Basin District, shared with Scotland. The Environment Agency will implement these Eel Management Plans following their approval by the European Commission during 2009. Each sets out short-term and long-term measures to manage and monitor eel populations within the 11 RBDs. Actions include better regulation of the fishery, removal of barriers to migration, increasing available habitat and reducing the impacts of entrainment. Progress against these measures must be reported to the European Commission triennially from June 2012.

You can find further information on the Defra website at:

<http://www.defra.gov.uk/foodfarm/fisheries/freshwater/fishman.htm>

vii) Environmental Impact Assessment Directive

Under the Environmental Impact Assessment Directive (85/337/EEC), as amended by Council Directive 97/11/EC and by Article 3 of Directive 2003/35/EC (to improve the rights for public participation), before consent is given for certain development projects, such as large-scale industrial or infrastructure projects, an assessment of the effects the development may have on the environment must be made, so that the competent authority that grants consent is aware of these possible consequences.

The developer makes the assessment and presents this in an environmental statement, which is consulted on widely. The environmental statement must identify, describe and assess impacts on people, plants and animals, soil, water, air, climate and the landscape, the built environment and cultural heritage, including how these factors link together. Consenting authorities can then assess whether a proposed development will have significant impacts on water bodies, and whether it may prevent environmental objectives being achieved.

How this Directive is implemented

The Directive is implemented through a number of statutory instruments, covering the consenting procedures for various categories of development, including activities such as forestry and quarrying. Projects that require planning permission are governed by the Town and Country Planning Regulations 1999 (Environmental Impact Assessment) (England and Wales) Regulations, as amended.

Associated mechanisms include:

- Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999;
- Harbour Works Environmental Impact Assessment Regulations 1999;
- Marine Works (Environmental Impact Assessment) Regulations 2007
- Environmental Impact Assessment and Natural Habitats (Extraction of Minerals by Marine Dredging) Regulations 2007;
- Water Resources (England and Wales) Environmental Impact Assessment Regulations 2003 as amended;

- Uncultivated Land and Semi-natural Areas Environmental Impact Assessment Regulations 2001 (England).
- The Town and Country Planning (Environmental Impact Assessment) (Amendment) (Wales) Regulations 2006;
- Environmental Impact Assessment (Agriculture) (Wales) Regulations 2007;
- Environmental Impact Assessment (Uncultivated Land and Semi-natural Areas) (Wales) (Amendment) Regulations 2002;
- Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999
- Marine Works (Environmental Impact Assessment) Regulations 2007
- Environmental Impact Assessment and Natural Habitats (Extraction Of Minerals By Marine Dredging) (Wales) Regulations 2007.

The Environment Agency is consulted on environmental impact assessments for developments that may affect the water environment.

You can find further information on the communities and local government website at: <http://www.communities.gov.uk/planningandbuilding/planning/sustainabilityenvironmental/environmentalimpactassessment>

viii) Environmental Liability Directive

The Environmental Liability Directive (2004/35/EC) seeks to achieve the prevention and remedying of environmental damage to habitats and species protected under EC law and to species or habitat on a site of special scientific interest for which the site has been notified, damage to water resources and land contamination which presents a threat to human health. It reinforces the polluter pays principle and makes operators financially liable for threats of or actual damage.

How this Directive is implemented

The Directive is implemented through the following regulations:

- The Environmental Damage (Prevention and Remediation) (England) Regulations 2009
- The Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009

for which the competent authorities are:

- The Environment Agency, which deals with damage caused by activities that it regulates and all water damage;
- Local authorities, which deal with all land damage and the prevention of damage caused by activities regulated by them;
- Natural England or Countryside Council for Wales, which deals mainly with damage relating to biodiversity on land;
- The Marine and Fisheries Agency in England or Welsh Ministers in Wales, which deals with damage relating to biodiversity in marine waters if the damage is not caused by an activity regulated by the Environment Agency.

The regulations apply only to the most serious types of damage:

- damage that would lower the status of a Water Framework Directive water body;
- damage that adversely affects the site integrity of a SSSI or significantly affects the conservation status of a protected species or habitat;
- damage to land that causes a significant risk of adverse effects on human health.

Operators of economic activities are liable to prevent and remediate the damage their activities cause. For water and biodiversity damage the Regulations require much more extensive remediation than under existing legislation

You can find further information on Defra's website at

<http://www.defra.gov.uk/environment/policy/liability/index.htm>

and the Welsh Assembly Government website at

<http://wales.gov.uk/topics/environmentcountryside/epq/liability/?jsessionid=S3NgKFyY82wmS0sZXGFcTGG8CHfzGKxQWpvvfSJJpt1nqShCp9Cq!640458692?lang=en>

ix) Floods Directive

The European Directive on the Assessment and Management of Flood Risks (2007/60/EC of 23 October 2007, the Floods Directive) is a common framework for Member States to assess the risk of flooding, map its potential impact and plan measures to reduce potential and significant flood risk, with a focus on human health, cultural heritage, the environment and economic activity.

How this Directive is implemented

The Floods Directive came into force on 26 November 2007. The UK and other European Union member states must establish their own legislation to implement the Directive within two years of this date. Defra and the Welsh Assembly government began their consultation (<http://www.official-documents.gov.uk/document/cm75/7582/7582.pdf>) on this in April 2009, when its draft Flood and Water Bill was published, but may transpose the Directive under section 2(2) of the European Communities Act.

You can find further information on Defra's website at

<http://www.defra.gov.uk/environment/flooding/policy/fwmb/index.htm>

x) Freshwater Fish Directive

The Directive on the quality of fresh waters that need protecting or improving to support fish life (2006/44/EC replacing Directive 78/659/EEC which was repealed) aims to protect and improve running or still waters capable of supporting "indigenous species offering a natural diversity". It protects those fresh water bodies identified by European Union member states as waters suitable for sustaining fish.

It sets physical and chemical water quality objectives for salmonid (salmon and trout) waters and cyprinid (for example, roach, bream, tench and rudd) waters. The Directive will be repealed in 2013 after which controls under the Water Framework Directive will be used to provide at least the same level of protection as the Freshwater Fish Directive.

How this Directive is implemented

This Directive is implemented under the Surface Waters (Fishlife) (Classification) Regulations 1997 as amended and the Surface Waters (Fishlife) Direction 1997 with the Environment Agency as competent authority.

Annex D sets out the freshwater fish waters designated as protected areas in the Severn River Basin District and their compliance with the Directive.

You can find further information on Defra's website at:

<http://www.defra.gov.uk/foodfarm/fisheries/index.htm>

and also on the Environment Agency's <http://www.environment-agency.gov.uk/business/regulation/31955.aspx>

xi) Groundwater Directives

The Directive on protecting groundwater against certain dangerous substances (80/68/EEC) prohibits discharges of particular substances and limits discharges of certain other substances into groundwater.

The Water Framework Directive and a new Directive (2006/118/EC) (on the protection of groundwater against pollution and deterioration, also known as the Groundwater Daughter Directive) was agreed in 2006, and this works alongside the old Groundwater Directive and provides supporting detail to the Water Framework Directive. It will be enacted in England and Wales during 2009. The old Directive will be repealed in December 2013.

The original Groundwater Directive (enacted in Great Britain through the Groundwater Regulations 1998) places controls on two lists of substances. (These Groundwater Directive lists are different from those in the Dangerous Substances Directive). Substances on List 1 are the most toxic and dangerous, whilst substances on List 2 are less dangerous but could still be harmful to groundwater in large amounts.

The 2006 Groundwater Directive replaces Lists 1 and 2 with hazardous substances and non-hazardous pollutants respectively, although the non-hazardous list is much broader than the old List 2 and covers all types of pollutants. The restrictions on these substances are substantially the same for both sets of legislation and are intended to prevent groundwater pollution. The Directives control both deliberate disposals of hazardous/non-hazardous substances, and other activities that might lead to accidental losses.

How these Directives are implemented

Directive 80/68/EEC is implemented by various pieces of legislation, including:

- The Environmental Permitting (England and Wales) Regulations 2007;
- The Water Resources Act 1991 (section 88 Discharge Consents);
- The Groundwater Regulations 1998 as amended.

Implementation of the new Groundwater Directive will initially be via the introduction of 2009 Groundwater Regulations which will repeal the 1998 Groundwater Regulations. Government will then incorporate the requirements in revised Environmental Permitting Regulations in 2010. There will be some minor policy changes but the existing enforcement arrangements

will be maintained. Enforcement of groundwater authorisations under the existing regulations is also a part of cross-compliance under the Common Agricultural Policy.

Our Groundwater Protection: Policy and Practice document sets out our general approach on how we plan to deal with activities that pose a risk to groundwater and is available at <http://publications.environment-agency.gov.uk/pdf/GEHO1006BLMW-e-e.pdf>

You can find further information on the old Groundwater Directive (80/68/EEC) at <http://www.environment-agency.gov.uk/business/regulation/31881.aspx>

You can find further information on the new Groundwater Directive (2006/118/EC) at <http://www.defra.gov.uk/environment/quality/water/wfd/daughter-dirs.htm>

xii) Habitats Directive

The “European Community Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora”, aims to contribute towards ensuring biodiversity through the conservation of natural habitats and wild plants and animals. Measures must be introduced to maintain or restore to ‘favourable conservation status’ the natural habitats and populations of wild plants and animals identified as important within the European Union (as specified in annexes to the Directive).

Representative areas with these habitats and species must be designated as Special Areas of Conservation. Special Areas of Conservation and Special Protection Areas designated under the Birds Directive (see section iii above) form a network of protected areas known as ‘Natura 2000’.

The Habitats Directive introduces for the first time for protected areas, the precautionary principle; that is that projects can only be permitted having ascertained no adverse effect on the integrity of the site. Projects may still be permitted if there are no alternatives, and there are imperative reasons of overriding public interest. In such cases compensation measures will be necessary to ensure the overall integrity of network of sites.

As a consequence of amendments to the Birds Directive these measures are also applied to Special Protection Areas.

How this Directive is implemented

The Directive is implemented by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), known as ‘the Habitats Regulations’, which are administered by Natural England and the Countryside Council for Wales. Special Areas of Conservation and Special Protection Areas are also notified as Sites of Special Scientific Interest.

Regulation 3(3) and 3(4) of the Habitats Regulations require every competent authority to have regard to the requirements of the Habitats Directive while carrying out their functions. The Habitats Regulations (Regulation 48) require that any plan or project, for example a development application or an environmental permit, that is not directly connected with or necessary to the management of a Natura 2000 site, but which could have a likely significant effect on it has to have an appropriate assessment of its implications on the conservation objectives of the site. In most cases, plans or projects that could have a negative effect on the integrity of a site can not proceed.

Regulation 50 of the Habitats Regulations require all Competent Authorities to review the impact of certain types of existing permits and modify or revoke them where necessary to remove effect or risk of effects on Natura 2000 sites.

Annex D shows the location of Natura 2000 sites and compliance with the Directive's objectives for the Severn River Basin District.

Wales Biodiversity Partnership brings together stakeholders from the public, private and voluntary sectors to promote and mainstream biodiversity action in Wales. The partnership is comprised of a Steering Group that meets three times a year, and a network that provides the Steering Group with advice and information.

You can find further information on the Joint Nature Conservation Committee's website at: <http://www.jncc.gov.uk/page-1374>

xiii) Integrated Pollution Prevention and Control Directive

The Integrated Pollution Prevention and Control Directive (2008/1/EC replacing the repealed Directive 96/61/EC) is designed to prevent, reduce and eliminate pollution at source by using natural resources efficiently. It is intended to help industries operate in a more environmentally sustainable way.

The activities covered include those arising from energy, metals, mineral, chemical, waste management industries, as well as others such as paper/board production, slaughterhouses, food and drink production, intensive pig and poultry farms. To comply with the regulations, operators need a permit and must use best available techniques to prevent emissions to air, land and water or, where that is not practicable, they must reduce them to an acceptable level. They must also minimise waste and recycle it where they can, conserve energy, prevent accidents and limit their environmental consequences, and return the site to a satisfactory state after operations cease.

How this Directive is implemented

The Directive is implemented by the Environmental Permitting (England and Wales) Regulations 2007. Competent authorities for these regulations are:

- the Environment Agency, which has responsibility for A(1) installations, the most polluting of the three industrial categories;
- local authorities, which have responsibility for A(2) installations (Local Authority Integrated Pollution Prevention and Control) and for Part B installations (Local Authority Pollution Prevention and Control).

(Prior to 6 April 2008 the Directive was implemented by the Pollution Prevention and Control (England and Wales) Regulations 2000).

This legislation helps deliver the Water Framework Directive objectives in a number of ways, including, for example, objectives for priority hazardous substances (cease or phase out discharges, emissions and losses) and by minimising other releases from major installations. The Regulations are supported by Europe-wide guidance notes on best available techniques. There were 434 permits for Part A(1) installations in the Severn River Basin District.

You can find further information on the Environment Agency's website at: <http://www.environment-agency.gov.uk/homeandleisure/37801.aspx>

xiv) Major Accidents Directive

The Major Accidents Directive (96/82/EC), also known as the Seveso II Directive, aims to prevent accidents, and limit their consequences if they do occur, at sites using or storing certain dangerous substances above specified thresholds.

It deals with exceptional risks (fires, explosions and massive emissions of dangerous substances when an activity gets out of control) and the steps to be taken to prevent major accidents. Operators of establishments where high quantities of dangerous substances are used or stored must produce a safety report and an on-site emergency plan. In addition, the relevant local authority must produce an off-site emergency plan, and the public must be told of safety measures and what to do in the event of an accident.

How this Directive is implemented

The Directive is implemented by the Health and Safety Executive and the Environment Agency through the Control of Major Accident Hazards Regulations 1999.

You can find further information on the Health and Safety Executive's website at:

<http://www.hse.gov.uk/comah/>

xv) Marine Strategy Framework Directive

The Marine Strategy Framework Directive came into force on 15th July 2008. This Directive establishes an integrated policy for the protection of the marine environment in a similar manner to the Water Framework Directive. Where both Directives apply in coastal waters, the Marine Strategy Framework Directive covers those aspects of the environmental status of the marine environment not covered by the Water Framework Directive. The Marine Strategy Framework Directive does not apply to transitional waters (e.g. estuaries). The Directive requires Member States to take necessary measures to maintain or achieve good environmental status in marine waters by 2020.

How this Directive is implemented

The Directive must be transposed by 2010. The Environment Agency is working with Defra, Welsh Assembly Government and others to ensure that implementation of both Directives will be complementary where they overlap. Marine strategies have to be developed in order to protect and preserve the marine environment, prevent its deterioration, restore marine ecosystems and prevent and reduce inputs in the marine environment.

Date	Action
2012	<ul style="list-style-type: none">• initial assessments of current environmental status and the environmental impact of human activities• Determination of good environmental status for waters concerned• Establishment of targets and indicators
2014	Establish monitoring programmes for ongoing assessment and updating of targets
2015	Develop programmes of actions to achieve/maintain good environmental status
2016	Implement programme of actions
2020	Take the necessary measures to achieve or maintain good environmental status in the marine environment

xvi) Nitrates Directive

The Nitrates Directive (91/676/EEC) aims to protect water quality against nitrate pollution from agriculture. It encourages better management of animal manure, manufactured fertilisers and other nitrogen-containing materials spread onto land. In England and Wales discrete areas of land have been designated as Nitrate Vulnerable Zones, where the waters that the land drains to contain, or are likely to contain 50 mg/l of nitrate, or the waters are eutrophic or likely to become so. Some other European Union member states have declared the whole territory as being vulnerable to nitrate pollution.

An action programme must be put in place in Nitrate Vulnerable Zones that farmers have to observe to reduce nitrate pollution. Rules cover the storage of manure and periods when spreading manure and manufactured fertiliser to land is not allowed and limits on rates of nitrate application. A review of both the designations and action programme must be carried out at least every four years, the outcomes of which are used by Ministers to make appropriate amendments. As well as action programmes in Nitrate Vulnerable Zones Member States must have voluntary codes of good agricultural practice in place to promote general good practice to control nitrate on all farms.

How this Directive is implemented

In England, this Directive is implemented under the Nitrate Pollution Prevention Regulations 2008. In Wales this Directive is implemented under the Nitrate Pollution Prevention (Wales) Regulations 2008.

The Environment Agency is the competent authority responsible for enforcing the Action Programmes.

Associated mechanisms include:

- Prohibition and notices under the Water Resources Act 1991 s85 and/or Water Resources Act 1991 s86 to prevent nitrate pollution from discharges;
- Water Protection Zones when existing mechanisms will not achieve the required objectives;
- Statutory Code of Good Agricultural Practice.

About 44% of land is currently designated as Nitrate Vulnerable Zone in the Severn River Basin District. The next review is expected to be implemented in 2013.

You can find further information in annex D on protected areas and on the Environment Agency's website at: <http://www.environment-agency.gov.uk/business/regulation/31901.aspx>

xvii) Plant Protection Products Directive

The Plant Protection Products Directive (91/414/EEC), also known as 'The Authorisations Directive', aims to prevent adverse impacts from plant protection products by controlling the marketing and use of new products. Plant protection products include herbicides (weed killers), insecticides, fungicides, molluscicides (slug/snail killer) and other pesticide products used to protect plants.

New active substances for use in plant protection must be approved before they can be sold or used. To gain approval, the producers must submit a dossier identifying the active

substance (and a plant protection product which contains in it); its physical and chemical properties; its effects on target pests; and any possible effects on workers, consumers, the environment and non-target plants and animals. The dossiers are evaluated at European level and a decision is made on whether the new substance can be approved for use and which conditions will apply across all European Union member states.

How this Directive is implemented

The Directive is implemented under the Plant Protection Products Regulations 2005 and administered by the Chemicals Regulation Directorate, which is part of the Health and Safety Executive.

The Directive will be replaced by a new Regulation concerning the placing of plant protection products on the market, which is expected to come into force in 2011.

You can find more detailed information on the Chemicals Regulation Directorate website at: <http://www.pesticides.gov.uk/approvals.asp?id=2310>

xviii) Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

REACH entered into force on 1st June 2007 under EC regulation 1907/2006 to streamline and improve the legislative framework on supply and use of chemicals in the European Union. REACH has several aims:

- To provide a high level of protection of human health and the environment from the use of chemicals.
- To make the people who place chemicals on the market (manufacturers and importers) responsible for understanding and managing the risks associated with their use.
- To allow the free movement of substances on the EU market.
- To enhance innovation in and the competitiveness of the EU chemicals industry.
- To promote the use of alternative methods for the assessment of the hazardous properties of substances e.g. quantitative structure-activity relationships (QSAR) and read across.

A major part of REACH is the requirement for manufacturers or importers of substances to register them with a central European Chemicals Agency (ECHA). A registration package will be supported by a standard set of data on that substance. The amount of data required is proportionate to the amount of substance manufactured or supplied. If a substance is not registered then the data on it will not be available and as a result it will no longer be possible to manufacture or supply it legally.

REACH applies to substances manufactured or imported into the EU in quantities of 1 tonne per year or more. Generally, it applies to all individual chemical substances on their own, in preparations or in articles (if the substance is intended to be released during normal and reasonably foreseeable conditions of use from an article). Some substances are specifically excluded, for example radioactive substances, substances under customs supervision, the transport of substances, non isolated intermediates, waste and some naturally occurring low-hazard substances.

Some substances, covered by more specific legislation, have tailored provisions, including human and veterinary medicines, food and foodstuff additives and plant

protection products and biocides. Others have tailored provisions within the REACH legislation, as long they are used in specified conditions, such as isolated intermediates and substances used for research and development. REACH also allows for the restriction of substances where it poses a particular threat that is deemed to require Community-wide action to mitigate the risk, or for substances of very high concern a company wishing to market or use such a substance must submit an application to the European Chemicals Agency for an authorisation.

How this regulation is implemented

The Competent Authority for REACH is the Health and Safety Executive (HSE), supported by others, in particular the Environment Agency. Implementation of REACH is phased with registration deadlines up to June 2018, depending on the annual tonnages involved.

Information on the hazardous properties of chemicals and their risk to the environment will be available through the European Chemicals Agency run database IUCLID <http://iuclid.eu/>

Further information is available at: <http://www.hse.gov.uk/reach>

xix) Sewage Sludge Directive

The Sewage Sludge Directive (86/278/EEC) aims to protect people, animals, plants and the environment against the possibility of harmful effects from the uncontrolled spreading of sewage sludge on agricultural land.

It encourages sewage sludge to be used correctly and prohibits it being applied to soils unless the concentration of heavy metals in the soil is below certain limits (which vary according to pH). Monitoring must be carried out to make sure that the soil does not exceed these limits after sludge has been spread. Sludge must be treated before it is used, for example to reduce pathogen levels, unless it is injected or worked into the soil. Animals cannot graze on land that has been spread with sludge, and crops cannot be harvested from the land, for three weeks after the sludge has been spread.

Preventing soils becoming polluted in this way also protects surface water and groundwater from receiving polluted run-off.

How this Directive is implemented

The Directive is implemented through the Sludge Use in Agriculture Regulations 1989 as amended, with the Environment Agency as competent authority.

The Regulations are supported by general binding rules and financial disincentives through cross-compliance under the European Union's Common Agricultural Policy and Single Farm Payments made in England and Wales. All the water companies follow the Safe Sludge Matrix, an agreement made in December 1998 between Water UK and the British Retail Consortium, which bans the use of untreated sludge on agricultural land. There is also a non-statutory code of practice.

The water and sewerage companies are responsible for managing the recycling and disposal routes of the sewage sludge produced by their sewage treatment works. They must comply with the requirements of the Sewage Sludge Directive, the Waste Framework Directive and the Urban Waste Water Treatment Directive.

The Environment Agency is the enforcement authority for the relevant legislation.

The Water Services Regulation Authority is responsible for ensuring that the companies are adequately funded to carry out their functions, which include sewage sludge disposal.

You can find further information on the NetRegs website at: <http://www.environment-agency.gov.uk/netregs/businesses/agriculture/61893.aspx>

xx) Shellfish Waters Directive

The Directive on the quality required of shellfish waters (2006/113/EC replacing Directive 79/923/EEC which is repealed) aims to protect or improve shellfish waters to support shellfish life and growth. It protects the water habitat of bivalve and gastropod molluscs, including oysters, mussels, cockles, scallops and clams. In this way, it contributes to the high quality of shellfish products eaten by humans. It sets physical, chemical and microbiological water quality requirements that designated shellfish waters must either comply with ('mandatory' standards) or try to meet ('guideline' standards).

The Directive will be repealed in 2013, after which controls under the Water Framework Directive will be used to provide at least the same level of protection to shellfish waters.

How this Directive is implemented

This Directive is implemented through the:

- Surface Waters (Shellfish) (Classification) Regulations (SI 1997/1332);
- Surface Waters (Shellfish) (Direction) 1997.

The Environment Agency is the competent authority.

Welsh Assembly Government formally designates waters through the issue of a Notice and Schedule. This places an obligation on the Environment Agency to ensure that designated waters meet the requirements of the Directive. The latest Shellfish waters designation notice was issued in March 2004.

Annex D sets out the shellfish waters designated as protected areas in the Severn River Basin District and their compliance with the Directive.

Shellfish Waters Pollution Reduction Plans were prepared in 2008. These are available for the 124 Shellfish Waters in England and Wales and are available from: <http://www.environment-agency.gov.uk/business/regulation/31931.aspx>

You can also find further information on Defra's website at: <http://www.defra.gov.uk/environment/quality/water/waterquality/shellfish/index.htm>

xxi) Strategic Environmental Assessment Directive

The Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment requires a formal environmental assessment of plans and programmes which are likely to have significant effects on the environment. Authorities which prepare and/or adopt such a plan or programme must prepare a report on its likely significant

environmental effects, consult environmental authorities and the public, and take the report and the results of the consultation into account during the preparation process and before the plan or programme is adopted. They must also make information available on the plan or programme as adopted and how the environmental assessment has been taken into account. River Basin Management Plans fall within the scope of the Strategic Environmental Assessment Directive.

How this Directive is implemented

The Strategic Environmental Assessment Directive is implemented through the Environmental Assessment of Plans and Programmes Regulations 2004. In Wales SEA is regulated in Wales through The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004.

Guidance is provided in 'A Practical Guide to the Strategic Environmental Assessment Directive'.

Further information is available on the Communities and Local Government website - <http://www.communities.gov.uk/planningandbuilding/planning/sustainabilityenvironmental/strategicenvironmentalassessment/>

and for Wales on the Welsh Assembly Government website – <http://wales.gov.uk/topics/environmentcountryside/consmanagement/sea/?land=en>

xxii) Sustainable Use of Pesticides Directive (Proposal)

The purpose of this Directive, as proposed, is to establish a legislative framework which:

- contributes to the reduction of impacts of plant protection products on human health and the environment;
- aims to achieve a more sustainable use of plant protection products;
- promotes a significant overall reduction in risks and hazards of using plant protection products consistent with necessary crop protection.

The final wording of this Directive will be adopted by the Commission in 2009.

There are 2 articles of particular relevance to Water Framework Directive measures:

- Article 11 - specific measures to protect the aquatic environment and drinking water
- Article 12 - Reduction of pesticide use or risks in specific areas, including protected areas under the Water Framework Directive.

See

http://www.pesticides.gov.uk/environment.asp?id=1980#authorisation_regulation_and_sustainable_use_directive for further information.

How this Directive will be implemented

The Directive will be implemented into UK legislation by late 2011. The Chemicals Regulation Directorate of the Health and Safety Executive (formerly Pesticides Safety

Directorate) is the competent authority for overseeing implementation of UK Regulations (including an anticipated public consultation in 2009).

The Directive is expected to establish a framework which will promote 'best practice' in the storage, use and disposal of pesticides, and their packaging. Key features will include: the establishment of national action plans; compulsory testing of spray machinery and certification of spray operators, distributors and advisors; a ban (subject to derogations) on aerial spraying; special measures to protect the aquatic environment, public spaces and special conservation areas; minimising the risk of pollution through handling, storage and disposal; and the promotion of Integrated Pest Management.

Further information is available at

http://www.pesticides.gov.uk_authorisation_regulation_and_sustainable_use_directive

xxiii) Surface Water Abstraction Directives

These two Directives were repealed in 2007, and the related regulations in England and Wales repealed subsequently.

- Directive 75/440/EEC concerning the quality of surface water abstracted for use as drinking water

This aimed to make sure that surface water abstracted for use as drinking water reached certain standards and was adequately treated before being put into public supply. It aimed to improve rivers or other surface waters used as sources of drinking water. Surface waters were classified by the water's general suitability for abstraction and level of treatment required before the water is suitable for public supply:

- A1 - simple physical treatment and disinfection;
 - A2 - normal physical/chemical treatment and disinfection;
 - A3 - intensive physical/chemical treatment, extended treatment and disinfection.
- Directive 79/869/EEC concerning the frequency of sampling and analysis of surface water intended for abstraction for drinking

This laid down the minimum standards, established the analytical methods to be used in measuring the parameters in 75/440/EEC, with minimum limits of detection, accuracy and precision, and set out the required sampling frequency.

How these Directives were implemented

The Directives were implemented through:

- The Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996 (SI 1996/3001);
- The Surface Waters (Abstraction for Drinking Water) Direction 1996.

You can find further information on the Environment Agency's website at

<http://www.environment-agency.gov.uk/business/regulation/31949.aspx>

Controls implemented under the Water Framework Directive, including for example through

use of Drinking Water Protected Areas (see F4 below), will ensure that at least the same level of protection is afforded to drinking water and its sources.

xxiv) The Urban Waste Water Treatment Directive

The Urban Waste Water Treatment Directive (91/271/EEC) regulates the collection and treatment of waste water from homes and industry. It protects the environment from the negative effects of urban waste water and discharges from certain industrial sectors, such as food and drink processing plants (some of which produce waste that has a similar polluting effect to untreated sewage). Most waste water must have at least secondary treatment (biological treatment). 'Sensitive' receiving waters are identified where sewage requires extra treatment before discharge into them. One type of sensitive area is 'eutrophic waters', where additional nutrients (mainly nitrate or phosphate) stimulate the growth of algae and other plants, damaging the natural environment. Another type of sensitive area is where water is intended for abstraction for use as drinking water but nitrate levels are high. In these areas, larger sewage discharges must be treated to reduce their load of nutrients (tertiary treatment).

How this Directive is implemented

The Directive is implemented through the Urban Waste Water Treatment Regulations 1994. These identify the sensitive areas for controls on discharges of nutrients (see annex D) and ban the disposal of sludge at sea. Powers to consent discharges, with conditions to protect the receiving waters, are available under the Water Resources Act 1991 (see F.6 below).

Sewerage undertakers have to develop a programme for improving discharges every five years. This programme, which is approved by Water Services Regulation Authority, the Environment Agency, Drinking Water Inspectorate and Defra and Welsh Assembly Government, provides the mechanism for funding and implementing the changes necessary to implement the Urban Waste Water Treatment Directive.

Associated mechanisms and resulting actions include:

- Codes of practice developed in partnership with UK Water Industry Research and the water industry;
- Financial incentives for sewerage undertakers to comply with permit conditions established under the Water Services Regulatory Authority operator performance assessment scheme, which links overall service provision to the price that customers pay.

You can find further information on Defra's website at:

<http://www.defra.gov.uk/environment/quality/water/waterquality/sewage/uwwtd/index.htm>

xxv) Veterinary Medicinal Products

Veterinary and human medicinal products in the European Union (EU) are regulated by the European Medicines Agency under Regulation (EC) No. 726/2004

How the Regulation is implemented.

The competent authority is the Veterinary Medicines Directorate which is an executive agency of Defra (<http://www.vmd.gov.uk/>). The Veterinary Medicines Directorate has UK-

wide responsibilities and its work assists the Welsh Assembly Government in achieving its strategic priorities.

Assessments and authorisation decisions are made by the Committee for Medicinal Products for Veterinary Use (<http://www.emea.europa.eu/htms/general/contacts/CVMP/CVMP.html>).

CVMP prepares scientific guidelines, in consultation with the competent authorities of the EU Member States, to help applicants prepare marketing-authorisation applications for medicinal products for veterinary use.

Environmental impacts assessments are carried out in two phases. In phase I the potential for environmental exposure is assessed based on the intended use of the VMP. Where a potential environmental risk is identified a detailed procedure of environmental risk assessment is carried out under Phase II. This provides a common basis for testing of veterinary medicinal products between the European Union, Japan, USA, Canada, Australia and New Zealand.

xxvi) Waste Framework Directive

The Directive 2008/98/EC on waste deals with the protection of human health and the environment against harmful effects caused by the collection, transport, treatment, storage and tipping of waste. Regulation under this legislation includes a system of permits and plans which set out the essential factors to be taken into consideration in respect of the various waste disposal and recovery operations. The Directive will be repealed and replaced by a revised Waste Framework Directive (2008/98/EC) from December 2010.

How this Directive is implemented

Waste operations that give rise to point and diffuse sources of pollution are controlled through the Environmental Permitting (England and Wales) Regulations 2007. The carriage of waste is regulated by the Control of Pollution (Amendment) Act 1989, Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991, the Hazardous Waste (England and Wales) Regulations 2005 and the Hazardous Waste (Wales) Regulations 2005, which include a system of registration and waste transfer notes.

Part II of the Environmental Protection Act 1990 includes a prohibition on the general deposit of waste or knowingly causing or permitting such waste to be deposited in or on any land except in accordance with an appropriate environmental permit. This is reinforced by the waste duty of care which includes a duty on those producing waste to ensure that it is only passed to an authorised person and to take appropriate reasonable measures to prevent the escape of waste from their control or that of another person.

You can find further information:

- On waste management generally at <http://www.environment-agency.gov.uk/business/sectors/32320.aspx>
- On agricultural wastes at <http://www.environment-agency.gov.uk/business/sectors/32777.aspx>

F.3 Efficient and sustainable use of water

Under the Water Framework Directive water must be used efficiently and in a way that can sustain future supplies. The mechanisms in this annex all help to meet these aims. Particular mechanisms that are available include:

Table F.1: **Mechanisms for efficient and sustainable use of water**

Mechanism	What this does
Water Resources Act 1991 Part II	Sets out controls for abstraction and drought management
Water Industry Act 1991 Part IIIA	General duties for protecting, managing the quality and sufficiency of supplies and promoting efficient use of water.
Water Act 2003 s 81-83	Duty for the SoS and Welsh Assembly to encourage water conservation, public authorities (including local authorities and statutory undertakes) to take into account, where relevant, the desirability of conserving water supplied or to be supplied to premises. This would include promoting water efficiency through exercise of their land use planning functions – production of development plans and control of development.
Planning and Compulsory Purchase Act 2004	Establishes principle of contributing to sustainable development for Spatial Planning System and the new framework of Regional Spatial Strategies and Local Development Frameworks for England. For Wales there is the Wales Spatial Plan and Local Development Plans.
Planning Policy Statement 1 and Planning Policy Statement: Planning and Climate Change - Supplement to Planning Policy Statement 1 Planning Policy Wales	These expand on the sustainable development duty, prudent use of natural resources and higher standards of sustainability if justified.
Environment Act 1995 s 6(2)	Provides a duty on the Environment Agency to conserve, redistribute or augment water resources and to secure their proper use
Pollution Prevention and Control Regulations 2000	Include provision to encourage water conservation, through installation of water-efficient appliances.

Spatial planning has a clear principle that it should contribute to sustainable development (as required by S39 of 2004 Act) and the need for prudent use of resources, including water, particularly through the design of development (see Planning Policy Statement 1). Planning Policy Wales states that local planning authorities should promote increased efficiency and demand management of water resources, particularly in those areas where additional water resources may not be available.

Planning Policy Statement 1 and the planning and climate change supplement requires Regional Spatial Strategies to take into account the availability of water resources to support development.

Local Development Frameworks and Local Development Plans in Wales have to take account of capacity of water resources infrastructure when selecting sites for development or considering whether to go beyond national standards for sustainability where, without such requirements (for example water efficiency) development would be unacceptable for that location.

Where there is a locally justified need to go beyond minimum standards, the Government's Code for Sustainable Homes introduces higher standards for water efficiency for new development. In these instances, use of these standards can be initiated through Development Plan policies and through conditions on planning permission, and also by negotiation with Government for sustainable development initiatives, for example Ecotowns and growth points in England.

Several water companies have established land management schemes in catchments to their public supply sources, funded through the periodic review process, to reduce diffuse pollution. These schemes can also help to reduce downstream flooding and enhance biodiversity.

F.4 Protection of waters used for abstracting water

The mechanisms in this annex which protect the quality or quantity of water also protect water bodies that have abstractions for drinking water. These mechanisms include statutory protected areas (see Annex D) and their related requirements under the Water Framework Directive. The Environment Agency's Groundwater Protection Policy also provides a range of guidance on activities in advisory source protection zones around groundwater abstractions.

More formal mechanisms that are in place for protecting waters abstracted for drinking water are shown in Table F.2:

Table F.2: **Mechanisms for protecting drinking water**

Mechanism	What this does
Water Resources Act 1991 s93	Provides the legislation for establishing statutory Water Protection Zones (WPZs). Work is currently underway to amend the legislation so that WPZs may be more readily applied to address pollution of drinking water catchments.
Surface Waters (Abstraction for Drinking Water) (Classification) Regulations and Direction 1996	Sets objectives and minimum standards for water to be abstracted for drinking water.
Water Industry Act 1991 Part III dealing with water supply	General duties for protecting and managing the quality and sufficiency of supplies.
Water Supply (Water Quality) Regulations 2000 as amended	Establishes a risk-based approach to the assessment and monitoring of water intended for public supply, requiring water supply operators to consider issues in the environment.
Private Water Supplies Regulations 1991 (administered by local authorities)	Sets objectives and minimum standards for drinking water from private supplies. Defra have consulted on new regulations which would introduce powers for local authorities and a risk based assessment element for protection of larger

Mechanism	What this does
	private supplies. A Welsh Assembly Government consultation on The Private Water Supplies (Wales) Regulations 2009 closed in June 2009.
Water Framework Directive 2000 – Article 7	Requires the identification of Drinking Water Protected Areas and sets objectives for these. Allows for the creation of Safeguard Zones within which necessary protection measures can be focused.

i) Drinking water protected areas

Drinking water protected areas are water bodies that are used now, or may be used in the future, for abstracting water for drinking, cooking, preparing food, or in food production businesses. A drinking water protected area is defined if the water body provides more than an average of 10m³ a day in total or serves more than 50 people.

Existing mechanisms for dealing with diffuse and point sources of pollution are used to protect water quality in these protected areas (see F.6 and F.7) but are not always sufficient to provide the protection needed, particularly from diffuse sources of pollution. The Environment Agency has carried out risk assessments of drinking water protected areas. Protected areas and more specifically the associated safeguard zones will provide a focus for reinforcing existing measures or implementing additional measures where these may be needed so that Water Framework Directive objectives can be met. (See annex D on Protected Areas for details).

The Environment Agency is adopting a tiered, risk-based, approach to drinking water protection, with:

- i) a general level of protection for all drinking water sources (existing measures maintained);
- ii) safeguard zones around sources at particular risk where existing measures can be strictly enforced and additional new voluntary measures can be focused; and
- iii) in England the use of Water Protection Zones for sources at particular risk where existing and voluntary measures have failed or are unlikely to prevent failure of WFD objectives. Here new statutory measures will be sought. A small number of Water Protection Zones will be promoted in England in the first river basin management cycle.

Drinking water protected areas and proposed safeguard zones are shown in Annex D. Any Water Protection Zones that are proposed in the Severn River Basin District will be subject to a separate public consultation process.

Implementation in the Severn River Basin District

There are 124 surface water bodies designated for drinking water protection in the Severn River Basin District.

All the groundwater bodies in the Severn River Basin District are Drinking Water Protected Areas. There are 236 existing groundwater source protection zones in the Severn River Basin District that form the first general level of protection noted above.

Annex D highlights the groundwater safeguard zones in this district (see figures D2 and D3). The additional measures in these zones will address the specific contaminants and activities of concern in these zones.

F.5 Abstraction and impoundment of water

Under the Water Resources Act 1991 s.24 no abstraction is permitted without a licence, except for certain exemptions (see below). Table F. summarises the mechanisms to control abstraction and impoundment of water (that is, storage of water for later use).

Table F.3: Mechanisms to control abstraction and impoundment

Mechanism	What this does
Water Resources Act 1991 <ul style="list-style-type: none"> • Abstraction and impoundment licensing system Chapter II of Part II (as amended by Water Act 2003) • Agreements under s20, 20A &158 • Drought orders and drought permits under Chapter III of Part II 	<ul style="list-style-type: none"> • Conditions applied to abstraction and impoundment licences to manage impacts on the environment. e.g. flows, resources, saline intrusion • Make operational arrangements with water companies and other abstractors to reduce the impact of abstractions, for example river support schemes. • Provides further controls on authorisations for abstraction and impoundments during droughts
Habitats Directive Review of Consents,	Can revoke or amend licences to reduce unacceptable impacts of abstraction.
Water Resources Management Plan Regulations 2007 and Water Resource Management Plan Directions 2007 and 2008	Water companies produce water resources plans to say how they propose to manage water supply and demand and related environmental issues.

Time limited licences were introduced in many cases in the 1990s and are compulsory for all new licences under the changes to the Water Resources Act 1991 brought about by the Water Act 2003. Before then, licences were granted with no time limit, and some licences in the past may have had unacceptable impacts on the environment. Although the Environment Agency has powers to amend or revoke these licences under the Water Resources Act 1991, we may have to pay compensation to the licence holder.

The Water Act 2003 extends the abstraction licensing system to include previously exempt uses and areas. For example the uses now include trickle irrigation, quarry dewatering, transfers of water. The areas previously exempt include mid-Wales and parts of Northumbria.

Other plans and programmes

Abstraction licences are being reviewed to determine whether they are having an unacceptable impact on the environment. This is being done as part of the review of consents required by the Habitats Regulations and included within the programme for Restoring Sustainable Abstraction. The mechanisms for funding compensation payments have been under discussion with Defra and the Welsh Assembly Government.

The Environment Agency has developed Catchment Abstraction Management Strategies to help ensure a consistent approach in managing water resources and balancing the needs of water users and the environment. They also help inform the public on water resources and licensing practice and involve them in managing water resources in their area

Under the Water Resources Management Plan Direction 2007 and Water Resources Management Plan Direction 2008 (England only), water companies have to prepare water resources plans to say how they propose to manage water supply and demand over the following 25 years. These have to show how they will protect the environment from unnecessary damage caused by taking too much water for people to use.

The National Environment Programme is the water companies' five-yearly environmental improvement programme. Successive water company improvement programmes since privatisation of the industry have resulted in substantial benefits to the water environment.

Other approaches

A variety of mechanisms can be used to protect water resources that are used for abstraction. The Environment Agency's Groundwater Protection: Policy & Practice provides guidance on activities involving abstraction of groundwater. Voluntary agreements, permits, economic incentives (water pricing) water-saving campaigns etc. can be used to manage demand. Direct action can be taken to maintain or improve flows, for example river restoration schemes.

Implementation in the Severn River Basin District

In 2007 there were 560 licensed impoundments in the Severn River Basin District. The largest impoundments are regulated under the Reservoir Act 1975 in relation to public safety alone.

In 2007 there were 3,197 licensed abstractions in the Severn River Basin District, authorising abstraction of 2,701,864 Ml of water a year, from surface waters, groundwater and tidal waters. Further information is provided in table F.4.

Table F.4: **Summary of licensed abstractions in the Severn River Basin District**

Sector	Licensed volume (MI ¹ / year)	Number of licences
Water supply	1,347,299	405
Agriculture	53,931	2,182
Fish and aquaculture ²	58,861	68
Electricity production ²	1,016,847	14
Industry	210,091	510
Other	14,835	18
Total	2,701,864	3,197

¹1MI is equivalent to 1000m³

²Electricity and fish/aquaculture normally return the water close to the point of abstraction.

Information on abstraction and impoundment licences, including licence applications, appeals, and transfers, is provided in public registers, which you can inspect in the Environment Agency office at:

- Hafren House, Welshpool Road, Shelton, Shrewsbury, SY3 8BB
- Riversmeet House, Newtown Industrial Estate, Northway Lane, Tewksbury, Glocs, GL20 8JG
- Sentinel House, 9 Wellington Crescent, Fadley Park, Lichfield, Staff, WS13 8RR
- Plas yr Afon/River House, St. Mellons Business Park, Fortran Road, St. Mellons, Cardiff, DF3 0EY
- Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS.

Abstractions and impoundments which are exempt from licensing requirements are not included in these registers.

F.6 Point source discharges

This section provides a summary of mechanisms for controlling discharges from identifiable point sources by limiting or preventing pollutants entering the water through prior authorisations, general binding rules and emission controls.

Point source discharges are controlled as follows:

Table F.5 **Mechanisms to control point source discharges**

Mechanism	What this does
Water Resources Act 1991	
<ul style="list-style-type: none"> • Prosecution under s85 	<ul style="list-style-type: none"> • It is an offence to pollute controlled waters by causing or knowingly permitting entry or discharge of polluting matter.
<ul style="list-style-type: none"> • Discharge consents, s88 	<ul style="list-style-type: none"> • Requires conditional consents for point source discharges to water

Mechanism	What this does
<ul style="list-style-type: none"> Prohibition Notices under s86 Enforcement Notices under s90B Works Notices under s161A Water Protection Zones under s93 	<ul style="list-style-type: none"> A Notice can be served to prohibit the discharge of any effluent onto or into land A notice to remedy contraventions of consents Any activity polluting or likely to pollute controlled waters can be served a 'works notice' to stop the activity or require certain improvements Can be used to implement specific point source controls within a formally designated zone.
<p>Environmental Permitting (England and Wales) Regulations 2007, which replace</p> <ul style="list-style-type: none"> Pollution Prevention and Control (England and Wales) Regulations 2000 Waste Management Licensing Regulations 1994 	<ul style="list-style-type: none"> Require permit with conditions to control deliberate emissions and minimise accidental losses from major installations; conditions prevent, minimise or render emissions harmless using the best available technologies as directed in guidance notes. Requires licence with conditions to control waste management operations.
<p>Groundwater Regulations 1998 (prevent or limit discharges to groundwater)</p> <p>Note: new Groundwater Regulations are due to be in place in Autumn 2009 and will replace the 1998 Regulations.</p>	<ul style="list-style-type: none"> Require authorisation for disposals/discharges that might lead to inputs to groundwater of substances listed under the Groundwater Regulations (or from Autumn 2009, WFD pollutants). Such authorisations include Water Resources Act discharge consents and Environmental Permitting Regulations permits. Notices to prohibit any activity that might lead to an input of a listed substance/WFD pollutant to groundwater through Regulation 19 Notice.
<p>Silage Slurry & Agricultural Fuel Oil Regulations 1991</p>	<p>Cover the design, siting, construction and maintenance of Silage, Slurry and Agricultural Fuel Oil stores.</p>
<p>The Control of Pollution (Oil Storage) (England) Regulations 2001</p>	<p>Sets minimum design standards for new and existing above ground oil storage facilities</p>
<p>Water Industry Act 1991 s166</p>	<p>Requires permit for operational (construction or maintenance) discharges relating to water abstraction and treatment.</p>
<p>Town and Country Planning Act 1990, Planning and Compulsory Purchase Act 2004, Planning guidance provided through Planning Policy Statements in England and Planning Policy Wales and Technical Advice Notes in Wales.</p>	<p>Planning policy contributes to the protection and improvement of the environment. In particular, planning should seek to ensure that development does not produce irreversible harmful effects on the natural environment.</p>
<p>Environmental Protection Act 1990, Part 2A</p>	<p>Controls point source discharges from contaminated land sites (local authorities lead, with Environment Agency regulating 'special sites').</p>

Plans and programmes

Spatial planning

The spatial planning system and particularly the development plan system as required by the 2004 Compulsory Purchase Act sets the framework for controlling development within England and Wales. The planning system makes a major contribution to protecting and improving the environment, the quality of life, and local and global ecosystems.

Urban development is planned up to 20 years ahead through Development Plans. Under the Planning & Compulsory Purchase Act 2004 these consist of Regional Spatial Strategies and Local Development Frameworks in England and in Wales, the Wales Spatial Plan and Local Development Plans. Planning Policy Statement 11 (Regional Spatial Strategies) and Planning Policy Statement 12 (Local Development Frameworks) and Planning Policy Wales set out more detailed guidance on the preparation of development plans in England and Wales.

In England Planning Policy Statement 1 specifically states that planning authorities should ensure that infrastructure and services are provided to support new and existing economic development and housing. Planning Policy Statement 23 also identifies the availability and capacity of waste water infrastructure as considerations in producing development plans and controlling development.

In Wales, guidance notes that planning authorities should “play an appropriate role in securing the provision of infrastructure (including water supplies, sewerage and associated waste water treatment facilities....)” It goes on to state that in preparing development plans, development should be planned and located to enable the sustainable provision of water services infrastructure and that in the control of development, the adequacy of water supply and the sewage infrastructure are material in considering planning applications and appeals. This enables planning authorities and utility providers to anticipate future demand for wastewater treatment, the adequacy of existing infrastructure and headroom in existing consents. Where it is justified, Development Plan policies can link the rate of planned development to the available capacity of wastewater treatment infrastructure and require planning authorities to investigate further through, for example, Water Cycle Strategies

Water industry planning

Urban development is planned up to 20 years ahead through Development Plans. This enables planning authorities and utility providers to anticipate future demand for wastewater treatment, the adequacy of existing infrastructure and headroom in existing consents. Where it is justified, Development Plan policies can link the rate of planned development to the available capacity of wastewater treatment infrastructure and require planning authorities to investigate further through, for example, Water Cycle Strategies.

Discharges from the water industry can be improved by modifying discharge consents. The investment required to improve treatment facilities is decided by the Water Services Regulation Authority through the price review process. The latest of these is the Periodic Review in 2009 (PR09). This price review covers the period from 2010 to 2015. The mandatory requirements for the Water Framework Directive and other Directives are included in this process.

The Periodic Review 2009 has also been used as a mechanism to investigate discharges from sewage treatment works and potential treatment solutions. A list of sewage treatment

works has been prioritised for investigation and these have been included in the companies' draft business plans and in DCCW's draft business plan.

Other approaches

Defra have produced several groundwater protection codes (some of which apply in Wales as well as in England) :

- Use and Disposal of Sheep Dip Compounds (August 2001)
- Petrol stations and other fuel dispensing facilities involving underground storage tanks (November 2002)
- Solvent Use and Storage (2004)

These support the Groundwater Regulations 1998, and deal with design, construction, operation, management and decommissioning of the relevant facilities.

The Highways Agency has established a register of soakaways and priority outfalls across the strategic road network in England and ranked these in accordance with the risk they may pose to underlying groundwater. This will help direct pollution prevention work.

The Environment Agency's Pollution Prevention Guideline Refuelling Facilities, (<http://publications.environment-agency.gov.uk/pdf/PMHO0804BIDG-e-e.pdf>), provides the background information to protect the environment through the correct delivery, storage and dispensing of fuels. The Environment Agency has signed an operating agreement with TOTAL for its petrol filling stations that ensures the company's capital investment is in line with related environmental risk. Other companies are considering similar agreements.

Pollution Prevention Guidelines also exist for a range of activities that have the potential to pollute surface waters, including:

- Above ground oil storage tanks (PPG02);
- Use and design of oil separators in surface water drainage systems (PPG03);
- Treatment and disposal of sewage where no foul sewer is available (PPG04);
- Working at construction and demolition sites (PPG06);
- Garages and vehicle service centres (PPG 19).

The full list is available at:

<http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx>

The Environmental Permitting Regulations will be implemented in 2010. These Regulations apply in England and Wales and will expand the current permitting regime to include permits, standard rules and a registration scheme. This will mean that all existing and new small sewage discharges have to be registered, which will enable us to identify clusters that may be contributing to the pollution load, particularly in relation to ammonia, biological oxygen demand and nutrients.

Implementation in the Severn River Basin District

In the Severn River Basin District there were, as at August 2009:

- 12,487 consents under the Water Resources Act (including treated effluent and site drainage);
- 923 of these were from water company owned sewage treatment works, with a total volume of 6,268,521 cubic metres per day;
- 1,350 were for trade effluent (including site drainage), with a total volume of 1,009,011 cubic metres per day;
- 12 permits under the Pollution Prevention and Control Regulations 2000 (now dealt with under the Environmental Permitting Regulations) which included discharges to water;
- 213 controlled landfills, of which 172 had non-inert wastes, with particular controls to manage the risk of pollution;

Information on the controls for point source discharges is provided in public registers. These are available from Environment Agency area offices at:

- Hafren House, Welshpool Road, Shelton, Shrewsbury, SY3 8BB
- Riversmeet House, Newtown Industrial Estate, Northway Lane, Tewksbury, Glocs, GL20 8JG
- Sentinel House, 9 Wellington Crescent, Fadley Park, Lichfield, Staff, WS13 8RR
- Plas yr Afon/River House, St. Mellons Business Park, Fortran Road, St. Mellons, Cardiff, DF3 0EY
- Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS.

and on our website (<http://www2.environment-agency.gov.uk/epr/?lang=e>) and include lists of all discharges for which a permit or authorisation has been granted, the conditions in these permits, and the results of monitoring action taken in respect of samples.

F.7 Diffuse source pollution

Diffuse pollution results from scattered or dispersed sources that together have a significant effect, but individually have limited environmental impact. Examples of diffuse pollution include:

- The cumulative effect of many individual and ill-defined events, such as poor management practice in storage and handling of sewage or farmyard manure. Although individually they can be small and hard to detect, at a catchment scale they can have a significant impact on groundwater and surface water quality.
- The dispersal of pollutants over an area, for example nitrate from the atmosphere, or leaching of fertilisers and pesticides from soils, including sediment loss.

Environment Agency Wales is currently developing a diffuse pollution strategy for Wales, in line with a request delivered in the remit letter from the Welsh Assembly Government Minister for the Environment, Sustainability and Housing.

Water Protection Zones

Water Protection Zones can already be designated under the Water Resources Act and additional statutory provisions can be used to prevent water pollution. To date this has been used only once in England & Wales to deal with point source pollution. There are well developed proposals to amend how Water Protection Zones can be used so that they can more readily deal with diffuse pollution and hydromorphological pressures. These legislative amendments are likely to be complete before the end of 2009 in England and Wales. Both Defra and Welsh Assembly Government will be issuing statutory guidance to the Environment Agency on the use of Water Protection Zones.

Before designating a Water Protection Zone, the Environment Agency would have to make an appropriate case to the Secretary of State or Welsh Minister. The Environment Agency would also carry out a 12 week public consultation, which will include assessments of the costs and benefits of any proposed measures to be used within a zone.

Water Protection Zones may then be used as a mechanism where evidence shows that existing statutory or voluntary measures have been or are unlikely to be sufficient to meet Water Framework Directive objectives. It will then be possible to enforce prohibition or management of polluting activities within those zones. Their size and nature will be dependent on the location and the nature of the problem.

The Environment Agency intends that Water Protection Zones should be put in place in a phased, prioritised programme. Work is being carried out to improve certainty about the Water Protection Zone mechanism and the locations for designating them. To this end the Environment Agency is trialling their use in a limited number of "candidate" areas in England to prove their concept as a useful and efficient mechanism to meet the objectives of the Water Framework Directive. Following this the intention is to use Water Protection Zones in a limited number of cases focussing on where Protected Areas are failing, or likely to fail Water Framework Directive requirements. It is not anticipated that any Water Protection Zones will be introduced in Wales during the first river basin management planning cycle.

i) Agricultural pollution

There is a range of mechanisms that can be used to manage diffuse pollution from agricultural sources, and key legislative controls are shown on table F.5 below.

Other mechanisms include voluntary initiatives, such as work with river trusts, Coed Cymru and other partnerships (for example Sustainable Catchment Management Programme (SCaMP) with Royal Society for the Protection of Birds, United Utilities and the agricultural industry. The Professional Nutrient Management Initiative), and pollution prevention campaigns such as England Catchment Sensitive Farming Delivery Initiative.

Part 4 of the Groundwater Protection Policy sets out the Environment Agency's policy on and approach to activities in advisory Source Protection Zones around groundwater abstractions, and also sets out good practice to protect the wider groundwater resource.

Catchment Sensitive Farming

The England Catchment Sensitive Farming Delivery Initiative is part of Defra's Catchment Sensitive Farming Programme, which aims to reduce diffuse water pollution from agriculture. The initiative was introduced in April 2006 in forty priority catchments in England and was further extended in 2008 to new target areas, including extensions of existing priority

catchments and 10 new priority areas. The programme is managed jointly by Natural England and the Environment Agency.

It includes encouraging farmers to follow good practice when using fertilisers, manures and pesticides; promoting good soil structure to maximise infiltration of rainfall and minimise run-off and erosion; protecting watercourses from faecal contamination (for example with fencing and livestock crossings), and from sedimentation and pesticides (for example with buffer strips); reducing stocking density or grazing intensity; reverting to grassland etc.

A small capital grants scheme runs alongside advice delivery in the priority catchments to assist farmers in making investments to reduce agricultural diffuse pollution.

An on-going review of agri-environmental schemes is currently being undertaken in Wales which will influence the future shape of land management in the Welsh uplands. It is clear that there are several important environmental challenges facing the agricultural sector and future management schemes will need to embrace these challenges and be versatile enough to allow changing priorities to be addressed. For example:

- In the short term this may be on safeguarding habitats;
- In the medium term this may be the Water Framework Directive and new bathing waters standards;
- In the longer term Climate Change – including issues associated with flood risk and habitat connectivity, Soils Framework Directive.

Welsh Assembly Government administered a demonstration Catchment Sensitive Farming project from 2006 to 2008, and proposals for a new scheme are being considered. More information is available on the Welsh Assembly Government’s website, at: <http://new.wales.gov.uk/publications/accessinfo/drnewhomepage/environmentdrs2/environmentdrs2008/sensitvefarmingcatchmntscheme/?lang=en>

Environment Agency Wales also manages its own catchment initiative in 6 priority river catchments – Cain, Cleddau, Clwyd, Teifi, Usk and Wye – each with a dedicated Catchment Co-ordinator. Engaging with farmers through a supportive approach has helped raise awareness of diffuse water pollution issues and options for dealing with the problem via advice, guidance and incentives (voluntary approaches). By linking diffuse pollution, habitat, flood risk and fisheries issues together multiple benefits have been achieved as many of the solutions rely on collective, catchment based approaches.

Table F.6 Mechanisms for managing agricultural diffuse pollution

Mechanism	What this does
Water Resources Act 1991	
<ul style="list-style-type: none"> • Causing or knowingly permitting pollution, s85 • Anti-pollution Works Notices,-s161A • Water Protection Zones s93 	<ul style="list-style-type: none"> • Allows prosecution for various offences where surface waters and/or groundwater is polluted • Requires a person to carry out works and operations to prevent or deal with the consequences of any poisonous, noxious or polluting matter or any solid waste entering controlled waters. • Restricts or prohibits activities in order to

Mechanism	What this does
	protect the water environment from entry of poisonous, noxious or polluting matter
<p>Environmental Permitting (England and Wales) Regulations 2007 which replace</p> <ul style="list-style-type: none"> • Pollution Prevention and Control (England and Wales) Regulations 2000 • Waste Management (England and Wales) Regulations 2006 	<ul style="list-style-type: none"> • Permits for pig and poultry farms of certain size, with conditions to protect the environment • Makes sure that agricultural waste is recovered or disposed of without putting people's health at risk and without using processes or methods that could harm the environment.
<p>Nitrate Pollution Prevention Regulations 2008 and The Nitrate Pollution Prevention (Wales) Regulations 2009</p>	<p>Require a code of good agricultural practice to be made for all farmers. In addition, on farms within Nitrate Vulnerable Zones farmers to follow an action programme that reduces nitrate entering the water,</p>
<p>Groundwater Regulations 1998 and associated statutory Codes of Practice</p> <p>Note: new Groundwater Regulations are due to be in place in Autumn 2009 and will replace the 1998 Regulations.</p>	<ul style="list-style-type: none"> • Require authorisation for disposals/discharges that might lead to inputs to groundwater of substances listed under the Groundwater Regulations (or from Autumn 2009, WFD pollutants). Such authorisations include Water Resources Act discharge consents and Environmental Permitting Regulations permits. • Notices to prohibit any activity that might lead to an input of a listed substance/WFD pollutant to groundwater. • Codes of Practice to encourage better management/prevention of releases of pollutants to groundwater.
<p>EU driven authorisation / approval mechanisms for the marketing and use of plant protection products, biocides and veterinary medicines. (These are enforced via equivalent UK Regulations covering plant protection products, veterinary medicines and biocides)</p>	<p>Require human health and environmental risk assessment of products and requirement for authorisation or approval by UK competent authorities before the products can be marketed or used.</p>
<p>Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) 'SSAFO' Regulations 1991</p>	<p>Encourages agricultural storage facilities to be managed better by setting minimum standards as general binding rules for constructing or changing them.</p>
<p>Environmental Protection Act 1990, Part 2A</p>	<p>Provides a system for identifying and improving land where contamination is causing unacceptable risks to people's health, crops and livestock or the environment.</p>
<p>Environmental Damage (Prevention and Remediation) Regulations 2009 and The Environmental Damage (Prevention and</p>	<p>Will require operators to carry out measures to prevent imminent or actual damage to the environment.</p>

Mechanism	What this does
Remediation) (Wales) Regulations 2009	
Wildlife and Countryside Act 1981 (as amended)	Allows consent to be refused for activities that may damage Sites of Specific Scientific Interest and action against third part damage to Sites of Specific Scientific Interest
Salmon and Freshwater Fisheries Act 1975	Takes action against polluters who harm or injure fish, spawning grounds or fish food.
The Sludge (Use in Agriculture) Regulations 1989	Makes sure that recycling sludge to agricultural land is carried out in a way that protects people's and animals' health and the environment.
Cross compliance	Requires farmers who receive the Single Payment to comply with environmental protection measures (e.g. Groundwater Regulations, Nitrate Vulnerable Zones, Sludge Regulations) and to achieve good agricultural and environmental condition

Plans and programmes

The Rural Development Programme for England (RDPE) is the mechanism Defra has for supporting rural development in accordance with European regulations and runs over the 6 year period from 2007 to 2013. It is administered by a number of organisations, including the Regional Development Agencies, Natural England and the Forestry Commission and supports farming and rural businesses and heritage. The Environment Agency worked closely with Natural England in identifying the priorities for resource protection within Environmental Stewardship. There are a number of different strands which include land based skills, capital grants, advisory services and agri-environment schemes. All of these strands can also be used for promoting protection of the water environment. Agri-environment schemes that help deal with diffuse pollution from run-off and soil erosion can also be funded.

The Rural Development Programme for Wales is the mechanisms the Welsh Assembly Government has for supporting rural development in accordance with European regulations. It supports farming and rural businesses and heritage, and can be used for promoting protection of the water environment, for example through provision of advisory services to farmers. Agri-environment schemes that help deal with diffuse pollution from run-off and soil erosion can also be funded.

Other approaches

Other approaches for tackling agricultural pollution include:

- The Code of Good Agricultural Practice, which provides practical guidance to help farmers and growers avoid causing pollution
- In England, Voluntary Initiative (VI) measures aimed at minimising the environmental impacts from agricultural and horticultural use of pesticides (including annual sprayer testing and spray operator training, implementation of Crop Protection Management Plans and best practice advice on individual 'problem' pesticides). The voluntary industry

group has also formed a national strategic partnership with Natural England to deliver a whole range of advice through the Catchment Sensitive Farming initiative.

- Other voluntary schemes such as:
 - British Agrochemical Standards Inspection Scheme - a certification scheme for staff handling pesticides and fertilisers;
 - Stop Every Drop pollution reduction plan for sheep dip
 - Farm assurance schemes, including the Red Tractor, run by an alliance of farmers, food processors, retailers and distributors who work together to maintain and raise production standard, including environmental standards; The LEAF (Linking Environment and Farming) Marque has a strong emphasis on environment in its assurance scheme
- Guidance such as the 'Think Soils Manual'; Sludge (use in agriculture) code of practice and Fertiliser recommendations for agricultural and horticultural crops (RB209).
- Groundwater protection code: Use and disposal of sheep dip compounds.
- The industry group (CLA, AIC, FWAG, LEAF, NFU) has launched a "Tried & Tested" nutrient management plan in England to help farmers and growers plan their fertiliser and manure use, meet increasing regulatory demands and protect the environment. The voluntary industry group has also formed a national strategic partnership with Natural England to deliver a whole range of advice through the Catchment Sensitive Farming initiative

Implementation in the Severn River Basin District

The range of national, statutory and voluntary mechanisms are used to deal with diffuse pollution from agriculture diffuse pollution in the Severn River Basin District. The Green Futures partnership in the West Midlands provides farmers with co-ordinated advice on complying with agricultural and environmental regulations and is an example of a locally led initiative.

Advice-led partnerships to reduce agricultural pollution operate in five priority catchments under the England Catchment Sensitive Farming Initiative (North Somerset Moors, Wye, Lugg, Teme, West Midlands Meres and Mosses). The initiative is being extended to include the Rivers Tern (including Roden) and Leadon as new priority catchments.

ii) Diffuse non-agricultural pollution

Run off from transport, on-street activities such as car washing, industrial estates, forestry and leisure industries, wrong connections into the surface water sewer network and discharges from contaminated land and disused mines all contribute to diffuse pollution from non-agricultural sources.

Formal mechanisms for managing diffuse pollution from non-agricultural sources are set out in table F.6 below. Spatial planning procedures and policies, supported by the planning consultation process are also valuable mechanisms for achieving controls on diffuse pollution. In addition, Defra and Welsh Assembly Government have published a consultation on measures and mechanisms to meet the requirements of the Water Framework Directive on non agricultural diffuse pollution.¹ Defra and Welsh Assembly Government are pursuing

¹ Consultation on non agricultural diffuse pollution in England and Wales, Defra, Welsh Assembly Government, February 2007

elements of the proposals including the removal of phosphorus from laundry detergents and sustainable drainage systems and are looking at the case for further measures.

The Environment Agency's Groundwater Protection: Policy & Practice provides guidance on activities in advisory source protection zones around groundwater abstractions and promotes good practice to protect groundwater generally.

Table F.7 Mechanisms for managing non-agricultural diffuse pollution

Mechanism	What this does
<p>Water Resources Act 1991,</p> <ul style="list-style-type: none"> • Anti pollution works notices s161A • Abandonment of mines s91A & B as amended by the Mines (Notice and Abandonment) Regulations 1998 • Causing or knowingly permitting pollution, s85 • Water Protection Zones s93 	<ul style="list-style-type: none"> • Notices can be served on polluters or prospective polluters to prevent water pollution • Requires mine owners to notify the Environment Agency if they plan to abandon a mine and to produce a closure plan. • Allows prosecution for various offences where surface waters and/or groundwater is polluted • Restricts or prohibits activities in order to protect the water environment from poisonous, noxious or polluting matter
Water Industry Act 1991, s101A	Provision of first time sewerage as a solution where there may be pollution from multiple septic tanks or cesspools, providing certain conditions are met
Control of Pollution (Oil Storage) (England) Regulations 2001	Sets minimum design standards for new and existing above ground oil storage facilities
<p>Groundwater Regulations 1998 and associated statutory Codes of Practice</p> <p>Note: new Groundwater Regulations are due to be in place in Autumn 2009 and will replace the 1998 Regulations.</p>	<ul style="list-style-type: none"> • Require authorisation for disposals/discharges that might lead to inputs to groundwater of substances listed under the Groundwater Regulations (or from Autumn 2009, WFD pollutants). Such authorisations include Water Resources Act discharge consents and Environmental Permitting Regulations permits. • Notices to prohibit any activity that might lead to an input of a listed substance/WFD pollutant to groundwater. • Codes of Practice to encourage better management/prevention of releases of pollutants to groundwater.
EU driven authorisation / approval mechanisms for the marketing and use of plant protection products, biocides and veterinary medicines. (These are enforced via equivalent UK Regulations covering plant protection products, veterinary medicines and biocides)	Require human health and environmental risk assessment of products and requirement for 'authorisation' or 'approval' by UK competent authorities before the products can be marketed or used.

Mechanism	What this does
Environmental Permitting (England and Wales) Regulations 2007, which replace: <ul style="list-style-type: none"> • Pollution Prevention and Control (England and Wales) Regulations 2000 • Waste Management Licensing Regulations 1994 	<ul style="list-style-type: none"> • Allows conditions to be set in the authorisation of a process that can include pollution prevention and other actions to prevent diffuse pollution, including air emissions that can lead to acidification. • Requirements for secure storage, safe transport and controlled disposal reduce the potential for waste materials of all kinds to enter the water environment.
Coal Industry Act 1994 as amended by Water Act 2003 and supported by Ministerial Statements and a Memorandum of Understanding with the Environment Agency	Provides powers to the Coal Authority to clean up and prevent water pollution from coal mines in England and Wales together with a prioritised programme of improvements required to minewaters in order to meet WFD objectives.
Trade effluent controls under the Water Resources Act 1991 and the Water Industry Act 1991	Applies to discharges and drainage arrangements from certain industrial sites.
Detergents Regulations 2005	Covers use of detergents by industry, institutions and consumers, as well as specifying the biodegradability of active ingredients of detergents (surfactants).
Environmental Protection Act 1990, Part 2A (remediation of contaminated land) and the Contaminated Land Regulations 2006	Provides for Notices to require remediation of contaminated land to improve the quality of groundwater and surface water.

Table F.8 **Local authority controls for managing non-agricultural diffuse pollution**

Mechanism	What this does
Public Health Acts 1936 and 1961 and the Building Act 1984	Gives local authorities powers relating to wrong sewer connections.
Building Regulations 2000 - Part H	Deals with sewers and encourages the Sustainable Urban Drainage Systems approach to surface water drainage.
Building Regulations 2000 - Part J	Deals with oil storage, and complements the scope of the Oil Storage Regulations (England) 2001.
Town and Country Planning Acts, supported by planning policy or guidance (Planning Policy Statements - PPSs) (Planning Policy Wales - PPW and associated Technical Guidance Notes - TANS)	<p>In England, using the Sustainable Urban Drainage System approach to surface water drainage is promoted in PPS 23 - Planning and pollution control - and PPS 25 - Development and flood risk. Flood Risk Management policies in Development Plans identify the need for Sustainable Urban Drainage Systems to be used where local water management requires it. Conditions can be attached to development permission to require the use of Sustainable Urban Drainage Systems where it is appropriate. Planning agreements (s.106) may also be required.</p> <p>PPS 23 also requires clean up of land contamination.</p>

Mechanism	What this does
Town and Country Planning Act 1990, s215	<p>In Wales, chapter 13 (Minimising and Managing Environmental Risks and Pollution) of Planning Policy Wales covers flood risk, contaminated land, unstable land and improving the quality of water and air. Technical Advice note 15 (Development and flood risk - TAN15) supplements the policy in Planning Policy Wales - it promotes Sustainable Urban Drainage Systems but does not make it a requirement.</p> <p>Gives local authorities powers to serve a notice on the owner or occupier of amenity land, or adjacent land, in their area to improve the condition of the land.</p>

Other approaches

Other approaches, such as voluntary mechanisms, include:

- In England, the Highways Agency is developing the Highways Agency Drainage Database Management System for the strategic road network. This will be used to identify and help manage pollution risks. The Highways Agency has invested in a new fleet of salt gritters which optimise salt spreading rates and limit the risks to the water environment. They are also carrying out research into alternative de-icing agents.
- General public awareness raising, such as the Oil Care campaign, and Netregs website (Environment Agency) environmental information to small businesses.
- Influencing developers to construct Sustainable Drainage Systems in new developments, and retrofit in existing developments where practicable;
- Education and training, for example including environmental issues in Construction Industry Training Board sponsored National Vocational Qualifications.
- Joint regulator/operator agreements/memoranda of understanding, such as the Network Rail/water companies herbicide agreements, the Environment Agency/Fire Service emergency response agreements and the Environment Agency/Coal Authority Memorandum of Understanding.
- Voluntary codes of practice, such as the Timber Treatment Code of Practice, Forest and Water Guidelines, a Metal Finishers code, a photo-imaging code and the British Marine Federation/Royal Yachting Association Environmental Code of Practice and the Charter for Sustainable Cleaning (December 2004) which is driven by the detergents industry and includes key performance indicators in order to monitor progress; United Kingdom Water Industry Research Limited common framework for capital maintenance planning, and sustainable drainage systems code of practice; interim code of practice on sustainable drainage systems (published by Construction Industry Research & Information Association).
- Industry initiatives such as the Amenity Forum, which is concerned with promoting best practice in using pesticides in the amenity sector, and measures identified within the UK Strategy for the Sustainable Use of Plant Protection Products to deal with amenity and home and garden use of pesticides.
- Guidance, for example:
 - The Code for Sustainable Homes;

- Industry sector guides, such Building a Cleaner Future and the Construction Industry Research & Information Association's control of water pollution from construction sites guide;
 - Regulator guidance, such as the Pollution Prevention Guidance notes from the Environment Agency;
- Supply chain controls - for example including environmental requirements in construction contracts.
- Best practice and design manuals - such as the Highways Agency's Design Manual for Roads and Bridges.

The Environment Agency's Metal Mines Strategy for Wales 2002 prioritises sites impacted by metal mines. Defra, supported by Welsh Assembly Government, are funding a National prioritisation programme for England and Wales which is due to report in 2009.

Implementation in Severn River Basin District

The range of national, statutory and voluntary mechanisms are used to combat non-agricultural diffuse pollution in the Severn River Basin District. Operation Streamclean in the Bristol Avon, River Flylife Partnerships in the South East Welsh Valleys are just two examples of local partnership projects to tackle pollution from urban and industrial sources. There are also programmes of action to investigate and where feasible, remediate pollution problems from abandoned coal and metal mines and also historical contamination of groundwater.

F.8 Morphology - physical modifications

Hydromorphology is a term used in the Water Framework Directive to describe the processes operating within, and the physical form of, a water body, which could be a river, lake, estuary or coastal water. The term encompasses both hydrological and geomorphological characteristics that, in combination, help support a healthy ecology within these freshwater and marine environments. The Directive requires that these water bodies are managed in such a way as to protect or improve hydromorphological conditions so that the ecology is protected or enhanced. In doing so, the Directive recognises the key role that water resources and habitats play in supporting healthy aquatic ecosystems.

The sections below provide an overview of mechanisms to deliver physical improvements to the morphology of surface water bodies and to control morphological pressures with the aim of preventing deterioration of ecological status or potential:

- Inland navigation
- Spatial planning
- Land drainage and dredging of inland waters
- Flood and coastal erosion risk management
- Dredging, disposal and development in estuaries (transitional waters) and coastal waters
- Other controls, plans and programmes

i) Inland navigation

British Waterways has general environmental duties under section 22 of the British Waterways Act 1995, which include conservation of flora and fauna.

The Association of Inland Navigation Authorities has prepared the report, 'Management strategies and mitigation measures for the inland navigation sector in relation to ecological potential for inland waterways'. This formed part of the UKTAG project to develop a methodology to classify good ecological potential (GEP) for artificial water bodies (AWBs) and heavily modified water bodies (HMWBs).

Appendix A to the report gives details of the pressures and impacts associated with inland navigation, including boat movement and dredging, and Appendix B has the measures which the inland navigation sector can use to mitigate these impacts (see http://www.aina.org.uk/work_programme/WFD-RH.html).

In addition to this work, the report, "Environmental impacts of boats: a review of possible mitigation strategies for inland waterways", produced by the Green Blue initiative, provides information on mitigating the impacts of recreational boating on inland waterways. The Green Blue was set up by the Royal Yachting Association (RYA) and the British Marine Federation (BMF) to inform and educate the recreational boating sector on how to improve their environmental performance.

ii) Spatial planning

There is a sustainable development duty under the spatial planning system and environmental protection and enhancement must be considered. The statutory processes of Sustainability Appraisal (incorporating Strategic Environmental Assessment), Habitats Regulation Assessment and individual Environmental Impact Assessment processes (or other relevant assessments) provide the means for screening for potential impacts of plans, programmes and individual proposals.

Any hydromorphological impacts identified in England have to be considered in line with Planning Policy Statement 9 which states that plans, policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests. Planning decisions should seek to prevent harm in the first instance and where this cannot be achieved, be satisfied that the development cannot reasonably be located on or provided for on any alternative sites that would result in less or no harm. In the absence of any such alternatives, adequate mitigation measures must be put in place with appropriate compensation measures sought for any unavoidable residual impacts. If this is not possible, then planning permission should be refused.

To achieve this, planning policies at regional and local scale, that help control both principles and detail of development, are needed that set out specific measures or criteria to be met to address any hydromorphological impacts and to encourage hydromorphological improvements.

This is particularly important where new development requires new or changed flood defences or improved coastal defences as these can often be designed to combine improving ecological quality with providing recreation facilities ('green infrastructure') for the local community. In England, growth funding may be available from Government or from development-related funding for these projects.

Influencing the final planning decision

The Environment Agency is a statutory consultee for regional spatial strategies, local development Frameworks (England) and Local Development Plans (Wales) and is also a statutory consultee under the Strategic Environmental Assessment Directive.

Under the provisions of The Town and Country Planning (General Development Procedure) (Amendment) (No. 2) (England) Order 2006, the Environment Agency is a statutory consultee for all planning applications where flood risk is an issue and for development on, in or within 20 metres of a main river or which include culverting or controlling its flow.

In Wales Consultation with the Environment Agency on flooding issues is promoted through Welsh Assembly Government Planning Policy Wales and TAN15.

Statutory consultee status provides the means for the Environment Agency to influence the planning policy framework and the control of developments at the local level.

Overarching Planning Policy Statements such as PPS1 (Delivering sustainable development), 9 (Biodiversity and geological conservation), 25 (Development and flood risk), Technical Advice Notes (TANs) such as 5 (Nature conservation and planning), 14 (Coastal planning), 15 (Development and flood risk) will be important for protecting and enhancing the hydromorphological conditions of waterbodies. They support sustainable development and require that development proposals look to enhance the environment as part of development.

Policies dealing with hydromorphology need to be included as part of the identified priorities for the environment in Regional Spatial Strategies. Waterbodies also need to be considered in regard to the proposed scale and distribution of new housing and infrastructure in the region. Regional Spatial Strategies set the overall scale of development in each region of England for a 15-20 year period. Projects and Plans which are developed to support the implementation of the Wales Spatial Plan need to consider both potential impact and improvement opportunities for water bodies. Plans must be assessed in terms of their potential environmental consequences, including any resulting from a hydromorphological change under the SEA Directive.

These are supported by Local Development Frameworks, which include the 'portfolio' of statutory local development documents setting out the spatial planning strategy for a local authority or unitary authority area. It is important to ensure that such plans and frameworks have clear policies in respect of hydromorphology since they establish the principle of what use is proposed for a piece of land before a planning application for the detailed development is received and how that application is considered.

The Wales Spatial Planning process and partnerships provide important ways to successfully implement the River Basin Management Plan. Each Local Planning Authorities is required to produce a Local Development Plan, which sets out the spatial strategy for the next 10 to 15 years. Local Development Plans must have regard to the Wales Spatial Plan.

The Environment Agency is a statutory consultee for all planning applications where flood risk is an issue in England. In Wales, consultation with the Environment Agency on flooding issues is promoted through Welsh Assembly Government Planning Policy. This is a key delivery mechanism for improving the hydromorphological condition of water bodies and regulates development which has the potential to cause deterioration of a water body. Conditions can be required to mitigate the flood risk impacts of proposed development and we already work with local planning authorities and developers to achieve these aims.

Where new development requires flood storage areas or improved coastal defences these often combine improving ecological quality with providing recreation facilities ('green infrastructure') for the local community. In England, growth funding may be available from Government or from development-related funding for these projects.

Table F.9: Mechanisms for managing spatial planning and hydromorphological pressures

Mechanism	What this does
Town & Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999	Requires an Environmental Impact Assessment for certain activities (listed in the Schedules of the Regulations) to determine the likelihood that a proposed project (development or other activity) will have significant environmental effects. Consenting authorities can modify or reject proposals that would significantly impact on hydromorphological conditions and can secure additional conservation gains as a condition of project approval.
Environmental Assessment of Plans and Programmes Regulations 2004	Ensures the environmental implications are taken into account before certain plans and programmes are adopted. The strategic environmental assessment process is integrated throughout the development of a plan or programme, notably during data gathering, feasibility of options, development of the preferred option, and monitoring its implementation. The Environment Agency is a statutory consultee to Environmental Assessments (Strategic Environmental Assessments and Environmental Impact Assessments) produced by other public bodies and developers.
The Town and Country Planning (General Development Procedure) (Amendment) (No. 2) (England) Order 2006	Establishes the Environment Agency as a statutory consultee for any planning application for development which involves the carrying out of works or operations in the bed of, or within 20 metres of the top of a bank of, a main river which has been notified to the local planning authority by the Environment Agency as a main river for the purposes of this provision; or the culverting or control of flow of any river or stream
Planning and Compulsory Purchase Act 2004 s39	Establishes the sustainable development duty of spatial planning and establishes the principles of and need to produce Regional Spatial Strategies and Local Development Frameworks

iii) Land drainage and dredging of inland waters

Land drainage

The Environment Agency can carry out various actions on main river to cleanse, repair or otherwise maintain existing watercourses. It can improve any existing watercourse or drainage by deepening, widening, straightening, raising or otherwise improving, or by removing or altering mill dams, weirs or other obstructions. It can make any new watercourse or drainage or do any other act required for the efficient drainage of any land. Local authorities and Internal Drainage Boards have similar powers to act on ordinary watercourses.

Land drainage works undertaken by the Environment Agency, local authorities or Internal Drainage Boards can only be undertaken to maintain or improve the efficient working of

drainage systems. These powers cannot be used to undertake works for the sole purpose of improving the physical condition or conservation interest of rivers, although in some cases it can be possible to realise these benefits additionally.

The Natural Environment and Rural Communities Act 2006 gave the Environment Agency and other drainage authorities amended byelaw-making powers to ensure that the broader effects of drainage systems on the environment can be taken into account when considering land drainage consent applications under byelaws. The Environment Agency is intending to use these powers to replace regional land drainage byelaws with a single set of national byelaws. By taking greater account of the environmental impacts of land drainage activities these proposed new byelaws will help reduce impacts to hydromorphological conditions in main rivers.

The Natural Environment and Rural Communities Act 2006 provides similar byelaw-making powers to local authorities and Internal Drainage Boards. This power could be used by these authorities to redraft their byelaws to help reduce impacts to hydromorphological conditions in ordinary watercourses.

Dredging

The Environment Agency’s land drainage byelaws can be used to some extent to control dredging activities, and in some areas the Environment Agency has the power to control dredging under specific local legislation.

Dredging undertaken by public bodies (including the Environment Agency) for the purposes of land drainage, flood risk management or navigation in ordinary watercourses is exempt from land drainage consenting. Control of potentially damaging activities is limited to the development of and adherence to good practice guides and memoranda of understanding.

Table F.10: **Mechanisms for managing land drainage works**

Mechanism	What this does
Water Resources Act 1991, s109	Provides Environment Agency with regulatory control (through land drainage consenting) of the construction, alteration or repair of structures in, over or under any main river. Power is also given to Environment Agency to alter or remove any works in contravention of section 109 and recover the costs of this. Conditions can be imposed only in relation to the time and manner in which work can be carried out. Limited power to achieve WFD's hydromorphological objectives.
<ul style="list-style-type: none"> • Water Resources Act 1991, s165 • Land Drainage Act 1991 s14(2) 	Empowers Environment Agency to maintain or improve existing drainage works or to construct new works on main river. Power also extends to maintain, improve or construct drainage works for the purpose of defence against sea water or tidal water. Work can only be undertaken to improve flow conveyance and ensure the efficient working of the drainage system, though other conservation benefits may also be achieved. Equivalent powers are conferred upon Internal Drainage Boards and local authorities through section 14(2) of the Land Drainage Act 1991. Any work carried out by third parties that may impact on flow conveyance is subject to a land drainage consent from the relevant authority (Environment Agency, Internal Drainage Board or local authority) – see below

Mechanism	What this does
<ul style="list-style-type: none"> Water Resources Act 1991 s107 	Provides Environment Agency power to serve a notice in regard to main river to ensure that necessary works to improve flow conveyance are carried out, or to undertake the works and recover reasonable costs.
<ul style="list-style-type: none"> Land Drainage Act 1991, s21 and s25 	Provides Internal Drainage Boards and local authorities powers to serve a notice in regard to ordinary watercourses to ensure that necessary works to improve flow conveyance are carried out, or to undertake the works and recover reasonable costs.
Land Drainage Act 1991, s23	Provides Environment Agency and Internal Drainage Boards a regulatory control (through land drainage consenting) of the erection, raising or otherwise altering of mill dams, weirs or other like obstructions to flow. Written consent is also required for the erection or alteration of any culvert that is likely to affect the flow in ordinary watercourses.
Water Resources Act 1991, Schedule 25 as amended by s 00 of the Natural Environment and Rural Communities Act 2006	Provides power to the Environment Agency to make byelaws necessary for the efficient working of any drainage system and for regulating the effects of any drainage system on the environment
Land Drainage Act 1991s 66 as amended by s100 of the Natural Environment & Rural Communities Act 2006	Confers byelaw-making powers on Internal Drainage Boards and local authorities that are deemed necessary for the efficient working of the drainage system and for regulating the effects of any drainage system on the environment. Powers for Internal Drainage Boards only extend to ordinary watercourses.
Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999	Requires an Environmental Impact Assessment for certain activities (listed in the Schedules of the Regulations) to determine the likelihood that a proposed project (development or other activity) will have significant environmental effects. Consenting authorities can modify or reject proposals that would significantly impact on hydromorphological conditions and can secure additional conservation gains as a condition of project approval.

iv) Flood and coastal erosion risk management

The Environment Agency, local authorities and Internal Drainage Boards manage flood and coastal erosion risks within England and Wales.

The Environment Agency's flood risk management activities, and how they can benefit river basin management through the use of particular mechanisms, are guided by the following plans and strategies:

- *Making Space for Water* – the Government's strategy for sustainable flood risk management in England for the next 20 years and beyond.
- *Welsh Assembly Government Environment Strategy* – the Government's strategy for the environment in Wales which includes flood risk management.
- *Catchment Flood Management Plans* – are prepared by the Environment Agency and set long term policies for sustainable flood risk management within a catchment.

- *Shoreline Management Plans* – are prepared by coastal local authorities and the Environment Agency, and promote sustainable management policies for the coastline over a 100 year period.
- *Delivery Plans* - specific ‘delivery’ plans will be developed to determine the best measures to deliver the policy intents of Shoreline Management Plans and Catchment Flood Management Plans. These plans could include for example Water Level Management Plans, System Asset Management Plans, Local Flood Warning Plans, and Multi-Agency Response Plans for flooding.

Any flood and coastal erosion risk management strategies or schemes which are promoted in accordance with policies in Shoreline Management Plans and Catchment Flood Management Plans will have to be assessed against the requirement to prevent deterioration in ecological status or potential and will have to comply with Article 4.7 of the Water Framework Directive. Project Appraisal Guidance for flood and coastal erosion risk management schemes is being revised to take account of Government policy, the Water Framework Directive and other relevant legislation.

Flood risk management grant in aid can legally fund the provision of environmental benefits, such as river restoration work, where it is integral to a flood or erosion risk management scheme. This expenditure remains subject to Government spending rules and priorities, such as Project Appraisal Guidance and Outcome Measures.

v) Dredging, disposal and development in estuaries (transitional waters) and coastal waters

The existing legislative mechanisms for licensing works in estuaries and coastal waters provide varying levels of control. Currently, some works may require a number of licences while others are not regulated at all. The licensing system is being completely revised under the Marine and Coastal Access Act 2009.

The Environment Agency does have some remit in estuaries and coastal waters for regulation through land drainage consents and discharge consents. Most works in estuaries and coasts however are not licensed by the Environment Agency. While the Environment Agency is not a statutory consultee in the process it is standard practice for it to be consulted on applications made for licences issued by the Marine and Fisheries Agency and the Welsh Assembly Government. Many marine works are also subject to Environmental Impact Assessment and hydromorphological impacts will be assessed as part of this. Important environmental considerations for regulators are the potential hydrological effects, interference with other marine activities, the possibility of turbidity, noise, drift of fine materials smothering seabed flora and fauna, and the risk of impact to designated conservation areas. In this way new physical modifications can be assessed to see if they will cause deterioration of the hydrological and morphological conditions. This will also highlight opportunities to make improvements, where this is possible.

In England the Marine and Fisheries Agency has statutory control over marine works, which were previously the responsibility of Defra and CLG, including construction, coastal defences, dredging, marine aggregates extraction and the disposal of waste materials in the sea. The Welsh Assembly Government has established a Marine Consents Unit to administer a range of marine consents in Wales including Food and Environmental Protection Act (FEPA 1985 part II) licensing and marine aggregates extraction permissions. Both of these will be replaced by the marine licence being introduced by the Marine and Coastal Access Act 2009 and which will be issued by the Marine Consents Unit in the Welsh Assembly Government. Coast Protection Act (1949, Part II) licences will remain with the

Marine and Fisheries Agency until they are also replaced by the marine licence being introduced by the Marine and Coastal Access Act 2009.

Table F.11 provides an overview of mechanisms for managing dredging in estuaries, coastal and marine waters.

Table F.11: Mechanisms for managing dredging in estuaries, coastal and marine waters

Mechanism	What this does
Food and Environment Protection Act 1985	Controls the deposit of dredged material and construction on the sea bed
Coast Protection Act 1949	Controls any capital dredge and any dredging for navigation where there are no harbour controls
Marine Works Environmental Impact Assessment Regulations 2007	Requires an Environmental Impact Assessment for certain activities (listed in the Schedules of the Regulations) to determine the likelihood that a proposed project (development or other activity) will have significant environmental effects. Consenting authorities can modify or reject proposals that would significantly impact on hydromorphological conditions and can secure additional conservation gains as a condition of project approval.
Environmental Impact Assessment and Natural Habitats (Extraction of Minerals by Marine Dredging) (England and Northern Ireland) Regulations 2007 and Environmental Impact Assessment and Natural Habitats (Extraction of Minerals by Marine Dredging) (Wales) Regulations 2007	Marine Minerals regulations were introduced in 2007 to replace the Government View procedure and establish a scheme of regulation for marine minerals dredging.
Harbour Orders /local powers	Controls the dredging of materials within a set area associated with a port or marine

The Marine and Coastal Access Act 2009 makes provision for one marine licence combining the requirements of Food and Environment Protection Act (1985), Part 2 of the Coast Protection Act (1949) and the previous non-statutory procedure for marine minerals extraction. Importantly, the Act includes the provision for all types of dredging to be included in the marine licence, although Defra are consulting on whether maintenance dredging that has no or little impact on the environment might be exempted under the subsequent exemptions order. However, any exemption made would not compromise the objectives of the Water Framework Directive. Renewable energy schemes will need consent under section 36 of the Electricity Act 1989 and a marine licence, but will have both applications considered together under one set of procedures. In England, the Marine Management Organisation will administer the new marine licence and in Wales, the new marine licence will be administered by the Marine and Consents Unit within the Welsh Assembly Government.

The separate requirement to seek an Environment Agency land drainage Consent under the Water Resources Act 1991 and its byelaws can also be disapplied by the Environment

Agency where a marine licence is also needed for a particular activity, although we would be part of this licence process. This is an area where we can influence development and protect or try to enhance the ecology of a water body by looking at the impacts on hydromorphology.

Harbour authorities need to take account of the Water Framework Directive. The Environment Agency will continue to work with navigation authorities so that they can prepare and implement maintenance dredging plans that support river basin management. The Water Framework Directive should also be taken into account as part of their harbour orders or marine licences. The Marine and Coastal Access Act 2009 contains a power to delegate the harbour order making functions of the Secretary of State to the Marine Management Organisation to enable applications for new harbour orders and a marine licence to be considered together through one set of procedures by one body and to ensure all issues are addressed by one or the other authorisations.

Many estuaries have Natura 2000 sites and under the Conservation (Natural Habitats, & c.) Regulations 1994 (as amended), works likely to have a significant environmental impact will be subject to an appropriate assessment. Alternatively in England, under the voluntary Maintenance Dredging Protocol participating port and harbour authorities will need to produce a baseline document which will review whether the proposals will impact on the protected site. Where the works are then aligned with the objectives of the Natura 2000 site it may also be possible to protect hydromorphological conditions.

The on-line guide (<http://www.estuary-guide.net/>) sets out how to assess and manage morphological change in estuaries, coastal habitat creation, restoration and recharge schemes.

vi) Other controls, plans and programmes

The management of activities that have potential to have an impact on hydromorphological conditions is of relevance across many different sectors and, within the Environment Agency, is a requirement for many different functions. As such the management of hydromorphological pressures requires an integrated catchment management approach. This section and Table F.12 below lists other relevant mechanisms for managing hydromorphological pressures.

Table F.12: **Mechanisms for managing hydromorphological pressures**

Mechanism	What this does
Salmon and Freshwater Fisheries Act 1975 Part II	Requires that new obstructions to the passage of salmon and migratory trout (or the raising or repair of existing obstructions) be fitted with appropriate fish passes. Includes powers to serve notice (under section 9) to require these works to be undertaken. Section 2(4) of this Act makes it an offence to wilfully disturb any river or lake bed, bank or shallow on which any spawn or spawning fish may be. Proposals to extend the powers in this Act to allow passage of all fish species are outlined in the January 2009 Defra consultation on modernisation of salmon and freshwater fisheries legislation; new Order to address the passage of fish.
Water Act 2003, s 3 and 4	Empowers the Environment Agency to licence existing unlicensed impoundings or remove or else modify existing unlicensed impoundments where necessary for the protection of the environment by serving notice under section 4.

Mechanism	What this does
Conservation (Natural Habitats, & c.) Regulations 1994 (as amended)	The legislative framework (along with the Wildlife & Countryside Act 1981) through which the Habitats Directive and Birds Directive are implemented. Regulations 3(3), 3(4), 48 and 50 provide a conservation duty for Natura 2000 sites that overrides all other statutory regimes. Powers are employed to assess new and existing consents and permissions for significant adverse impacts and to provide compensatory habitat if required. Habitats Directive objectives are reflected in Water Framework Directive Protected Areas objectives and so the requirements of Habitats Directive have to be met under Water Framework Directive. The Review of Consents process does not include land drainage consents
Wildlife & Countryside Act 1981, s 28G	Places a duty on public bodies (including Environment Agency) in exercising their functions to take reasonable steps to further the conservation and enhancement of the special features of Sites of Special Scientific Interest. Limited geographical application
Wildlife & Countryside Act 1981, s 28J	Gives Natural England and Countryside Council for Wales powers to put in place a management scheme to conserve or restore the flora, fauna, geological or geophysical features of Sites of Special Scientific Interest. May need Environment Agency (or other drainage authority) consent for the works. Limited geographical application
Wildlife & Countryside Act 1981 s 28K	Gives Natural England and Countryside Council for Wales powers to serve a management notice to ensure that conservation or restoration works are implemented. Also empowers Natural England to carry out the works itself and recover the costs from the owner or occupier. May need Environment Agency (or other drainage authority) consent for the works. Limited geographical application.

Diffuse pollution control measures have significant potential to control activities that cause deterioration of hydromorphological conditions, and offer great potential to restore water bodies to a more natural condition. These mechanisms are discussed in section F.7.

Several Environment Agency plans and strategies can also be used to guide the extent (and location) of application of the mechanisms outlined in this section, including:

- Fisheries Action Plans
- Salmon Action Plans
- Eel Management Plans
- National (England and Wales) Trout and Grayling Strategy
- Sea Trout and Salmon Fisheries Strategy
- Biodiversity Action Plans
- Species action Plans
- Habitat Action Plans
- Local Biodiversity Action Plans
- Water Resources Strategy

Many restoration and enhancement projects are undertaken in partnership with, or in some

cases solely by, Natural England, Countryside Council for Wales and other conservation bodies such as the Rivers Trusts. Many projects are undertaken through voluntary agreements at local level.

The Wetland Vision

The Wetland Vision has been developed in partnership between Natural England, the Environment Agency, English Heritage, Royal Society for the Protection of Birds and the Wildlife Trusts. It sets out the need for strategic action to restore the wetland environment, mainly for nature conservation and the preservation of the historic environment, but with significant benefits for society through flood mitigation, groundwater recharge and storage of carbon. Maps have been prepared that help visualise the action needed to ensure sustainable wetland biodiversity and provide other benefits. The Vision will be implemented through existing mechanisms and partnerships, such as agri-environment schemes, remedial work to Sites of Special Scientific Interest (SSSIs), the Environment Agency's Regional Habitat Creation Programme and nature reserve acquisition.

Catchment Restoration Fund

Defra is in discussion with the Environment Agency, Welsh Assembly Government and key environmental NGOs on the potential establishment of a Catchment Restoration Fund. Such a fund would be used to deliver morphological improvements across all water body types for the purpose of helping to achieve Water Framework Directive environmental objectives.

A Defra-led project began in early 2009 to investigate the potential sources of funding for a Catchment Restoration Fund and to explore options for its administration for both England and Wales. This project has produced a report that provides a summary of regional, national and European sources of funding that currently are used by the Environment Agency and Water Framework Directive co-deliverers for hydromorphological improvements. A further draft report from this project assesses the potential benefits and limitations of a number of different administrative models for a potential Catchment Restoration Fund. This report makes recommendations for preferred options as discussed by this group of stakeholders.

Working towards delivery of new mechanisms

The Environment Agency has identified a number of gaps in, or limitations of, existing legislation that weaken the ability of the Environment Agency and other public bodies to deliver the environmental objectives of the Water Framework Directive. These limitations principally relate to the ability of the Environment Agency and other public bodies.

The Environment Agency has been working with Defra and the Welsh Assembly Government to find ways to improve the ability to limit or prevent deterioration in water body status and secure improvements to water body status. Several proposals were included in Defra consultations on the draft Flood and Water Management Bill (April 2009) and Water Protection Zones (December 2008). A summary of these is provided in table F.13 below.

Table F.13: **Possible new mechanisms for managing hydromorphological pressures**

Mechanism	What this would do
Consenting Works Affecting Water Courses	The draft Flood and Water Management Bill contains a draft clause that would enable the Environment Agency, local authorities and Internal Drainage Boards to make consents subject to reasonable conditions. Such provision would ensure that flood and coastal

Mechanism	What this would do
WFD Duty on Drainage Authorities	erosion risk management authorities are able to impose conditions on consents to prevent, limit or mitigate damage to hydromorphological conditions in line with WFD requirements. The draft Flood and Water Management Bill contains a draft clause that would place a duty on all flood and coastal erosion risk management authorities to act in accordance with WFD requirements. This is intended to ensure that the operational and regulatory flood and coastal erosion risk management activities of these authorities are undertaken so as to secure compliance with the requirements of the WFD.
Power to Improve Hydromorphological Conditions	The draft Flood and Water Management Bill consults on proposals for the provision of a permissive power for the Environment Agency to enter land and undertake works for the purpose of improving hydromorphological conditions as necessary to achieve WFD environmental objectives. Such a power would be employed in cases where the existing suite of delivery mechanisms had failed to deliver necessary improvements to hydromorphological conditions.
Water Protection Zones	The Defra/ Welsh Assembly Government consultation on Water Protection Zones (December 2008) proposed legislative change to section 93 of the Water Resources Act 1991. This would allow the Environment Agency to use WPZs to manage or prohibit a specific set of high risk activities causing direct or indirect damage to the hydromorphological condition of the bed, banks and riparian zone of surface water bodies.
Works Notices and Emergency Works	The Defra/ Welsh Assembly Government consultation on Water Protection Zones (December 2008) proposed legislative change to sections 161 and 161A of the Water Resources Act 1991. The proposed changes would allow the Environment Agency to issue a Works Notice, in cases where damage has been caused to the morphological condition of controlled waters, to require restoration of those waters to their state immediately before the damage occurred. The Environment Agency would also be empowered to act itself to restore controlled waters where damage has been caused or to investigate the cause of damage, with cost recovery.

Implementation in the Severn River Basin District

The fish pass at Pontymoel weir on the River Lwyd is an excellent example of a hydromorphological improvement. The River Lwyd rises North of Blaenavon, joining the River Usk South of Caerleon in South East Wales. The current Ecological Status for the majority of the river is 'Poor' and this is driven by the fisheries classification. One of the major factors impacting upon the fish was the total barrier to migration at Pontymoel weir just south of Pontypool.

The historic weir dates back to the early 1800s and forms the footings for the Aqueduct of the Monmouthshire to Brecon Canal as it crosses the River Lwyd. Funding for a Fish Pass was provided by the Financial Instrument for Fisheries Guidance, a source of European funding specific to creating fisheries improvements.



The Larinier-type Pass, with two flights of baffles and two rest pools, will allow salmon, sea trout and brown trout to travel to their preferred spawning areas. The Pass, which opened in early 2009, has been designed so that a fish counter can be installed, and this - along with monitoring the juvenile salmonid population upstream, and the catches anglers make – will help in judging just how successful it is.

F.9 Fishing and fish stocking

The Environment Agency's responsibility for the management of fisheries covers England and Wales and extends out to 6 nm from the baselines. In carrying out its functions, the Environment Agency's principle aim is to protect and enhance the environment and take the appropriate steps towards achieving sustainable development. With regards to fisheries, the Agency is required to maintain, improve and develop migratory and freshwater fisheries. This includes:

- Ensure conservation and maintain diversity of fish and conserve the aquatic environment
- Enhance the contribution that salmon and freshwater fish make to the economy
- Enhance the social value of fishing

The Environment Agency is also required to maintain healthy fish populations, and ensure that inappropriate fish species are not introduced and that the diseases or parasites they may carry are adequately controlled.

In most recreational fisheries it has become popular to practise catch and release (almost 100% for coarse fish and more than 50% for salmon) or to re-stock to maintain the fish population. The main commercial fisheries that remove fish are those for inshore fisheries, salmon/sea trout and eel, and the 4000 consents to crop coarse fish that we regulate each year.

Formal mechanisms that help the Environment Agency to conserve and protect fish populations are set out below.

Table F.14: **Mechanisms for managing fisheries**

Mechanism	What this does
National spring salmon byelaws	Prohibits the killing of salmon before 1 June each year
Fisheries byelaws	Controls on fishing activities, such as bans on use of live bait and restricting the fishing methods used.
Fish Health Directive	Requires fish farms, suppliers and fisheries to be registered or authorised so that the transfer of fish diseases is better controlled
Import of Live Fish Act (ILFA) 1980	Controls spread of non-native species. ILFA regulates the import, keeping and release of non native fish in England and Wales, by means of Orders relating to specific listed species.
Prohibition of Keeping or Release of Live Fish (Specified Species) Order 1998 (as amended in 2003)	Prohibits the keeping or release of listed non-native species except under licence.
Prohibition of Keeping of Live Fish(Crayfish) Order 1996	Prohibits, with one exception being signal crayfish (<i>Pacifastacus leniusculus</i>) in areas where it has become established, the keeping of any non-native crayfish except under licence.
Wildlife and Countryside Act 1981	Prohibits the releasing to the wild of scheduled invasive-non-native species or allowing them to escape into the wild.
Salmon & Freshwater Fisheries Act 1975, s30	Prohibits the release of fish into inland waters without consent.
Salmon and Freshwater Fisheries Act 1975	Provides various powers for the protection and management of fisheries, including the introductions of orders that limit the number of nets fishing in a public fishery.
Water Resources Act 1991	Sets out the responsibilities of the Environment Agency in relation to water pollution, resource management, flood defence, fisheries, and in some areas, navigation.
Environment Act 1995	Sets up the Environment Agency and set new standards for environmental management
Other related legislation	These include the Salmon Act 1986 etc.

In addition to these a number of informal mechanisms are available.

The Environment Agency works with national and local organisations to improve awareness of issues and to promote good practice. Accreditation schemes that promote fish welfare and conservation help with this and include schemes that relate to products used by anglers.

Fisheries action plans are local plans developed in partnership between the Environment Agency and local angling and fisheries groups, with input from conservation and other interest groups. They are based on river catchments, but cover canal and still-water fisheries as well as rivers. They may cover a wide range of issues from fish habitat through to angling promotion and land management. Each Fisheries action plan is different and reflects the

concerns and priorities of local angling and fisheries interests.

Salmon and eel action plans have been prepared that identify a range of pressures that need to be addressed to improve salmon and eel stocks. The Environment Agency's strategy for the management of salmon fisheries in England and Wales requires the production of an individual Salmon Action Plan (SAP) for each principal salmon river. As well as updating these plans at regular intervals, they will be progressively integrated to the 6-yearly Water Framework Directive Planning Cycle. Whilst the strategy recognises the need to maintain a national overview of salmon conservation, the key component requires individual stocks to be managed effectively. Government has instructed the Agency to set Conservation Limits (CLs) for individual rivers and to refine these limits and the way they are used to take account of improvements in methodologies and new data. This approach is endorsed by the North Atlantic Salmon Conservation Organisation which is an inter-governmental body concerned with salmon conservation at an international level.

The Anglers Monitoring Initiative is a national scheme led by the Riverfly Partnership. Anglers use a simple technique, with reference to riverflies, to monitor river water quality. This complements the Environment Agency's invertebrate monitoring programme and helps ensure that water quality is checked more widely so that action can be taken at the earliest opportunity if problems are apparent. It is a good example of collaborative working between communities and the statutory bodies, which has widespread support. It deters casual polluters and helps identify waters for further investigation.

Future mechanisms that will be introduced to ensure more appropriate measures are in place is highlighted below:

In response to the collapse of the single European eel stock across Europe, the European Commission published Council Regulation No 1100/2007 introducing limits on eel fisheries. We have produced Eel Management Plans (EMPs) which set out the necessary measures and timescales to achieve 40% escapement of silver eel. Some of the measures needed includes: eel net limitations; close seasons; maximum size limits; regulation of eel traders; and traceability of imports and exports of eels.

The Marine and Coastal Access Act 2009 provides the Environment Agency with new powers and modernised tools for the effective management of fisheries and their enforcement, to enable the better protection of stocks and their habitats. Such powers include provisions to make emergency byelaws to respond effectively and promptly to unforeseen threats to fish stocks; modify the existing fishing licensing regime and introduce an authorisation regime for some fishing activities; and they give powers for Ministers to introduce a new regulatory scheme to manage the movement of live fish in order to protect local and national biodiversity.

The Environment Agency have day-to-day responsibility for the regulation and management of migratory and freshwater fisheries in England and Wales, including the Border River Esk in Scotland, but excludes the English River Tweed.

The Marine and Coastal Access Act 2009 establishes Inshore Fishing and Conservation Authorities (IFCAs) in England, previously Sea Fisheries Committees (SFCs), and can introduce byelaws for the regulation of sea fisheries that have an impact on salmonids, in order to protect these species. In Wales, the Welsh Assembly Government will be responsible for overall sea fisheries management.

This arrangement exists currently and will continue under the Act. This is because salmon and other migratory species are included in the wider definition of the 'marine environment'

and so byelaws to regulate sea fisheries (e.g. requirements to set a bass net at a certain level so that salmon can swim over) can continue. IFCA's and Welsh Assembly Government will work with the Environment Agency – as SFCs do now - so appropriate measures can be taken to regulate sea fish for the protection of salmon and other migratory species.

Implementation in the Severn River Basin District

The Environment Agency issued 773 consents in 2007 to stock fish to freshwaters in the Severn River Basin District.

F.10 Alien species - invasive non-native species

Invasive non-native (or alien) species are those species that are not native to this country, or to a particular water body. After being introduced accidentally or deliberately, they may become established and may have the ability to out-compete native species, taking over their new environments. They are commonly referred to as invasive non-native species (INNS) or invasive alien species (IAS).

Management of this problem will be led by the “Invasive Non-native Species Framework Strategy for Great Britain”, Defra, May 2008. (available at the GB Non-Native Species Secretariat website <http://www.nonnativespecies.org/>)

Key measures in the strategy include:

- Developing ways to educate people on the risks from invasive non-native species, and how to help avoid introducing these species.
- Developing a web-based shared Non-Native Species Information Portal that will show the distribution of non-native species and more detailed factsheets for 300 species
- Developing expertise for early identification of potential problem species that may already be here or on their way, and the best ways to handle them.
- Developing a clear framework for rapid responses when invasive species are detected for the first time in Britain.
- Encouraging a partnership approach to managing invasions.
- Supporting research on cost-effective methods to address established invasions.

An action plan has been developed by the GB Programme Board to implement this strategy which sets out actions to tackle the problems of non-native species across England and Wales. A non-native invasive species steering group has been established that will develop an action plan for Wales.

Some of the formal mechanisms already available include the following:

Table F.15: **Mechanisms for managing invasive non-native species**

Mechanism	What this does
Import of Live Fish Act (ILFA) 1980	Controls spread of non-native species. ILFA regulates the import, keeping and release of non native fish in England and Wales, by means of Orders relating to specific listed species.

Mechanism	What this does
Prohibition of Keeping or Release of Live Fish (Specified Species) Order 1998 (as amended in 2003)	Prohibits the keeping or release of listed non-native species except under licence.
Prohibition of Keeping of Live Fish(Crayfish) Order 1996	Prohibits, with one exception being signal crayfish (<i>Pacifastacus leniusculus</i>) in areas where it has become established, the keeping of any non-native crayfish except under licence.
Wildlife and Countryside Act 1981	Prohibits the sale of, and releasing to the wild of scheduled invasive-non-native species or allowing them to escape into the wild.
Salmon & Freshwater Fisheries Act 1975, s30	Prohibits the release of fish into inland waters without consent.
Fisheries byelaws	Controls on fishing activities, such as bans on use of live bait (or by using the licence schemes described above).

Guidance on good practice to avoid introducing invasive non-native species, or to detect and/or eradicate these is given in national codes of practice, such as “The knotweed code of practice” for managing Japanese knotweed on development sites (Environment Agency, 2006) and the Horticultural Code of Practice (Defra, 2005).

Partnerships between ports authorities and other interested groups have introduced guidance under the International Convention for the Control and Management of Ship’s Ballast Water and Sediment (to be ratified).

Direct action to detect and eradicate invasive non-native species may be taken locally, often in partnership with others (for example a local “Invasive non-native species forum”) and as part of Local Biodiversity Action Plans. Flood risk river management programmes often include actions to manage non-native plant species where they have an impact on flood risk. Areas of high biodiversity value, or of high risk from plant-induced flooding, may benefit from plans to prevent invasive non-native species from becoming established.

Implementation in the Severn River Basin District

In the Severn River Basin District there are several of locally-led measures. The Bristol Invasive Weeds Forum and a Partnership Project to eradicate Giant Hogweed and treat Himalayan Balsam and Japanese Knotweed on the rivers Wye and Usk are two examples of locally-led partnership actions.

F.11 Direct discharge of pollutants into groundwater

The direct discharge of pollutants into groundwater is discouraged but can be allowed in some locations and in specific circumstances. Any direct discharge must still comply with the overall objectives of the Water Framework Directive and Groundwater Daughter Directive. That is, the discharge does not cause pollution, the input of hazardous pollutants is prevented, the status of the groundwater body is not reduced and there is no significant rising trend of pollutants that needs to be reversed. Direct discharges of List I substances are already prohibited by the Groundwater Directive, which is put into effect through the

Groundwater Regulations 1998 and other legislation noted under F.2 xi above, subject to certain exemptions.

F.12 Priority substances

The Water Framework Directive provides for the identification of priority substances (PS) for which the objectives are a progressive reduction of discharges, emissions and losses and, for a subset of priority hazardous substances (PHS), a cessation or phasing-out of discharges, emissions and losses within 20 years. It also requires the determination at European Union level of environmental quality standards (EQS), which will be used as criteria for the assessment of 'good chemical status' for surface water bodies. The 'priority list' of dangerous substances was agreed by co-decision (Decision 2455/2001/EC) in 2001. Priority substances were selected on a risk-based prioritisation process which identified both priority substances and priority hazardous substances using monitored and modelled data demonstrating EU-wide significance, and taking into account their persistence, bioaccumulation and toxicity.

There are 33 priority substances (or groups of substances), of which 13 have been identified as priority hazardous substances. Environmental quality standards for these substances were published in December 2008 in the Priority Substance Daughter Directive (2008/105/EC). All the standards in that Directive must be met for a surface water body to be classified as being of 'good chemical status'

The Priority Substance Daughter Directive reiterates that the objectives and provisions of Water Framework Directive Article 4 apply. Therefore the objectives to achieve 'good chemical status' and for a progressive reduction of priority substances and cessation of priority hazardous substances are subject to disproportionate cost and technical infeasibility considerations.

A further objective of the proposal is for Member States to take measures aimed at ensuring, subject to Water Framework Directive Article 4, that concentrations of certain priority substances that tend to accumulate in sediment and/or biota do not significantly increase. Member States are also to establish an inventory of emissions, discharges and losses of the pollutants listed in the Priority Substance Daughter for each river basin district.

Until June 2009, measures for priority substances were set out in European Community Council Regulation No 793/93 of 23 March 1993 on the Evaluation and Control of the Risks of Existing Substances. This legislation required risks to human health and the environment (including the water environment) to be assessed. Where risks were confirmed, risk reduction strategies were implemented. This legislation has been the main factor driving restrictions on certain chemicals (such as nonylphenol) due to their impact on the water environment and will be replaced and expanded by the REACH (Registration, Evaluation, Authorisation and restriction of Chemicals) Regulations. REACH manages chemical substances produced or imported into the European Union in quantities over one tonne a year. This includes registration and assessment of risks to human health and the environment. Substances of high risk to human health or the environment will be subject to high levels of control. The REACH Regulations came into force on 1 June 2009.

The competent authority for managing REACH in England and Wales is the Health and Safety Executive, working closely with the Environment Agency and other key partners.

Many of the mechanisms listed in F.6 (point source pollution) and F.7 (diffuse pollution) can be used to avoid or limit pollution from priority substances.

Other available mechanisms for managing priority substances are given in Table F.16.

Table F.16: **Measures for managing priority substances**

Mechanism	What this does
<p>Controls on point or diffuse sources of pollution under:</p> <ul style="list-style-type: none"> • Water Resources Act 1991 • Groundwater Regulations 1998 <p>And under the Environmental Permitting Regulations (England and Wales) 2007, which replace:</p> <ul style="list-style-type: none"> • Pollution Prevention and Control (England and Wales) Regulations 2000 • Waste Management Regulations 1994 • Landfill Regulations 2002 • Waste Management Regulations (England and Wales) 2006 (Agricultural Waste Regulations) 	<p>Place controls on discharges or disposals of priority hazardous substances; eliminates, reduces and renders emissions harmless.</p> <p>(See also Section F.6 on Point Source Discharges and Section F.7 on Diffuse Source Pollution)</p>
Control of Pollution Act 1974 and Food and Environment Protection Act 1985	Bans use of tributyltin (TBT) on boats less than 25m long.
European Regulation 782/2003	Removal of tributyltin (TBT) from hulls by July 2003. No vessels in European Union waters by 2008 with TBT on their hulls.
Marketing and Use Restriction under Regulation European Community 850/2004	Bans use of particular substances in the European Union.
Marketing and Use Restrictions under the Control of Pesticides Regulations 1986	Bans or restricts use of priority hazardous substances used for pesticides.
World-wide treaty on Persistent Organic Pollutants	Bans marketing and use of these substances

The European Union mercury strategy and the work of the OSPAR Commission² have reduced the use of mercury in industry, including a ban on mercury thermometers.

The Environment Agency's Memorandum of Understanding with the Coal Authority deals with the prevention of new discharges and remediation of existing discharges from abandoned coal mines, exchange of information, research and to ensure (as far as possible) operators deal with potential pollution from closure of licensed coal mines

There are several national assurance schemes that help to minimise the environmental risks from sheep dip chemicals and prevent further environmental damage. These include Linking Environment and Farming, Local Environment Risk Assessment for Pesticides, voluntary agreements on use of pesticides and sheep dip, for example Pesticide Voluntary Initiative (in England) with Defra, WaterUK, and the Environment Agency.

Registration of users and certificates of competence under BASIS - minimises the

² The 1992 OSPAR (Oslo-Paris) Convention is the current instrument guiding international cooperation on the protection of the marine environment of the North-East Atlantic

environmental risks from sheep dip and other chemicals and prevents further environmental damage.

Pollution Reduction Programmes are also in place for the following substances:

Priority Substances: 1,2-Dichloroethane, Alachlor, Atrazine, Chlorfenvinphos, Diuron, Simazine and Trifluralin, Benzene, Chlorpyrifos, DEHP, Dichloromethane, Isoproturon, Lead, Naphthalene, Nickel, Octylphenol, Pentachlorophenol, Trichlorobenzenes and Trichloromethane.

Priority Hazardous Substances: Anthracene, Cadmium, Endosulfan, Hexachlorobenzene, Hexachlorobutadiene, Hexachlorocyclohexane, Mercury, Nonylphenol, PAHs, Pentabromodiphenyl ether, Pentachlorobenzene, Short chain chlorinated paraffins and tributyltinTBT.

Specific Pollutants: 2,4-D, Cypermethrin, Diazinon, Dimethoate, Linuron and Mecoprop.

These provide information on probable sources, and possible measures together with their likely contribution to status and their cost-effectiveness.

These provide information on probable sources, and possible measures together with their likely contribution to status and their cost-effectiveness. They also set out how progress will be made towards stopping use of Priority Hazardous Substances and compliance with status objectives for other chemicals. Pollution Reduction Plans were released in September 2009.

The Environment Agency has published pollution prevention guidance, including guidelines on sheep dipping (PPG12).

Groundwater protection codes:

- Use and storage of solvents - prevents pollution from solvents.
- Groundwater protection code: Use and disposal of sheep dip compounds - minimises the environmental risks from sheep dip chemicals and prevents further environmental damage.

Implementation in the Severn River Basin District

Pollution prevention campaigns

In the Severn River Basin District, key locally targeted pollution prevention campaigns relevant for chemicals include work to tackle pollution issues on Industrial Estates in the River Taff catchment.

The River Taff rises on the southern edge of the Brecon Beacons and descends in a steep valley through Merthyr Tydfil, Pontypridd and Cardiff to the Severn Estuary. Heavy industry and urban development along the valley floor and banks of the main river and tributaries led to a river which used to run black with coal dust and was too polluted for many fish to live in. The Taff today is cleaner now than it has been for generations and there has been much hard work to improve the habitat for fish and to remove any barriers to their migration. However, there are still problems to tackle in the catchment, such as those experienced around Treforrest Industrial Estate where biological investigations indicate an impact from the North outfall.



A working group involving the estate managers, owners, Environment Agency and Welsh Water was set up to find a solution. A targeted investigation plan has been put into action with pollution prevention visits being made to companies occupying units closest to the outfall and dye tracing of their foul water lines. This has identified several polluting discharges wrongly connected to the surface water system. The targeted drainage inspection regime, company visits and partnership work will help reduce the frequency of illegal discharges and minimise pollution events from this problematic outfall, improving the water quality of the River Taff.

Safe use of pesticides on livestock farms

The Cain Valley Catchment Initiative works with farmers to reduce the impact that their activities has on the wider environment. The Cain Valley in Powys, is home to many sheep flocks and the effective control of ecto-parasites is a major challenge for sheep farmers requiring the use of pesticides. Run by Environment Agency Wales, the Initiative provides advice and guidance to farmers on the safe use of pesticides for controlling ecto-parasites



on sheep. It covers the process of dipping sheep, methods to control contamination of water courses by freshly dipped sheep and the disposal of spent dip. While many farmers opt to use sheep dip, there are various alternative control methods available that do not require dipping and therefore do not pose the same risk to the aquatic environment through accidental spillage, contamination from sheep entering watercourses and the difficulty of disposing of spent dip.

Building on the 'Stop every drop' campaign, industry backed demonstrations and best practice advice was delivered through a series of workshops involving the Cain Valley Catchment Co-ordinator, local farmers, Health and Safety Executive and pesticide suppliers to raise awareness of alternative yet effective control strategies.

F.13 Accidental pollution incidents

Mechanisms set out above in sections F.6 on point source discharges, F.7 on diffuse source pollution and F.11 on priority pollutants can also be used to help avoid or deal with the effects of accidental pollution. Educational programmes and raising public awareness are also valuable mechanisms.

The more specific measures to prevent or reduce the impact of accidental pollution incidents are set out in Table F.17.

Table F.17: **Mechanisms to prevent or reduce accidents**

Mechanism	What this does
Control of Major Accident Hazard Regulations 1999 in partnership with Health & Safety Executive	Minimises accidents from stored pollutants.
Environmental Permitting Regulations (England and Wales) 2007	Controls on process industries to minimize accidental emissions
Water Resources Act 1991 <ul style="list-style-type: none"> Liability for sewage discharges from sewerage system, s87 Works notices, s161A Storage of pollutants and use of Water Protection Zones, s93 Flood warnings, s166 	<ul style="list-style-type: none"> Makes sure sewerage undertakers (owners/operators) prevent illegal inputs to sewage treatment works To prevent/reduce pollution. Minimises/Prevents accidents from stored pollutants. Carry out flood defence functions, including flood warnings, by use of committees
Groundwater Regulations 1998 (due to be replaced in Autumn 2009 by new Groundwater Regulations)	Notices to prohibit any activity that might lead to an input of a listed substance/WFD pollutant to groundwater.
Control of Pollution (Oil Storage) (England) Regulations 2001	Minimises/Prevents accidents from oil storage.
The Environmental Damage (Prevention and Remediation) (England) Regulations 2009 The Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009	Prevention and remedying of environmental damage to habitats and species protected under EC law and to species or habitat on a site of special scientific interest. Environment Agency, local authorities, Natural England and Marine and Fisheries Agency

Planning for managing accidents can help prevent a spill becoming a pollution incident. Emergency Planning activities are carried out by a range of organisations, including central government and local authorities, and by industry and business.

An example is the Maritime and Coastguard Agency's National Contingency Plan which deals with pollution incidents in the marine environment. Owners and masters of ships and the operators of offshore installations have the responsibility for ensuring that they do not pollute the sea. Harbour authorities are responsible for ensuring that their ports avoid marine pollution and for responding to incidents within their limits. The Marine and Coastguard Agency will also provide national support to ships, offshore installations, harbour authorities and coastal local authorities where this is necessary.

Implementation in the Severn River Basin District

In the Severn River Basin District in 2008 there were:

- 15 category 1 and 58 category 2 incidents³ affecting the water environment

Further information is available on the Environment Agency's website at <http://www.environment-agency.gov.uk/research/library/data/34363.aspx>

³ Category 1 incidents have a serious, and often persistent, effect on quality water, air or land, with and uses that are dependent on these, such as ecosystems, public supply abstractions. Category 2 incidents are significant but less severe.

F.14 Marine waters

Much of the pollution in marine waters comes from the land and freshwater. Many of the measures listed in previous sections help to avoid marine waters becoming increasingly polluted. Particularly relevant are:

- Section F.6 on point source discharges;
- Section F.7 on diffuse source pollution;
- Section F.8 on hydromorphology, especially controls relating to managing sediment in estuaries by activities such as maintenance dredging (including disturbance of trybutyl tin accumulation), flood risk management and development;
- Section F.10 invasive non-native (alien) species related to shipping and ballast waters;
- Section F.12 on priority hazardous substances particularly polyaromatic hydrocarbons (PAH), and agricultural pesticides;
- Section F.13 on accidental pollution.

There are also specific mechanisms used to avoid increased pollution in seas. These include:

Table F.18: **Mechanisms for managing pressures on marine waters**

Mechanism	What this does
Urban Waste Water Treatment Regulations 1994	Bans disposal of sludge to sea
Sea Fisheries (Regulation) Act 1966	Sea Fisheries Committees can make byelaws for managing and conserving their district's fisheries
Environment Act 1995	The Environment Agency regulates fishing for salmon, migratory trout and eels to 6 nautical miles. The Marine and Coastal Access Act adds smelt and lamprey to this list
Water Resources Act 1991	It is an offence to pollute controlled waters by causing or knowingly permitting entry or discharge of polluting matter. The WRA 1991 requires conditional consents for point source discharges to water - see section F4. These controls extend out to 3 nautical miles from the baseline

- In England, the Marine and Fisheries Agency regulate the marine consents and licensing work and marine aggregates extraction previously undertaken within Defra and CLG. This includes the Coast Protection Act (1949, Part II) licences and Food and Environment Protection Act (1985, Part 11) licences and marine aggregates extraction permissions.
- In Wales, the Marine and Fisheries Agency regulate the Coast Protection Act (CPA 1949 Part II).
- The Welsh Assembly Government marine licensing unit regulates Food and Environment Protection Act (FEPA 1985 part II) licensing for Wales.
- Sea Fisheries Committees can make byelaws for managing and conserving their districts' fisheries under the Sea Fisheries (Regulation) Act 1966 (out to 6nm). Byelaws can be used to control fishing activities to prevent bed sediments being disrupted, bed habitat

being removed, flow/sediment dynamics being altered, contaminants being disturbed, and changes to water quality. These committees will be replaced by Inshore Fisheries and Conservation Authorities in England, while in Wales, Welsh Assembly Government will assume responsibility following implementation of the Marine and Coastal Access Act 2009. They will cover a similar area but take over all estuaries in England including those for which the Environment Agency is currently responsible.

- The Marine and Fisheries Agency has responsibility for enforcing sea fisheries regulations within English and Welsh waters (out to 200nm or the median line with neighbouring states) under the European Union's Common Fisheries Policy. It also enforces national fisheries measures, including those implemented under the Sea Fish (Conservation) Act 1967 and associated regulations (The Marine and Fisheries Agency will be replaced by the Marine Management Organisation in England, and the Welsh Assembly Government in Wales following implementation of the Marine and Coastal Access Act 2009).
- Controls on the operators of shell fisheries and fish farming are available through - Centre for Environment, Fisheries, and Aquaculture Science register, seabed licence from the Crown estate, several regulating Orders.

The Marine and Coastal Access Act 2009 provides for a better system of achieving sustainable development of the marine and coastal environment is expected in the next parliamentary session. This will introduce:

- A new strategic marine planning system;
- Streamlined marine licensing;
- Improved inshore fisheries management, including Sea Fisheries Committee reform;
- Nature conservation legislation – including the creation of marine conservation zones.
- Clauses on coastal access;
- New migratory and freshwater fisheries legislation.

There will also be a new marine management organisation in England which will play a key role in protecting or ensuring 'good status' so that the aims and objectives of the Water Framework Directive are met. Marine planning will enable development in the marine environment to be better balanced and the environment to be fully considered, and this will be taken into account in making decisions on future licensing applications. It is important that River Basin Management Plans inform the new marine planning system. The introduction of national marine protection areas 'Marine Conservation Zones' will help to protect nationally important biodiversity, which will help achieve Water Framework Directive objectives in protecting important parts of estuaries and coastline. In particular protection for areas which provide nursery grounds for juvenile fish would be proposed. This would not mean that all activities would need to be prohibited in these areas and some controls may only be necessary at certain times of the year. In Wales, the intention is to create some Highly Protected Marine Conservation Zones to complement the existing marine Special Areas of Conservation and Special Protected Areas designated under the Habitats Directive regulations. The new fisheries legislation and the new Inshore Fisheries and Conservation Authorities and Welsh Assembly Government will provide better measures to protect and manage migratory and sea fisheries.

You can find further information, on the Marine and Fisheries Agency website at: <http://www.mfa.gov.uk> and on the Welsh Assembly Government [website](#).