local environment agency plan

WEST DORSET

CONSULTATION REPORT

NOVEMBER 1997

ENVIRONMENT AGENCY

WEST DORSET
LOCAL ENVIRONMENT AGENCY PLAN
CONSULTATION REPORT

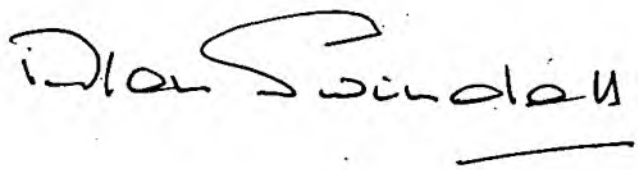
Foreword

This Plan is one of a series that is being prepared to cover the whole of England and Wales. Together they represent a significant step forward in environmental thinking. It has been clear for many years that the problems of land, air and water, particularly in the realms of pollution control, cannot be addressed individually. They are interdependant, each affecting the others. The Government's answer was to create the Environment Agency with an umbrella responsibility for all three, and these Plans are one of the principal ways in which the Agency is approaching the task of bringing them together within an overall programme.

Like most of these Plans, this one covers very contrasting areas. The western part is basically rural while the eastern section is dominated by the more urban character of Weymouth and Portland. It does, however, differ from most in covering a number of small catchments rather than a single river.

The issues covered in this Plan are central to the future quality of life for all the people who live in the area. They complement the work being done by the local authorities, and are strongly allied to the environmental aims of the various Local Agenda 21 Groups. These Plans influence the priorities of the Environment Agency in the area, and so must be of great importance to the growing number of people who are concerned for the environment.

So, do please read this document. Think about its contents, discuss it with your colleagues, and let us know your conclusions. The decisions which emerge from it may affect the life of your children; they shouldn't be left to the experts alone.



Alan Swindall

Chairman, South Wessex Area Environment Group of the Environment Agency

WEST DORSET

LOCAL ENVIRONMENT AGENCY PLAN

CONSULTATION REPORT

Your views

West Dorset is the second Local Environment Agency Plan (LEAP) produced by the South Wessex Area of the Environment Agency.

This Consultation Report is our initial view of the issues; public consultation allows people who live in or use the area to have a say in the development of our plans and work programmes. We welcome your ideas on our future management of this area:

- Have we identified all the issues?
- Have we identified all the options for solutions?
- Have you any comments on the issues and options listed?
- Do you have any other information or views that you wish to bring to our attention?

This is your opportunity to influence our future plans.

We look forward to hearing from you.

Howard Davidson

Area Manager, South Wessex Area of the Environment Agency

Please send your comments by 31 January 1998, preferably by writing to:

The LEAP Team
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Rivers House
Sunrise Business Park
Higher Shaftesbury Road
Blandford Forum
Dorset DT11 8ST
Tel: 01258 456080 Fax: 01258 455998

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Our draft vision statement for this Plan area

This Plan covers an area of exceptional natural beauty and diversity, including:

- the urban centres of Weymouth and Bridport
- small coastal rivers like the Char, Brit and Bride
- the important wetland areas of Radipole and Lodmoor
- the Isle of Portland
- Chesil Beach, the Fleet and Lyme Bay, coastal features of international importance

Our Vision is of a healthy and diverse area, managed in a sustainable way in which economic and social needs are met in ways which will maintain high environmental quality standards.

Our Plan will help to ensure that:

- discharges to land, air and water do not harm the environment
- the abundance and diversity of wildlife and habitats is maintained and, where appropriate, restored or enhanced
- there is minimal risk to people and property from flooding
- there is environmentally sustainable use of water resources
- waste generation is minimised and the quantity of waste requiring disposal is reduced through the principles of reuse and recovery
- features of archaeological and historical interest are conserved
- people's enjoyment of the environment continues to grow

We cannot realise this vision on our own, and will seek to work in partnership with local authorities, industry, farmers, environmental groups and other interested organisations to turn this Vision into reality.

Part 1

1. Introduction

1.1 The Environment Agency

The Environment Agency is a major and powerful force with the task of safeguarding and improving the land, air and water environment in an integrated way. It was formed by bringing together the National Rivers Authority (NRA), Her Majesty's Inspectorate of Pollution (HMIP), the Waste Regulation Authorities (WRAs) and some parts of the Department of the Environment (DoE) dealing with technical aspects of waste and contaminated land.

1.1.1 Sustainable development

In 1987, the World Commission on Environment and Development (the Brundtland Commission) defined sustainable development as that *which meets the needs of the present without compromising the ability of future generations to meet their own needs.*

Sustainable development brings together environmental protection, providing for the future, quality of life, and fairness, to create a new policy which integrates environmental, developmental, social and economic concerns.

1.1.2 Our principal aim

Our aim is to protect or enhance the environment, taken as a whole, in order to play our part in attaining the objective of sustainable development.

1.1.3 Our objectives

We work towards sustainable development through seven objectives set by Ministers:

- an integrated approach to environmental protection and enhancement, considering the impact of all activities and natural resources
- delivery of environmental goals without imposing excessive costs on industry or society as a whole
- clear and effective procedures for serving our customers, including the development of single points of contact within the Agency
- high professional standards, using the best possible information and analytical methods
- organisation of our own activities to reflect good environmental and management practice, and provision of value for money for those who pay our charges, and for taxpayers as a whole
- provision of clear and readily available advice and information on our work
- development of a close and responsive relationship with the public, including local authorities, other representatives of local communities and regulated organisations

1.1.4 Our umbrella duties

There are a number of umbrella duties which we carry out for all our functions:

- Rural Areas - when considering any proposal, we must have regard to any effect which the proposals would have on economic and social well-being of local communities in rural areas. Some of our activities, such as meeting statutory objectives, emergency actions and the taking of legal actions are not subject to this appraisal
- Costs and Benefits - we are required to take into account the likely costs and benefits when deciding whether to exercise our powers. Costs include both financial costs and costs to the environment; benefits include those which communities will enjoy, both now and in the future
- Conservation - we must have regard to conservation in our pollution control functions, and we have a duty to further conservation in all our other functions. We also have a duty generally to promote the conservation of flora and fauna dependent on the aquatic environment

1.1.5 What we do not do

We do not cover all aspects of environmental legislation and service to the general public. Your local authority deals with:

- all noise problems
- litter
- air pollution from vehicles, household areas, small businesses and small industries
- planning permission (they will contact us when necessary)
- contaminated land issues (at present in liaison with ourselves)
- environmental health issues including control of invasive weeds on non-main river and notification of health risks from blue-green algae
- coastal erosion, and most flood defence matters on non-main rivers

1.2 Environmental standards

A great deal of legislation determines the way we operate and carry out our duties. The Environment Act 1995 provides some harmonisation of powers, but we also rely on other legislation, including the Control of Pollution Act (1974), the Control of Pollution (amendment) Act (1989), the Environmental Protection Act (1990), the Radioactive Substances Act (1993), the Salmon and Freshwater Fisheries Act (1975), the Water Resources Act (1991), and the Land Drainage Act (1991).

We are the competent Authority for over 25 EC environmental Directives whilst a further 70 Directives affect our policies and activities. These include the Quality of Bathing Waters, Dangerous Substances, Industrial Plant Emissions, Waste Management Framework, Quality of Water to Protect Freshwater Fisheries, and the Urban Waste Water Treatment Directives.

Operational Standards are the technical, scientific and engineering procedures which are necessary to put legislation and our policy into practice. These take many forms, including policy statements, procedural manuals, and a suite of quantitative output and performance measures that we monitor quarterly or annually. Failures to comply with standards have helped us to identify the issues raised in this plan. We publish details of our operational standards in technical handbooks, research & development reports, and information leaflets; details are available from our local offices.

1.2.1 Public registers and access to environmental information

We maintain several public registers which can be inspected at most Environment Agency offices. Information is usually provided free of charge, but for large and complex requests we may charge for staff time and materials. There are also standard charges for some specific searches. Confidential information, incomplete or draft reports, and information where disclosure may lead to environmental damage are generally not available.

At present, offices may have information relevant only to their local area; please call before you visit

to ensure that the information you want is available at your local office. Our staff will be happy to help you with any queries you may have and if you call before you visit we will ensure that they are on hand to help you with your query.

Some environmental details and information about our public registers are available on the Internet on http://www.environment-agency.gov.uk. Further details are available in our leaflet *A Guide to Information Available to the Public*, available at our local offices.

1.3 This Local Environment Agency Plan

This Local Environment Agency Plan follows from the series of Catchment Management Plans which we were producing to cover all river catchments in England and Wales. We use Local Environment Agency Plans to cover the same topics as Catchment Management Plans, but they also deal with other topics to cover the full range of our responsibilities.

A holistic approach to environmental management is required to plan for sustainability and improvement. Local Environment Agency Plans allow the full range of management issues to be identified and considered within a geographical area which is both relevant and meaningful. They are strategic in nature, since individual plans cover large areas of land, often straddling local authority boundaries.

Economic and political constraints will influence what we are able to do. For example the funds that the water service companies and other industries invest in pollution control will make a difference to the extent of water quality improvements that we are able to achieve.

1.3.1 The Area Environment Group

During the summer of 1996, we set up an Area Environment Group for the South Wessex Area. We regard this Group as fundamental in assisting us in building relationships with our customers. The Group has a broad experience and interest in environmental matters. The role of the Area Environment Group is an advisory one, and they have been consulted during the production of this Plan.

Alan Swindall (Chairman)
Brian Chandler (Wessex Regional Flood Defence Committee)
Charles Tarver (Wessex Regional Fisheries Advisory Committee)
Susan Caito (Regional Environmental Protection Advisory Committee)

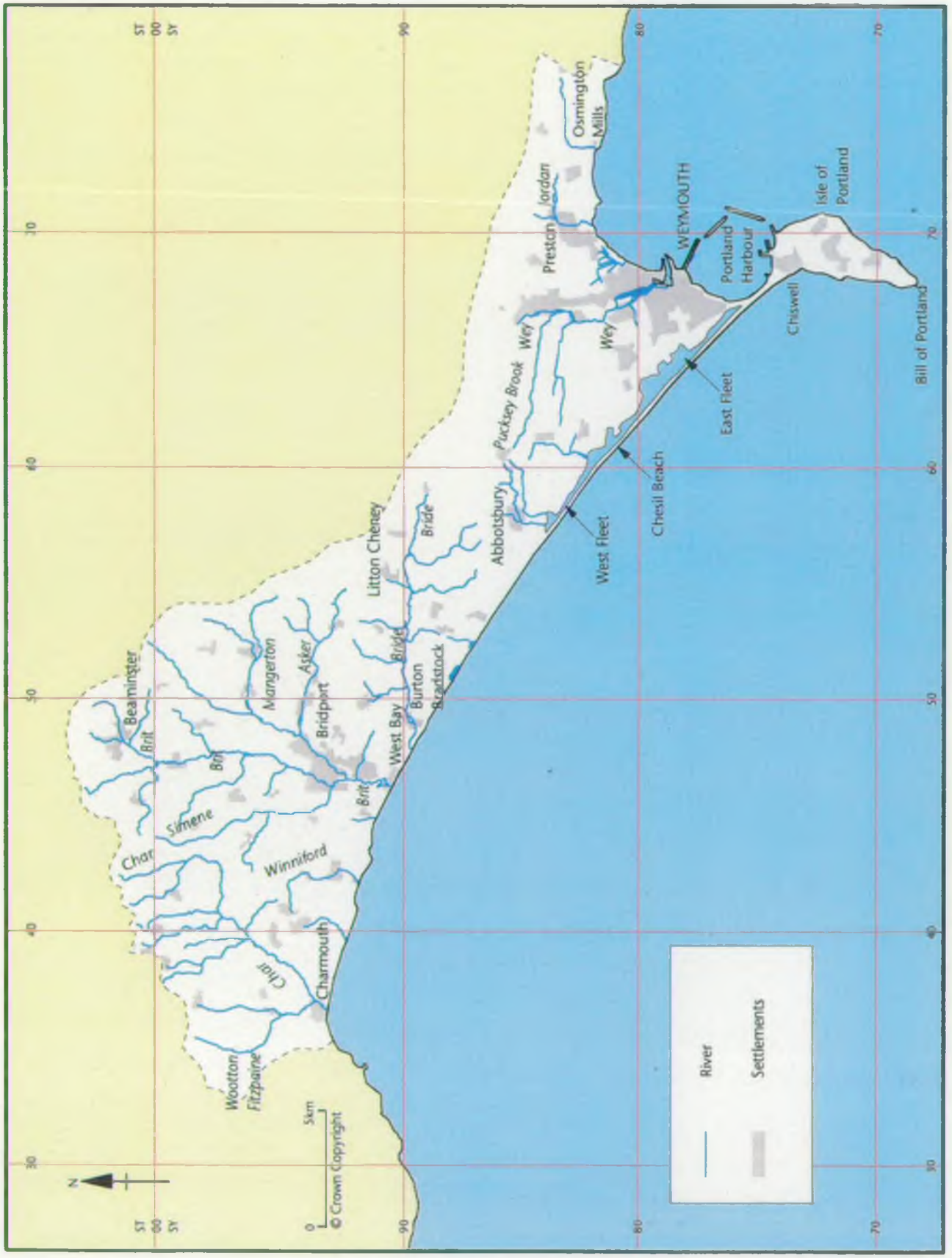
Roger Harrington (water resources)
Michael Webster (industry)
Timothy Palmer (agriculture)
John Davies (recreation)
Sue Harmon-Smith (tourism)
Arthur Bromwich (local authority)
Barbara Smith (local authority)
Tim Moore (landowner)
Peter Bialek (waste management)
Andy Stillman (education)
Laura Hirst (conservation)
Michael Park (fisheries)
Annette Brooke (local authority)
Sheila Poupard (local authority)
John Day (RSPB)

This Local Environment Agency Plan Consultation Report gives you the opportunity to comment on environmental problems or our work. It describes the environmental resources of the area, explains how these resources are affected by human uses or pressures, and outlines issues where we or others need to take action to address problems in the environment.

1.3.2 The Action Plan

We will collate responses to this Report and publish an Action Plan in summer 1998. Each year we will review the progress that has been made with the actions identified in the Action Plan and publish a brief report. Within five years of publishing the Action Plan we will carry out a major review of the progress we have made.

Map 1. The West Dorset Local Environment Agency Plan area



1.3.3 Local Environment Agency Plans and Development Plans

We can control some of the things that influence the quality of the environment, but the way that land is developed is the responsibility of local planning authorities. They prepare statutory development plans whose policies guide the way that land is developed. We advise and guide them to adopt policies that protect the environment from harmful development. Where we can, we will reinforce these policies when we comment on planning matters and when we are making our own decisions.

1.3.4 How to use this plan

This Report is split into two parts. Part 1 contains our Vision, this Introduction, a general Description of the area, the Issues that we have identified in our work and our proposed Options for their resolution. It also includes Protection through Partnership, which outlines the work that we do in collaboration with other organisations and where the work of other organisations plays an important part in helping us to achieve some of our aims and objectives.

Part 2 contains a detailed account of the use, activities, and the state of the environment of this area. It forms a useful reference document and provides background information relevant to the Issues identified in Part 1.

2. Description of the plan area

The area covered in this plan is a collection of small river catchments (see section 5) sharing the common feature of flowing into the sea on the south coast of west Dorset. There are no large rivers, but there are major wetlands - the Royal Society for the Protection of Birds reserves at Radipole and Lodmoor, the unique coastal features of Portland Harbour, the Fleet lagoon and Chesil Beach, and the marine zone in Lyme Bay.

2.1 Settlements and commerce

Development is concentrated in the east of the area around the major town of Weymouth. While it has been a traditional holiday resort for over two centuries, its light industrial and commercial development make it an employment centre for the area. The market town of Bridport is important in the west of the area, and supports a number of light industries as well as its historic role as a centre for rope and net making.

There are three significant harbours in the area: Weymouth is important for commercial, fishing and recreational shipping; Portland Harbour, formerly a major naval harbour, is currently being redeveloped primarily for commercial shipping; and West Bay is predominantly a port for fishing and recreational activity.

The limestone quarries of Portland have supported a major local industry for hundreds of years, which as well as shaping the local landscape has made major contributions to the architecture of major cities throughout the country.

Away from the seaside towns and the quarries of Portland, the area is largely farmland. The steep slopes and intricate geology have discouraged intensive agriculture, and the unspoilt river valleys are essential components of this quiet landscape which is more suited to quiet enjoyment than the more organised recreation on the coast.

2.2 Population and tourism

The 1991 Census population for the Weymouth & Portland District Council area was 61,233, and 28,518 for the part of West Dorset District Council that lies within the plan area.

Tourism is a major factor in population and business terms. The West Dorset Heritage Coast area, which includes Portland but not Weymouth, has holiday accommodation for over 22,000 with 90% in caravans and campsites. There are estimated to be over half a million holidaymakers each year, with over two million day visitors, generating an income of over £50M.

In the Weymouth & Portland District Council area, there are estimated to be over a million holidaymakers each year, generating an income of over £95M (1990 values) and creating employment for 29% of the workforce.

2.3 Landscape character

The whole of the area, apart from Weymouth and its environs, is in the Dorset Area of Outstanding Natural Beauty, designated by the Countryside Commission to conserve and enhance the natural beauty of the landscape, mainly through planning controls. The coastal strip, up to 5km inland, is also designated Heritage Coast. The Countryside Commission's division of the country into landscape character areas offers a structured starting point for our description.

2.3.1 The Weymouth Lowlands and Marshwood and Powerstock Vales

The majority of the plan area is in these two character areas. Agriculture in the west of the region is predominantly small livestock units and permanent grasslands. The broad, bowl-shaped clay vales are incised by the river valleys. The valleys are often fairly steep sided with moderately fertile hill slopes supporting small, ancient woodlands linked by a network of hedges enclosing pastures or small arable fields. The streams are flanked by clay or alluvial meadows and wet woodlands with a diverse invertebrate fauna. Exposures of Jurassic Limestone show the stratigraphy and provide specialist niches for plants out of reach of most grazing animals. To the east, pasture is mixed with arable, and farming is generally on a larger scale; with the proximity to the sea, this gives the area a rather bleak and windswept character.

2.3.2 The Blackdowns and the Dorset Downs

The remainder of the mainland area is within these character areas, but the amount is so small that their distinctive qualities are not readily apparent. The underlying Chalk and Greensand of the Dorset Downs are the source of the water for the rivers issuing on the Gault Clay.

2.3.3 Isle of Portland

Portland is noted for its geological interest with the cliffs and quarries exposing the stratigraphy. The uncultivated land on the undulating plateau supports species-rich grassland on the thin, free-draining, limestone-derived soils. There are many disused quarries in which notable plants and animals have found a refuge, and the traditional small field farming system is still practised on areas not quarried.

2.3.4 The Coast

Lyme Bay encompasses over 150km of the most varied and ecologically important coastline in England. It is largely undeveloped and provides spectacular scenery with some most important geological features including hard and soft rock cliffs, sand dunes, Chesil Beach and The Fleet. There is also a wide range of submerged habitats supporting a wealth of marine life, and four Sensitive Marine Areas have been identified.

Portland Harbour is a sheltered waterbody with important marine communities and rare species with a southern distribution at their western limit. Eastwards the seabed consists of reefs and ledges with coarse sand and gravel waves.

The 26km long Chesil Beach is a unique feature and shelters Britain's largest saline lagoon, the Fleet. Important soft cliffs continue eastwards from Charmouth and rise to 191m on the spectacular Golden Cap. Further west is Europe's largest coastal landslip complex at Black Ven, caused by water accumulating in and weakening the clays and shales underlying sandstones.

2.4 Geology

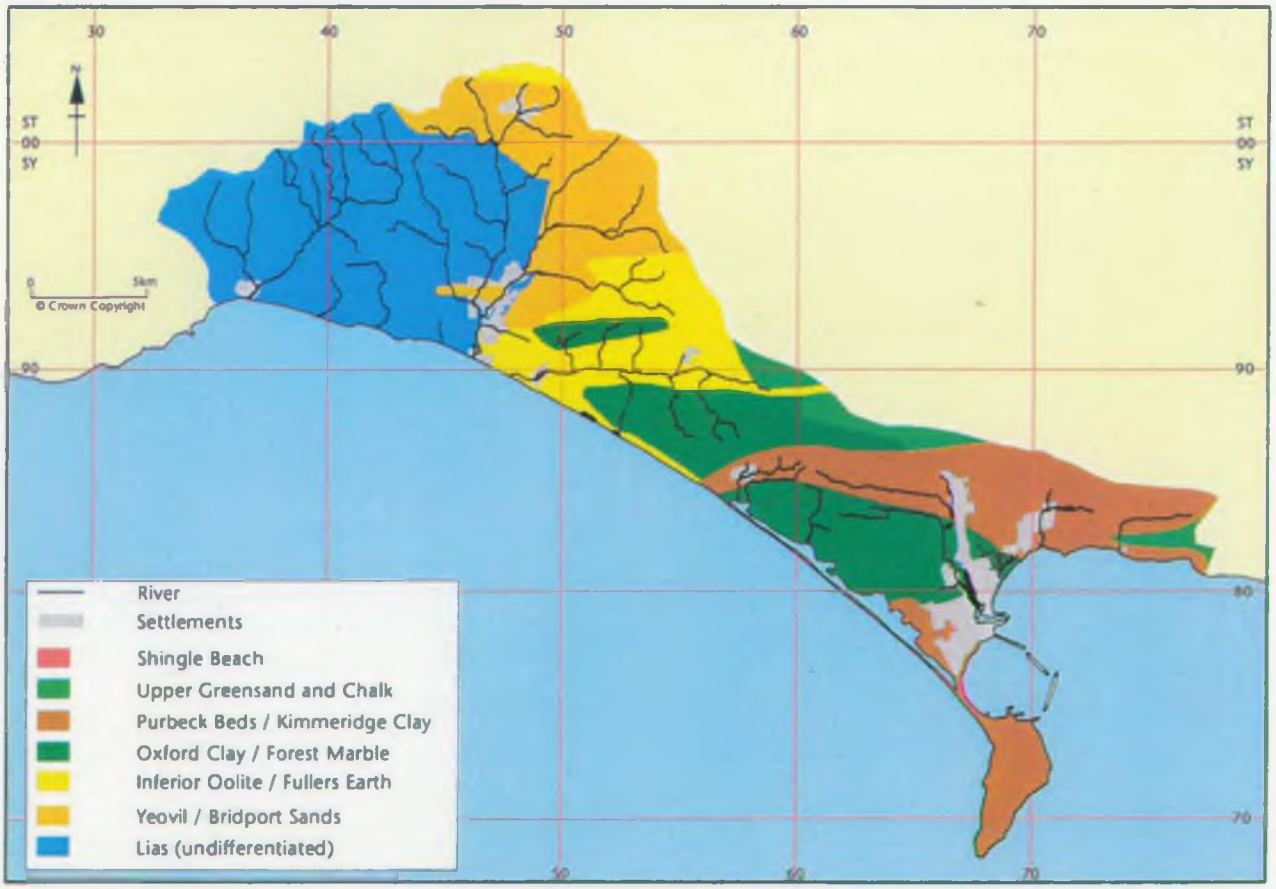
With the exception of the Cretaceous Upper Greensand which intrudes into the far west of the area near Lyme Regis, the oldest rocks are largely clays and limestones of the Lower Jurassic Lias Period which were laid down between 190 and 170 million years ago. Beyond the Brit, the strata change to alternating beds of fine grained sand or crumbly sandstone, and sandy limestone. These are the slightly younger Yeovil and Bridport Sands.

The Middle Jurassic is represented by the Inferior Oolite Limestone and the Fuller's Earth clays. For the purpose of simplicity, the Middle Jurassic Limestone which comprises the Forest Marble and the clays and shales of the Upper Jurassic Oxford Clay have been combined in Map 2.

In general, to the north of Abbotsbury, the relationship between the Forest Marble and the Oxford Clay is rather complex and cannot be shown on the scale employed for the map. To the south of Abbotsbury, the Forest Marble is found at the centre of a large arch or anticline, bordered on either side by the slightly younger Oxford Clay. There is a small outcrop of Bagshot Sands around Hardy's Monument.

In a broadening swathe from Abbotsbury eastwards, the Kimmeridge Clay of the Upper Jurassic Period is found at outcrop. This same strata underlies the alternating clays, marls and limestones of the Lower Purbeck on the Isle of Portland. On the eastern boundary of the area, further outcrops of Cretaceous Upper Greensand overlain by Chalk occur. Finally, extending from Burton Bradstock to the Isle of Portland is the shingle of the Chesil Bank.

Map 2. Simplified geology



2.5 Hydrogeology

The Cretaceous Upper Greensand and Chalk, and the Middle Jurassic Inferior Oolite are all classified as Major Aquifers. Such formations are considered to be highly permeable usually with known or with the probable presence of significant fracturing. The strata are highly productive and of regional importance and are often used for large potable abstractions.

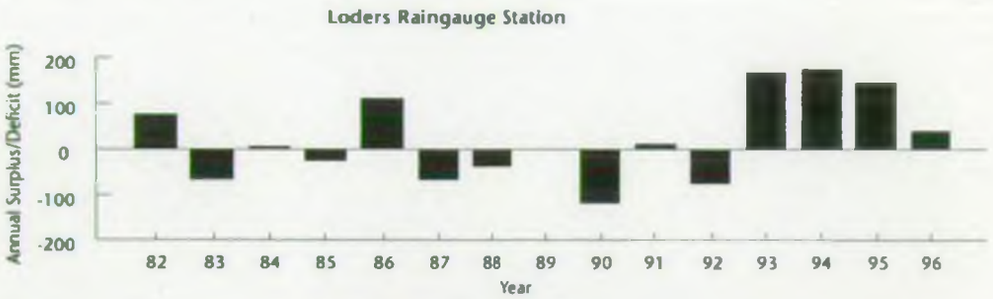
Public water abstractions from groundwater are taken from two boreholes in the Chalk at Litton Cheney, from a borehole beside a fault separating the Chalk and the Kimmeridge Clay at Portesham, and from three boreholes in the Portland Beds at Friar Waddon. The Sutton Poyntz Springs source near Weymouth also relies on emergent groundwater from these aquifers.

The Lower Jurassic Yeovil and Bridport Sands, the Middle Jurassic Forest Marble and the Upper Jurassic Purbeck Limestone have all been classified as Minor Aquifers. Such aquifers can support locally important abstractions from the fractured or potentially fractured strata.

The remaining rocks including the Oxford Clay, the Kimmeridge Clay, the Fuller's Earth and the Liassic clays have been classified as Non-Aquifers which are only capable of supporting very minor abstractions, if any, because the formations only have negligible permeability.

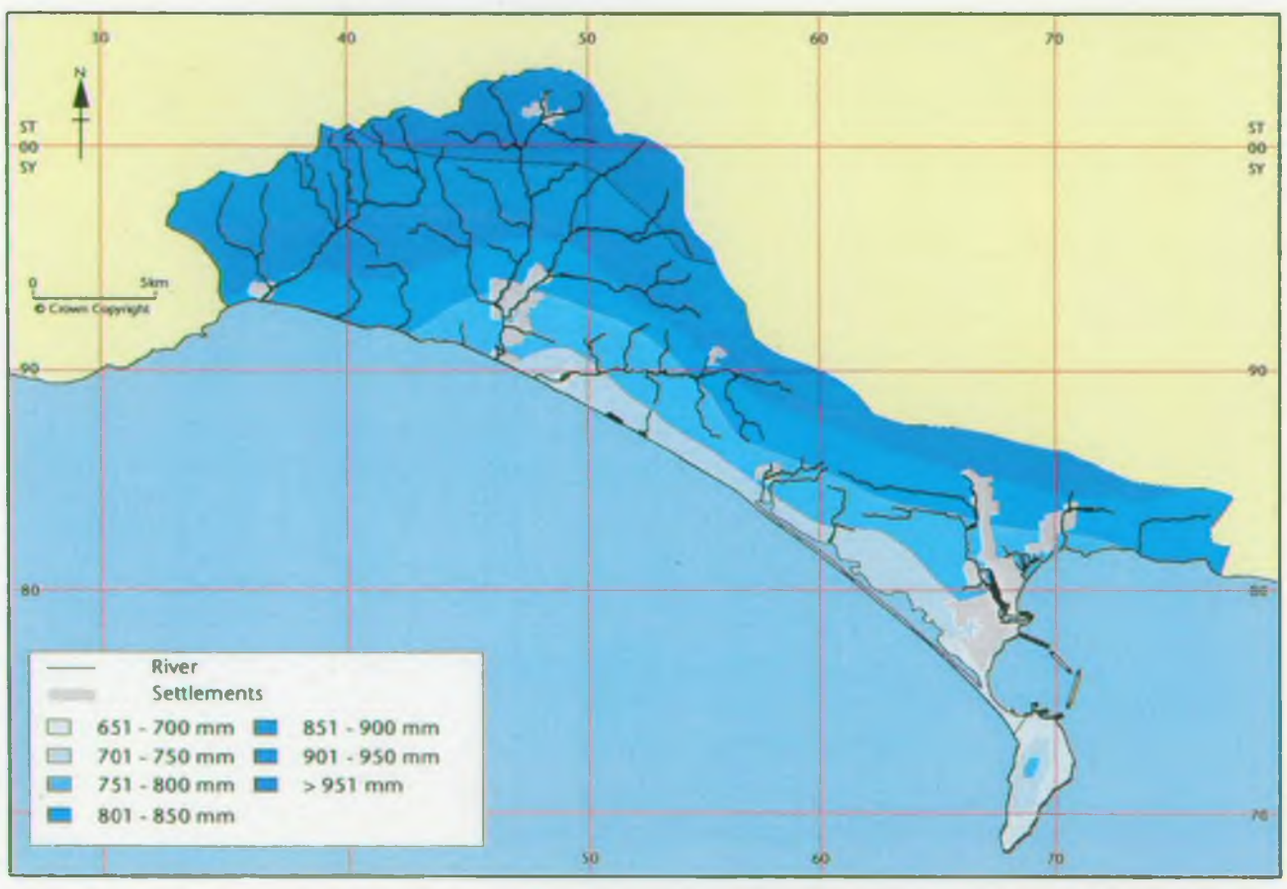
2.6 Rainfall

Rainfall is currently measured at seven Meteorological Office approved daily gauges within the area. There are also five telemetry raingauges which record rainfall intensity (Map 4).



Map 3 shows how annual average rainfall varies across the area. The highest rainfall, over 950mm, occurs in the north of the area; annual average rainfall decreases towards the coastal strip with the remainder of the area experiencing between 650-950mm. The unusual distribution of rainfall on Portland may be a result of limited information or may reflect the extremes of altitude experienced on the peninsula.

Map 3. Rainfall

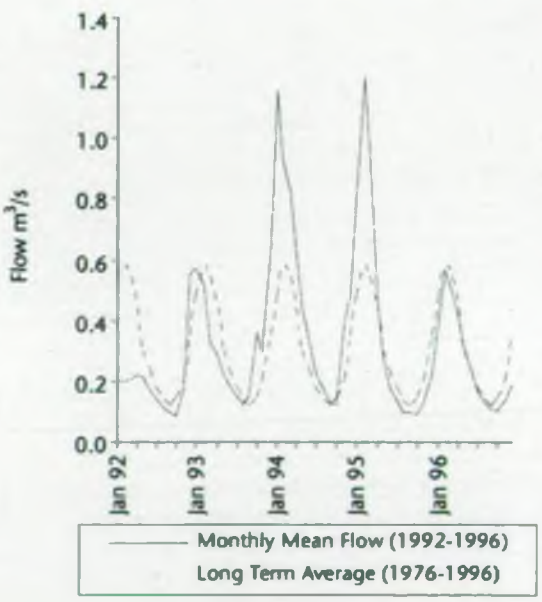


2.7 River flow

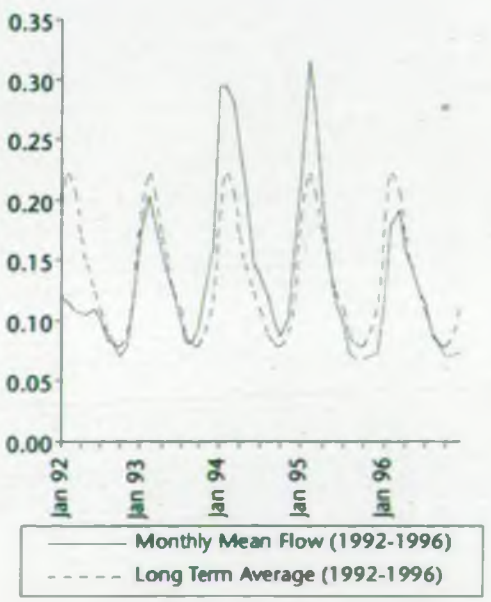
We have continuous river flow gauges at six stations in this area, and we record river levels at a further four locations (Map 4). We also monitor groundwater levels manually at a borehole at South Poorton on the Asker.

Map 4. Hydrological monitoring sites

Wey at Broadwey



Litton Cheney Stream at Litton Cheney



3. Issues and options

3.1 Our proposed targets for river water quality

We manage water quality by setting targets called River Quality Objectives (RQOs) (see section 6.1). They are intended to protect current water quality and future use, and we use them as a basis for setting consents for new discharges and planning future water quality improvements.

We also manage water quality by applying standards set in EC Directives and other international commitments. Failure to comply with these standards is outlined later and more detail is available in section 6.

We have proposed our River Quality Objectives using a classification scheme known as River Ecosystem (RE) which comprises five hierarchical classes. The River Quality Objectives we set must be achievable and sustainable; we must be able to identify what needs to be done to meet the River Quality Objective, and to ensure as far as practicable that water quality can be maintained at this level in the future.

RQO (RE Class)	Class Description
RE1	Water of very good quality suitable for all fish species
RE2	Water of good quality suitable for all fish species
RE3	Water of fair quality suitable for high class coarse fish populations
RE4	Water of fair quality suitable for coarse fish populations
RE5	Water of poor quality which is likely to limit coarse fish populations

Map 5. Our proposed River Quality Objectives

Where we are unable to identify solutions or resources to resolve current water quality problems, we can also set a Long Term River Quality Objective; we will test compliance against River Quality Objectives but use Long Term River Quality Objectives as a basis for setting consents for new dis-

charges. This will ensure that future developments will not prevent us from achieving our long term objectives.

The rivers of this area have been divided into 15 classified reaches and the River Quality Objectives that we intend to set are shown in Map 5. Where a reach does not comply with the proposed River Quality Objective, the reasons are investigated and the necessary actions are taken to achieve compliance.

We welcome your comments on the River Quality Objectives that we propose.

3.2 Impact of rural land use on water quality

3.2.1 Background

While the agricultural community has responded well to our campaigns to reduce acute pollution incidents by improvements to the storage facilities provided for material such as silage and slurry, changing agricultural cropping practices and increases in the disposal of waste to land have led to problems including diffuse discharges of fertilisers and soil erosion.

3.2.2 Effects

Monitoring of groundwater abstractions for one public water supply in the area has demonstrated nitrate levels in excess of the EC Nitrates Directive limit (see section 6.4).

Rivers, ponds and the internationally important conservation sites in the Fleet and Portland Harbour may be suffering from diffuse inputs of nutrients and pesticides which are threatening the wildlife resource of the area. The water quality of the Fleet is monitored quarterly; possible factors include agricultural activities and swan fouling.

Diffuse agricultural inputs are believed to be contributing to River Quality Objective failures on the Char and the Wootton Fitzpaine stream (see section 6.1).

The biological water quality (see section 6.9) of the Simene, the Wey and the upper Bride is less than expected and may be associated with diffuse agricultural inputs.

3.2.3 Options for action

The water supply source at Langdon Springs, Beaminster has been designated a Nitrate Vulnerable Zone. All agricultural activity within the Zone will be subject to control defined in an Action Programme, to be established during 1998 with implementation by December 1999. We will be responsible for the enforcement of this Action Programme.

Other water supply sources in the area are also showing increasing levels of nitrate, and so it may be that the periodic review of all sources, which is currently underway, will identify additional Nitrate Vulnerable Zones in the area. However, this review will not be complete before publication of this document.

After recent contamination of water supply at Beaminster with nitrates and bacteria, Wessex Water Services have signed an undertaking with the Department of the Environment (WS094) to install new treatment plant to remove nitrates, to replace the Langdon works with a new one at the Toller Down service reservoir, and to link Toller Down with the Langdon service reservoir via a new main. There will also be further investigations into ways of keeping nitrates from entering the supply.

We have investigated the EC Bathing Water Directive failure at Bowleaze Cove to establish whether diffuse agricultural inputs or storm sewer surcharges to the Jordan may be involved. We will continue this work in conjunction with Wessex Water Services and landowners, and when it has been completed an appropriate course of action will be determined.

We will encourage landowners to establish buffer zones between intensive farmland and water courses wherever possible, and to explore agricultural incentive schemes. Farm waste man-

agement plans, farm waste brokerage schemes and nitrate management plans should also be considered.

Particular problems occur around the Fleet and the Simene, and we will work in partnership with the Fleet Study Group. The Fleet is a candidate Special Area for Conservation (see section 9.1.1), and the EC Habitats Directive Regulations require English Nature to develop conservation objectives for the management of these sites; this will involve input from a number of bodies including ourselves.

3.3 Impact of sewage and sewerage on water quality

3.3.1 Background

Considerable areas are not on mains drainage, and septic tank discharges in clay areas can lead to water quality problems.

With three significant Long Sea Outfalls in the area, concerns have been raised about the visible plumes of sewage, and the effects of discharges containing industrial elements on the flora and fauna, relating to both fisheries and conservation aspects.

Weymouth Bay has become a popular winter anchorage for *klondyker* fishery ships (see section 10.3.1), with over 30 such vessels recorded in some recent years; questions have been raised as to the pollution risks from these moored factory ships. There are also general concerns about discharges from boats to tidal waters, and subsequent water quality problems involving sewage, nutrients and oil.

3.3.2 Effects

The EC Bathing Waters Directive protects the environment and public health of bathing waters, by reducing pollution entering identified bathing areas (see section 6.2). Of the 11 identified EC Bathing Waters in the area (see section 6.2), Sandsfoot Castle failed in 1992 and 1993, and Bowleaze Cove failed in 1996.

Septic tank discharges around Whitchurch Canonicorum may be contributing to River Quality Objective failures in the Char, and similar problems may affect the Wootton Fitzpaine stream (see section 6.1). There are sewage discharges to Ringstead Stream which may have possible effects on the local beaches.

Chafey's Lake has been polluted by spillages from industrial estates being washed into surface water drains; contamination here could eventually also impact the important conservation site at Radipole (see section 9.2.2). There have also been problems with surcharging sewers in areas adjacent to Chafey's Lake, Radipole and Lodmoor. Parts of the Brit have a lower than expected biological quallty, and this may be related to flowing through a built-up area.

We have carried out an annual bioaccumulation monitoring programme which measures the levels of metals and organic residues in mussels, limpets and seaweed to provide information on the levels and bioavailability of these pollutants. Seaweeds collected from the west coast of Portland contained higher levels of metals (cadmium, copper, chromium, nickel and mercury) than elsewhere along the South Wessex coast during 1996. Arsenic was the only metal found at elevated levels in limpets.

In subtidal samples, metals (mercury, copper, arsenic, zinc, manganese, tin and cobalt) and organic compounds (PCB153 & DDE (OP)) were observed at higher levels nearer the outfall. Cadmium, copper and PCB153 exceeded the guidelines agreed by the Joint Monitoring Programme of the Oslo and Paris Commissions. In 1996, sites in Portland Harbour failed to meet the standards for zinc and copper under the EC Shellfish Waters Directive (see section 6.7).

A survey in November 1993 on the biological communities within 400m of the discharge of the Charmouth Long Sea Outfall suggested that it was not having a detectable effect.

The Backwater in Weymouth Harbour has suffered from red tides of the potentially toxic alga *Alexandrium* which may be indicative of unidentified inputs of sewage, possibly from moored vessels, or discharges from storm overflows. Growths of the potentially toxic alga *Oscillatoria* have been recorded on Seatown beach where the Winniford discharges.

3.3.3 Options for action

We are monitoring the Long Sea Outfalls under the EC Urban Waste Water Treatment Directive (see section 6.6), and Wessex Water Services are carrying out Comprehensive Studies of their impacts; we will work with them to determine the appropriate treatment. Wessex Water Services have already announced that it will install secondary treatment and disinfection for all its sewage discharges which may affect recreational, bathing and shellfish waters, but the timing of these improvements has yet to be determined.

We have investigated the EC Bathing Water Directive failure at Bowleaze Cove to establish whether diffuse agricultural inputs or storm sewer surcharges to the Jordan may be involved. We will continue this work in conjunction with Wessex Water Services and landowners, and when it has been completed an appropriate course of action will be determined.

We are conducting a study to investigate the EC Shellfish Waters Directive failure in Portland Harbour, incorporating our EC Directive sampling, our operational sampling, and the results from our bioaccumulation surveys.

The surface water drainage system at Granby Industrial Estate, Weymouth drains directly to Chafey's Lake. This system has developed piecemeal with the evolution of the Estate, and we believe that a number of mis-connections to the system have occurred. This combined with inadequate storage facilities at premises means that there is an urgent need to review the activities and practices of businesses. This will form the basis of a comprehensive pollution prevention and control campaign, which will also involve extensive educational visits to companies on the Estate to reduce the likelihood of future problems.

We set our water quality targets (River Quality Objectives) based on the need to protect current water quality and future use (see section 3.1). We work with developers and local planning authorities to ensure that adequate pollution prevention is incorporated into any new industrial developments (see section 15.4.3). We are working with Wessex Water Services to reduce problems of sewer surcharging in parts of Weymouth; improvements have already been carried out in many of these locations.

First time sewerage applications must be made to Wessex Water Services; we will provide any relevant environmental information if required, and we are involved in discussions with West Dorset District Council concerning Whitchurch Canonicorum and Ringstead.

We do not regulate the discharge of trade and domestic effluent from vessels; this activity is controlled by the imposition of local authority byelaws or exercised through the Marine Safety Agency for coastal waters or Harbour Master within the jurisdiction of a port. However, we do attempt to influence and provide anticipatory pollution control guidance to organisations and pleasure boat users through contact with the local planning authority and discussions with marina and mooring operators.

3.4 Protection of ecologically important habitats and species

3.4.1 Biodiversity

In 1994, the government published the *UK Biodiversity Action Plan* as its response to the international initiative for conserving biodiversity, and we have been named as the contact point for one habitat, chalk rivers, and twelve species, at least three of which (water vole, otter and white-clawed crayfish) have been recorded in the plan area.

Although we can directly influence some of the activities affecting the quality of the water environment, achieving environmental sustainability requires the commitment and cooperation

of many people and organisations. We will collaborate with them to set targets, prepare and implement the *UK Biodiversity Action Plan* for key species and habitats, and we will incorporate appropriate actions in our Action Plan.

We have now signed up to the actions in the *South West Biodiversity Action Plan*, and we will collaborate with other organisations to set targets, prepare and implement local action plans for key species and habitats and to set interim targets where insufficient information is available. We will monitor invertebrate populations, targeting those species for which we are the contact point, and carry out investigations of sites with low diversity like the Simene.

We will collaborate with surveys initiated by other organisations to establish the status of other rare birds, invertebrates and plants and seek opportunities for improving their habitats.

3.4.2 Protection of ecologically important habitats

We will play our full part in contributing towards the appropriate management of protected sites in the area (see section 9.1). Other areas lacking statutory protection are also valued and may be managed sympathetically whether in private hands or as nature reserves. We will consult with English Nature, Dorset Wildlife Trust and other conservation organisations where known sites may be affected by our activities or works that we have consented.

We are a *competent authority* for Special Areas of Conservation and Special Protection Areas and have extra responsibilities regarding their protection. We should not permit developments which could damage the integrity of the sites, and review existing authorisations and modify or revoke them if they would damage the site.

The EC Habitats Directive Regulations require English Nature to develop conservation objectives for the management of these sites; this will involve input from a number of bodies including ourselves. The Fleet lagoon has priority status under the EC Habitats Directive, and there is evidence that its botanical interest is declining. We should work to establish the causes, develop plans to improve the habitat diversity of the hinterland, seek to restore ditch systems, establish sustainable inputs of nutrients and set target levels, and monitor the status of the chemistry and the animals and plants.

Where we have agreed work plans within any of these designated areas, we will continue to implement them, and will develop and implement modifications and new plans, including Water Level Management Plans, as appropriate (see section 16.5.7). We will endeavour to restore the natural and traditional features which form the character of the river valleys.

Operational and maintenance plans are required for all routine flood defence work in Sites of Special Scientific Interest, including Burton Bradstock, which will need to be agreed with English Nature.

We will support the designation of Lyme Bay as a World Heritage Site, in order to control the potential damage arising from unregulated fossil collection.

We will support initiatives that allow the sustainable use of the scallop fishery in Lyme Bay without damaging the rare animals and plants of the area.

3.4.3 Floodplain habitat loss

The river floodplain habitat has been significantly reduced, in many places to a narrow strip. This has resulted in patchy habitat which has reduced the value of the remaining habitat and potentially makes the impact of river maintenance work much more severe.

Erosion occurs and maintains steep river banks in the alluvial floodplains. It is compensated for by shoals and banks building up on the inside of meanders. This process naturally provides a dynamic range of habitats and any interference will be resisted except where it compromises urban flood alleviation schemes.

We encourage actions which link the remaining valuable habitats into a continuous, broad river corridor and which provide a buffer against undesirable influences. We will work with Dorset Wildlife Trust to devise suitable criteria to select river corridors as Sites of Nature Conservation Interest (see section 9.1.5), and encourage the inclusion of these sites on the Proposals Maps in Local Plans to maintain the integrity of the river corridor.

We will support agricultural incentive schemes (see section 4.4) to encourage forms of agriculture which balance the needs of the environment with production, and to encourage more traditional and less intensive forms of agriculture, particularly to protect wetland spring sources, flushes and mires.

Throughout this area there is potential for restoration and enhancement of the river corridor, particularly to improve sections of the Wey and its tributaries, the Jordan, and streams flowing into the Fleet, by restoring natural channel shape and reinstating meanders and side ditches. We should set targets for the amount of restored wetland and linear river habitat.

Improvements in habitat will require us to review our own flood defence maintenance operations and to work in partnership with riparian owners to secure improvements. We will critically examine all river work proposals for opportunities to increase habitat diversity.

We need to reverse the loss of wetland habitat and will critically examine all proposals which could result in a reduction in this habitat, and seek to restore any drained or degraded wetlands, damp meadows, unmodified banks and other waterside habitats especially on the Char, Brit and Bride.

Reed beds are an important feature of the wetland habitat in this area; many are well maintained, but we should ensure the appropriate management of Burton Mere and similar reedbeds. This could involve the control of scrub and providing assistance in their maintenance.

3.4.4 Otters in the area

Formerly widespread throughout the UK, the otter underwent a rapid decline in numbers from the 1950s to 1970s. Factors contributing to this decline may include pollution of watercourses especially by chemicals which affected their reproductive system, insufficient prey associated with poor water quality, impoverished bankside habitat features needed for breeding and resting, and incidental mortality primarily by road deaths and drowning in eel traps.

Otters are very scarce in this area as a breeding mammal. Only one spraint (from the Brit) was recorded in the latest national otter survey. More recently, the Char has been searched without success, though there have been sightings on the Bride, Asker and the Brit. The habitat appears suitable with plenty of tree cover, though mostly in a thin band, and most rivers are relatively undisturbed. Improvements in bankside habitat may assist their spread in this area.

The closest populations are on the upper reaches of the Axe and the Parrett, well within the range of otters seeking new territories, so introduction of captive-bred animals is not appropriate. The upper Parrett is not popular with otters and the Axe population is not as strong as it should be. The A303 appears to present a barrier, so recolonisation may not be immediate. Recolonisation from the Frome would be possible, but less likely unless populations do well.

We have carried out monitoring of pesticide levels in eels, a major food source of otters, and this has shown that pesticide levels are stable or in decline. We also carry out spot checks to ensure that otter guards are fitted to all fyke nets set for eels when we carry out licence checks.

We will carry out surveys to increase our knowledge of the distribution of otters, and look at ways of improving habitats especially on the Char, Brit and Bride. We shall be looking more closely at the distribution of otters and what limiting factors, if any, are operating. We will also provide post mortem analyses of any dead otters that are found (details from our offices).

3.4.5 Crayfish in the area

There have been no recent records of the native white-clawed crayfish in this area, though American signal crayfish are present; their introduction for farming brought with it a virulent fungal infection which proved fatal to our native species.

This infection can be spread on damp equipment and mud, and also by birds and animals. We are publicising the dangers of plague transfer and the benefit of disinfecting equipment and boots by people who regularly cross between catchments; a leaflet is available from our offices.

Crayfish are also susceptible to habitat modification, especially dredging and weed removal, and water quality, especially siltation and herbicides. We will ensure that river and bankside works are carried out in a sensitive manner should native crayfish be present.

We will monitor the situation, initiate action to control species that threaten the viability of native populations, and investigate opportunities for the reintroduction of native crayfish.

3.4.6 Water voles in the area

The water vole is probably widespread in the area, and a countywide survey started in 1997 will provide a better picture of the current situation. Existing records are scattered, and are mainly from the lower reaches of the Char, Brit, Bride, Jordan and Wey. We are supporting a project run by Dorset Wildlife Trust to record the distribution of water voles in the county.

A National research project is studying the interactions between water voles and mink, by trapping and radio tracking, habitat manipulation, and analysis of land use and water quality data. This is a two year project due to report in 1998.

3.4.7 Twaite and Allis Shad

There is evidence of populations of twaite shad in the coastal waters of Lyme Bay. We will endeavour to increase local awareness of the need to conserve these species by distributing Nationally-produced literature as and when it becomes available.

3.4.8 Invasive plant species

Invasive plant species occur in the areas, but our knowledge of their distribution is patchy (see section 9.4). There is no evidence of damage to the native aquatic wildlife, but we will continue to monitor the situation.

When our maintenance staff are working on a site on main river (see section 16.1) we will take appropriate action to control stands of these plants. On non-main river this responsibility rests with the riparian owner; a leaflet is available from our offices.

Giant hogweed can also pose a risk to human health, and local authority Environmental Health Officers should be notified in public areas. We will look at ways in which we can help in dealing with this particular weed, holding discussions with local authorities and conservation groups.

3.5 Limited distribution of salmonid fish

3.5.1 Background

Populations of migratory salmon and sea trout may be limited by poor migration conditions in many of the rivers in this area; these are often man-made obstructions. The potential for these populations to expand should these obstructions be overcome requires investigation.

3.5.2 Options for action

Subject to funding, we propose to employ a consultant to investigate the scope for expansion and the measures needed to overcome individual obstructions.

3.6 Need to protect features of archaeological interest

3.6.1 Background

The area has many known archaeological sites, and probably contains many more undiscovered features. We have a statutory duty to protect and conserve buildings, sites and objects of archaeological, architectural or historic interest.

Many of the most prominent and numerous features of archaeological interest lie on the watersheds; there appear to be very few known archaeological remains close to watercourses.

3.6.2 Effects

Wetland archaeological features may be at risk from direct damage by our river maintenance and dredging work, and indirectly through the drying out of organic remains with lowered water tables and the deposition of spoil on sites of historic interest.

3.6.3 Options for action

As very little is known about this resource, we need to further identify the wetland archaeology of this area, and to ensure that our database is kept updated.

Our own work is screened for the presence of scheduled archaeological sites, and we will continue to consult with the County Archaeologist where known sites may be affected by our own activities or works that we consent. We will also endeavour to restore historic features which form part of the character of the river landscape.

3.7 Maintaining our rivers and flood defences

3.7.1 Background

We maintain the natural and artificial drainage system to ensure their efficient working, and to ensure that flood alleviation schemes provide protection up to their design standard.

Our maintenance work is underpinned by the Standards of Service methodology (see section 16.5.2) which identifies the level of maintenance required based on the use and associated value of the adjacent land. We monitor compliance with the Standards of Service and, where we are not meeting our target, remedial work is considered.

3.7.2 Effects

In this plan area, 20km of river does not meet the target Standard of Service; the completion of Bridport, West Bay, Beaminster and Burton Bradstock urban schemes in recent years has resulted in additional work associated with the maintenance of the schemes themselves. Extra work is required periodically on river reaches between these schemes, and this is where the standard needs to be improved.

If we do not undertake the appropriate level of maintenance, there will be an increased risk of flooding and land drainage problems. Additionally, maintenance work has the potential to enhance or damage the habitat and wildlife of the river and the river corridor.

3.7.3 Options for action

Higher standards of maintenance are proposed to meet the target Standard of Service and for the urban flood alleviation schemes. This will result in further expenditure being shifted away from other catchments or the need for additional financial resources.

We need to review whether the historical maintenance that we have carried out, for example weed cutting to maintain agricultural land drainage schemes, is justifiable or whether this maintenance effort should be redirected to urban areas.

Over the next two years (1997-99), some strengthening work will be carried out to the existing Melplash Showground Flood Wall. Methods will be chosen to ensure the continuity of the defences during the reconstruction phase. The final alignment of the wall will be unchanged from the existing position and will not interfere with the Melplash Show.

We must take account of our conservation duty when undertaking maintenance work and when we review Standards of Service for historical land drainage schemes to those appropriate for the current land use, so that it is consistent with the need to protect and enhance the natural environment. We will do this on the coastal sites that we own as a priority. When work is taking place on main rivers, we will control invasive species of plants as appropriate.

3.8 Provision of new flood alleviation facilities

3.8.1 Background

We can build new defences if flooding is a serious problem in a particular area, but nowadays we usually only build new defences to protect built-up areas. All schemes must be proven to be technically, economically and environmentally sound.

3.8.2 Effects

Flooding can cause widespread damage to property, business, transport, and even death.

3.8.3 Options for action

We are contributing financially and technically to the proposed West Bay Outer Harbour Scheme which is currently being managed by West Dorset District Council who are the Harbour Authority. The feasibility studies are well advanced and should be completed by the end of May 1998, with the construction phase possibly in 2000-01. West Dorset District Council are independently pursuing a privately financed marina development around this site, and we will comment on this at the appropriate time.

At West Bay, an element of natural shoaling builds up in the channel between the Harbour piers. In stormy weather, material from East Beach is washed into this Harbour channel. West Dorset District Council, as the Harbour Authority, use contractors to remove this material. While the current arrangement of recycling these harbour arisings benefits the environment as a whole, we are investigating with the Council possible alternatives of more local benefit, including the possibility of returning some of it to replenish East Beach itself.

We are investigating, with Weymouth & Portland Borough Council, the potential for protecting low-lying areas adjacent to Weymouth Inner Harbour by building low flood defence walls.

3.9 The adequate provision of flood warning and emergency response in the area

3.9.1 Background

Absolute flood protection is not possible; because of this we need to warn people when there is a risk of flooding. Since 1 September 1996, we have the lead role in passing flood warnings to people who are at risk, so that they can take action to protect themselves and their properties (see section 16.7).

3.9.2 Effects

Flood warning accuracy for the catchments in this plan is the most difficult in the South Wessex Area as river response to rainfall is very rapid and sea conditions are not easily predictable. Examples of this include the Wey, where a rise in level from below Yellow warning to above Red in less than one hour can occur on some extreme events, and at Chiswell, where the Meteorological Office can underpredict surges and extreme wave heights.

3.9.3 Options for action

We have an Emergency Response Level of Service strategy which details how flood warning procedures operate, and we use this to improve our emergency response. Where possible, we issue a warning at least two hours in advance of flooding.

£10,000 has been included in our Flood Defence Capital Works Programme for 1997-98 to investigate an improved flood warning service for the Wey. However, the financial viability of any scheme (flood warning or alleviation works) is likely to conclude that the benefits do not exceed the costs. Elsewhere in West Dorset this may not apply and we are looking, for example, to work with the

Royal Navy Air Station in a partnership scheme to reposition a wave buoy to help with flood warning at Chiswell and West Bay.

As well as issuing flood warnings, we have our own emergency workforce which works to ensure that river flood alleviation schemes and sea defences work to their design standards. So that they can respond to flooding, we have an *inform operations* level, which is reached before a yellow warning is issued, to put them on alert; these response times are being tested.

Location	Hours	Location	Hours
Brit-Asker Catchment	2.5	West Bay-Freshwater	2.5
Wey Catchment	2.0	Chiswell	2.5
Bride Catchment	3.0		

Over the next 5 years, we will be improving the flood warning service so that more information reaches those who need it.

3.10 Potential impact of development on the environment

3.10.1 Background

We advise and guide local planning authorities to adopt policies that protect the environment from harmful development (see section 15). Where we can, we will reinforce these policies when we comment on planning matters and when we are making our own decisions.

Local planning authorities may produce Development Briefs for selected sites following their allocation in the Local Plan. These are usually prepared for the larger sites or those which may be contentious. We already comment on site allocations at the Local Plan stage (see section 15.2) but are currently often not consulted on Briefs for these allocations.

We recognise that there has to be a balance between protection of natural resources and the need for a prosperous local economy. Most of the West Dorset District Council area and the Isle of Portland are designated as Rural Development Areas established in part to encourage employment.

Chiswell is an area designated for regeneration and Weymouth & Portland Borough Council have adopted the Chiswell Brief which provides a framework for new investment and development to assist the regeneration programme; we commented on this Brief in relation to flood risk as there is a history of tidal flooding problems in some parts of Chiswell.

The Portland Naval Base itself has already been sold by the Ministry of Defence to Portland Ports Ltd who hold a Change of Use permission from Weymouth & Portland Borough Council for the redevelopment of the site as a commercial port.

3.10.2 Effects

In seeking a more proactive approach to our involvement in the Town & Country Planning system, we need to identify specific issues and constraints relating to the development of sites so that we can make the local planning authority and any potential developers aware of the potential problems at an early stage in the development process. If developers are unaware of issues relating to a site, then development may result in adverse impact on the environment.

We have concerns that both proposed developments and climate change (see section 16.6) may increase flood risk in parts of Chiswell and other locations in the area like the Royal Naval Air Station HMS Osprey site (see section 15.4.5), and that new properties themselves will be at risk from flooding. We also need to ensure that development does not reduce the existing standard of flood defence, and that opportunities for environmental enhancement are taken if development is considered appropriate in this location.

We recognise that the development of Portland Harbour is commercially significant to the community. We are working with the developers to ensure that their operations can be carried out without detrimental impact on the sensitive habitats contained within the Harbour itself

and in the internationally protected lagoon of the Fleet whose only connection to the open sea is through the Harbour.

3.10.3 Options for action

As additional Capital Works are not financially viable for protecting Chiswell, the option of improved flood warning will be investigated (see section 3.9.3). A special procedure already exists for this area, detailed in our *Portland (Chiswell) Flood Warning Arrangements* leaflet. We are contributing to the current review of the Weymouth & Portland Borough Council Local Emergency Plan.

As a result of our concerns relating to development in this area and the ability of the existing sea defences to protect it against flooding, we have commissioned a flood appraisal to determine the risks. The local planning authority are aware of our concerns and are working with us. The study will look at the existing sea defences, their ability to defend against flooding, the options for increasing the defences and whether development is appropriate in this location. English Nature will be consulted on the recommendations of the flood appraisal. Until the results of the appraisal are known, we should consider objecting to further developments in the area under Department of the Environment Circular 30/92 (see section 16.2.2).

Both West Dorset District Council and Weymouth & Portland Borough Council have agreed that we should be consulted on all Development Briefs for sites likely to affect our interests; we will produce an integrated response within an agreed timescale.

We have had detailed discussions with Portland Ports Ltd regarding the need to provide adequate pollution prevention measures as part of the redevelopment, in order to ensure that the water quality of Portland Harbour is not put at risk. The need for such facilities has been stated in the form of conditions in the planning permission. A Hazardous Substance Consent is also being considered which will also require rigorous conditions.

A baseline survey of the macrobenthic invertebrates and sediments of Portland Harbour was undertaken during January 1997 to investigate the sediments and biological communities within Portland Harbour in relation to the change of use.

We are undertaking quarterly surveys to ascertain any water quality impacts as a result of the redevelopment of Portland Harbour into a commercial port receiving fertilisers and molasses, and other commercial activities. Boat surveys will be undertaken during 1997 after which further monitoring will be reviewed.

3.11 Waste minimisation

3.11.1 Background

The strategy set out in the White Paper *Making Waste Work* highlights waste minimisation as fundamental to the efficient management of waste (see section 14). The Waste Minimisation Seminar and subsequent Workshop which we organised in east Dorset has led to the establishment of an active waste minimisation group chaired by local industry (see section 14.1.2) and activity supported by the Agency.

3.11.2 Effects

Much of the waste collected in this area is already disposed of to sites outside the area, and the major landfill sites within the area are reaching the end of their working lives. Efficient minimisation can reduce the need for new landfill sites and the transport of wastes, and will often produce significant commercial benefits for industry.

3.11.3 Options for action

We will endeavour to encourage industry and commerce in this area to join the South Wessex Waste Minimisation Group to promote the benefits of waste minimisation.

3.12 Contaminated land

3.12.1 Background

The Environment Act 1995 contains new provisions for dealing with contaminated land which will be implemented by spring 1998; local authorities will be the key regulators and we will act as a consultee and advisor, and take responsibility for *special sites* (see section 18).

Local authorities will be required to carry out a survey to identify contaminated land in their area, and when these have been carried out we have a duty to publish a report on the state of contaminated land periodically.

The precise nature and extent of contaminated land within this area is not fully known as it is often only discovered when sites are redeveloped or when pollution actually occurs.

3.12.2 Effects

Contaminated land carries with it the potential to cause pollution of groundwater and surface waters, especially when new developments take place on the site. Some sites, including those which are likely to cause serious water pollution, may be designated as *special sites* and will become our responsibility.

3.12.3 Options for action

There is a need to clarify the status of contaminated land sites in this area, especially in the urban area of Weymouth and on land released by the Ministry of Defence. Once these sites have been identified, it will be necessary to decide what remedial work is required. We need to ensure effective collaboration with the local authorities and developers throughout this process.

At present, there are no facilities for handling many categories of contaminated waste within the plan area, and we need to determine what are the most appropriate ways to deal with material arising from these sites, and to ensure that it is not disposed of along with clean construction and demolition wastes to landfill.

4. Protection through partnership

We need to work in partnership with local authorities, industry, farmers, environmental groups and other interested organisations to resolve the issues identified and to protect this area. This section outlines some of our work with other organisations, and highlights where we need to further develop these partnerships.

4.1 Links with local authorities

We need to work with local authorities to reduce potentially harmful effects of development. We advise local planning authorities about the impacts of proposed developments on the environment, and identify opportunities for environmental improvement.

New developments may be at risk from flooding or may aggravate flood risks elsewhere by obstructing floodplain flows or increasing surface water runoff. We routinely give advice on flood defence matters for planning applications and other enquiries, and through local plan consultation (see section 15.2).

Where a site forms part of the essential floodplain of the river, *Department of the Environment Circular 30/92* guides us to oppose developments which would obstruct floodplain flows or reduce flood water storage to the detriment of land and property in other ownership (see section 16.2.2). Where necessary we will ensure that flood defence measures are incorporated in all new developments. We have a presumption against culverting of watercourses and other major modifications to watercourses as this reduces wildlife habitat and amenity value.

We will seek to ensure that appropriate pollution control measures are incorporated in all new developments and that the wildlife and landscape of river corridors are protected and en-

hanced. Watercourses should be protected from development, and river corridors extended and managed for wildlife.

The aesthetic impact of litter is also of concern along with other pressures facing urban watercourses. We will encourage local authorities to investigate litter clearance schemes.

The Agency and local authorities both have responsibilities for issues like air quality (see section 8) and contaminated land (see section 18), and we need to work together to deliver improvements. Equally important is the need to further develop effective working relationships with local Environmental Health Officers in areas of common interest.

4.1.1 Communication of Policy Guidance

We have produced and revised several documents which set out our policy guidance in a number of areas. We intend the information in these documents to be useful in ensuring that we provide consistent and up-to-date advice to our customers, and informing local planning authorities, developers and other interested parties about our policies.

- *Liaison with Local Planning Authorities* (see section 15.1.1)
- *Section 105 Surveys* (see section 16.3.1)
- *Policy and Practice for the Protection of Groundwater* (see section 17)
- *A Guide to Surface Water Best Management Practices* (see section 16.3.3)
- *Policy and Practice for the Protection of Floodplains* (see section 16.2.1)

4.2 Planning in the coastal zone

This document also considers issues that affect the coastal zone. Above the low water mark, the Town & Country Planning system provides the means of regulating development (see section 15). Below the mean low water mark, regulation is controlled by several government departments. Historically there has been considerable concern about the sectoral approach in that it allows departments to take a single issue view, and discourages an integrated approach.

The government has rejected a seaward extension of the planning system as the most effective means of controlling development in the marine environment. The view taken is that voluntary cooperation and self-regulation, with local authorities taking the lead role, is the best way to control activity and development.

4.2.1 Dorset Coast Forum

Dorset County Council have taken the lead role in setting up a Coast Forum for Dorset, consisting of local authorities, environmental agencies, central government departments, businesses and other interest groups. Their aim is to promote a sustainable approach to the management of the coastal zone and to develop an integrated coastal zone management policy. We are a member of this Forum and support its aims.

The Forum has been successful in securing European funding from the EU Life Demonstration Programme on Coastal Zone Management; the total project value is £330k, half of which is being met from European funds. The project is being coordinated by Dorset County Council with support from other partners including ourselves, English Nature, Wessex Water Services, British Petroleum, Amoco, Poole Borough Council, Bournemouth Borough Council, West Dorset District Council and Dorset Wildlife Trust. It aims to produce a Coastal Strategy for Dorset and to set an example at the European level on how to approach coastal zone management.

4.2.2 Shoreline Management Plans

Shoreline Management Plans set out the coastal defence strategy for lengths of coast, taking into account natural coastal processes, human and other environmental influences and needs. They are promoted by coastal defence authorities, such as ourselves and District and Borough Councils, and used in local authority development plans and coastal zone management.

These plans provide the vehicle for the long term sustainable defence of our coastlines, by:

- improving our understanding of coastal processes
- working in partnership with all interests and organisation
- preparing an agreed framework for the long term planning of coastal defences

Shoreline Management Plans are part of an initiative on the future planning of our coastline, backed by the Ministry of Agriculture, Fisheries & Food, the Association of District Councils, English Nature and ourselves. There are two plans in preparation for the coastal zone in this area; we work in partnership with other organisations in the development of these plans.

Weymouth & Portland Borough Council are the lead authority for the Durlston Head to Portland Bill Shoreline Management Plan. The Stage 1 Scoping Study has been completed and Stage 2, the preparation of the draft Shoreline Management Plan, is due to commence in September 1997 and should take 11 months.

Stage 2 of the Lyme Bay & South Devon Shoreline Management Plan (Portland Bill to Rame Head, Cornwall) is being managed by West Dorset District Council and is due to be completed by December 1997.

4.2.3 West Dorset Heritage Coast Management Plan

A consultation document, *The West Dorset Heritage Coast, Today and Tomorrow*, was published in March 1996 by Dorset County Council, West Dorset District Council and Weymouth & Portland Borough Council. It provides a focus for debate on the future of the Heritage Coast prior to the preparation of a revised management plan by these three authorities. The document examines a number of issues affecting the Heritage Coast including transport, sewage treatment and water quality, coastal defence, local industries including farming, fishing and tourism, and the recreational use of the area. We recognise the need to work in partnership with these authorities to resolve issues of common interest that impact upon this coast.

4.3 Local Agenda 21

Local authorities are assisting their communities in developing local strategies and action plans for sustainable development. The approach adopted varies, with many Local Agenda 21 groups setting up working groups looking at specific issues.

In October 1997, we organised a conference for all the local authorities in the South Wessex Area, to look at how we can be most effective in assisting communities in developing their Local Agenda 21 plans. Council officers, Councillors and Local Agenda 21 representatives were invited.

4.4 Working with farmers

We promote agricultural incentive schemes as a means of supporting forms of agriculture which can protect and enhance wildlife habitats and landscape. There are no Environmentally Sensitive Areas in this plan area, but other schemes may be available including Countryside Access, Farm Woodland Premium and Countryside Stewardship Scheme from the Ministry of Agriculture, Fisheries & Food; the Wildlife Enhancement Scheme for Sites of Special Scientific Interest from English Nature; the Sites of Nature Conservation Interest Grant Scheme from West Dorset District Council; and the Woodland Grant Scheme from the Forestry Authority.

4.5 Working with business

We are working with local businesses and their representatives to promote pollution prevention and waste minimisation. The recent waste minimisation seminar (see section 14.1.2), our oil care campaign (see section 7.3), and our training video for construction workers are practical examples of how we intend to combine education and communication to prevent pollution.

4.6 Education

We recognise that broad-based education covering the community, educational and industrial sectors will result in a more informed society that is better able to understand the environment, its needs, and the impact of society's activities upon it. In particular, there is a need to:

- educate young people to equip them to make informed judgements about future environmental decisions
- educate industry through consultation, collaborative activities and targeted campaigns to promote a culture of prevention rather than cure
- raise public awareness of environmental issues to engender in society a common ownership of the environment and its challenges

Currently, we provide a wide range of information to all sectors of society, and in addition give many talks and presentations. This Plan is a practical example of the material we publish which can assist in raising public awareness and understanding of environmental issues.

4.7 Development of recreation

Many people spend their spare time enjoying our rivers and coasts. We have a general duty to promote the recreational use of the water environment, and particularly use by the disabled and use for educational purposes. We are required to develop the amenity and recreational potential of inland and coastal waters and associated land where appropriate.

Recreational activities can produce tremendous pressure on our environment and result in conflicts of interest between various activities. We will work with other organisations to promote and develop the recreational use of the area where this can contribute to an appropriate balance of uses. Where high usage of coastal facilities is causing degradation of the environment, we will support projects such as the West Dorset Heritage Coast Management Plan to promote the sustainable use of the coastal zone. We will also support initiatives to reduce litter nuisance, especially on coastal sites.

Part 2

5. The wetland resource of the area

We monitor 52.2km of rivers in this area; in 1995, 78.2% of monitored river lengths were of good or very good chemical quality, while 21.8% were fairly good. In biological terms 88.5% of the monitored river lengths were of good or very good quality while the remaining 11.5% were fairly good. Between 1990 and 1995 there was an overall improvement in chemical quality over 32.5% of the network while biological quality improved by 53.2%. Although water quality has recently improved there are parts of the area where it is not good enough (see section 6.1).

5.1 The Char

The western tributaries arise from seepages below Lambert's Castle, and flow in steep sided valleys on the Gault to join the Char as it cuts through the coastal ridge at Charmouth. The other tributaries flow from the Lias as springs in shallow coombes on the hillside and join the Char in the broad, undulating plain of Marshwood Vale. The headwaters with their flushes now tightly constrained by farmed land, are largely unpolluted but little studied. Of outstanding importance on the coast are the soft cliffs with their wet flush communities and rare insects adapted to the bare soil created by the mobile environment of the slumps. Landslips occur where Lias and Gault Clay outcrop.

Farming is mixed, with grazing on the steep slopes and some arable in the valley bottoms, conserving a traditional landscape. There are some heavily improved leys, but few fields come right up to the rivers. There is a substantial block of mixed forestry above Chamberhayes; elsewhere woods are small and often deciduous copses conceal flushes or line the streamside, retaining humid conditions in the river corridor.

5.2 The Winniford

Between the large catchments of the Char and the Brit, the Winniford flows out to the sea at Seatown and a shorter stream cuts through the coastal ridge at St. Gabriel's Mouth to the west of Golden Cap. Neither has been much modified although the corridor is very narrow. The landscape is hilly with small unimproved fields on the steeper slopes, some under the sympathetic management of the National Trust and others under the same pressures as the Char.

5.3 The Brit

The Brit rises around Beaminster where a number of streams converge between Beaminster and Netherbury. The hills around the north of the catchment form a wide bowl with many springs flowing from the junction of the Upper Greensand with the Gault Clay. It heads due south initially in a steep sided valley with a widening floodplain, enclosed by escarpment slopes with small grazed fields. The lower, undulating land is farmed as arable and improved grassland in larger fields, but a good number still have hedges.

It flows through the west side of the town of Bridport where it is joined from the west by the Simene and then from the east by the Asker. The river then continues on a relatively flat floodplain to its outfall into West Bay Harbour.

Beaminster to West Bay	River Length 13km
Beaminster to N. Mills Bridport	Average Gradient 1:212
N. Mills to West Bay	Average Gradient 1:400

Some Chalk tops the high ground around Beaminster but the upper catchment is predominantly overlain with Fullers Earth Clays. Below Beaminster, the river flows over Yeovil and Bridport Sands. Response to rainfall is very rapid at the top of the catchment; heavy rain can result in almost instantaneous flooding in Beaminster. The steep gradient and short distance can result in flood peaks reaching Bridport within 4 hours of rainfall.

The Simene rises from an outlier of the Cretaceous stata in the head of a steep sided, wooded valley and follows a natural course until the valley opens out and the fields become larger.

The Asker and its tributary the Mangerton arise from similar circumstances, although their sources are in better defined coombes. The Asker itself has two main tributaries which flow approximately parallel in a westerly direction. The streams then run in broad valleys until the main valley is reached. Strip lynchets survive in large blocks around Loders and Uploders.

To the north, the Mangerton rises in steep-sided valleys around Powerstock and West Milton then turns south through Mangerton and joins with the Asker at Bradpole. The Asker skirts the eastern side of Bradpole and flows through the east side of Bridport to meet the Brit just downstream of Bridport.

Powerstock to Brit	River Length 8km
Askerwell to Bradpole	Average Gradient 1:72
Bradpole to Confluence	Average Gradient 1:300

The upper reaches of the Asker and Mangerton are principally overlain with the Fullers Earth Clays (Middle Jurassic), which give way to inferior Oolitic Limestones, and to the north of Bridport, the Bridport and Yeovil Sands (Lower Jurassic) with the lowest reaches on middle Lias Sands. The steep sided, clay, upper catchments respond very rapidly to rainfall; peak flows can reach Bradpole and Bridport within 3-4 hours of rainfall.

5.4 The Bride

The Bride rises at a lake in hills at Bridehead near Dorchester, and flows due west through an increasingly wide and gently sloping valley to Burton Bradstock. Upstream of the town the channel splits into a mill stream, which passes through the southern side of the town, and a bypass channel which skirts meadows to the south. The channels join downstream of the B3157 and flow a short distance through a gap in the limestone coastal ridge to outfall through the gravel beach at Burton Freshwater.

For most of its length the channel has not been greatly modified as it flows through the mixed grazing and arable fields. However there is a greater proportion of arable and a more open field pattern than in the catchments to the west, and maize is becoming common.

Little Bredy to Sea Outfall	River Length 12km
	Average Gradient 1:170

The high ground around the west of the Bride valley is topped with Chalk and Greensand overlying Oxford Clays; these give way to Fullers Earth Clays along the valley. The response to rainfall can be variable due to the mixed geology of the catchment. The chalk hills to the west usually dampen the response to high rainfall, but the clay areas can result in rapid run-off. Intense storms after prolonged periods of rain are likely to result in unusually high flows.

The two largest tributaries on the south side flow through steep sided valleys with woods listed as Sites of Nature Conservation Interest. There are fewer copses on the north side and the streams are shorter. They derive from groups of springs at Litton Cheney, Chilcombe and above Shipton Gorge.

No sizeable streams flow directly to the sea, but there are significant flows through the ground. Where drainage of fresh water is impeded by the pebbles of Cogden Beach, there are important coastal meadows, the wetlands of Burton Mere and West Bexington nature reserve.

5.5 Rodden, Portesham Mill Stream, Cowards Lake and the Fleet

The catchment of the Fleet is a narrow strip of undulating arable or improved pasture running northwest from Weymouth to the Abbotsbury Swannery, backed by the steep slopes of White Hill and Portesham Hill. Fences or stone walls are more a feature of this open landscape than the hedges in the catchments to the west and there are few trees or copses. The three short streams flowing into the Fleet have modified channels for much of their length and a number of the old ditches have been lost.

5.6 The Wey

The source of the Wey is a chalk spring at Upwey, south of Dorchester, from where it takes a highly modified course due south through Broadwey and Nottington to Weymouth. Tributaries from the west, principally the Pucksey Brook, are similarly modified channels crammed between intensively farmed fields. The few coppices left are Sites of Nature Conservation Interest, but they are incidental to the streams.

At Weymouth the river runs through a marshy, semi-tidal area, Radipole Lake, before turning east and outfalling through the Harbour, into Weymouth Bay. Before reaching the lake and extensive reed beds, the river flows beside the semi-improved pasture and sallow scrub in the upper section of the nature reserve. Silt deposition, brought down from the arable fields is a problem and will be the subject of a Water Level Management Plan (see section 16.5.7).

River Length	8km
Average Gradient	1:140

The upper reaches are fed by chalk springs, while from Broadwey to Weymouth the catchment comprises principally Kimmeridge and Oxford Clays and Forest Marble. The tributaries from the west are also derived from Kimmeridge and Oxford Clays and Forest Marble. The high proportion of clay in the catchment can result in rapid responses to intense rain. The worst conditions are likely to occur when intense rain follows a prolonged period of wet weather and the upper chalk catchment is saturated.

At the east of Weymouth is Lodmoor, an important wetland nature reserve with a country park and complex of visitor attractions including a Sealife Centre and butterfly farm. Our recent capital scheme to rebuild the Preston sea wall incorporated features to improve conditions in the nature reserve.

5.7 Weymouth to Ringstead

The Jordan flows from a steep-sided coombe in the downs north of Sutton Poyntz through Preston and substantial caravan sites to the coast. Most of the channel has been modified. There is a relatively large wood listed as a Site of Nature Conservation Interest. Two small streams flow from opposite directions to meet above Ringstead and flow south. The western tributary is wooded and the eastern tributary flows through arable land.

Fields are mainly improved grazing, less so on the Downs to the north and the land is not as intensively farmed as the Wey catchment. At Ringstead there is a slumped cliff, similar to Black Ven at the western extreme of the area.

To the east, the stream falling to the sea over Hannah's Ledge at Osmington Mills, rises east of Upton in a shallow valley and flows westwards before turning into the narrow chine to the sea.

6. Water quality

We aim to maintain and where appropriate improve the quality of controlled water for all those who use it. We achieve this by setting water quality targets for the area based on:

- River Quality Objectives to protect recognised uses
- standards laid down in EC Directives
- international commitments to reduce the amount of Annex 1A substances entering tidal waters

6.1 River Quality Objectives

The water quality targets that we use for managing water quality are known as River Quality Objectives (see section 3.1); these are based on the River Ecosystem classification which considers dissolved oxygen, Biochemical Oxygen Demand (BOD), ammonia, pH, copper and zinc levels. These classes reflect the chemical quality needed by different types of river ecosystem including the types of fishery they can support.

Map 6 shows where current water quality fails to meet its River Quality Objective. This assessment is based on three years of routine monitoring data from the Public Register collected between 1994 and 1996. We have shown these failures as *significant* and *marginal*. Significant failures are those where we are 95% certain that the river stretch has failed to meet its River Quality Objective, marginal failures are those where we are less certain (between 50% and 95%) that the stretch has failed.

Of the 15 monitored river stretches (52.2km) in this area there are none which significantly fail their

Map 6. Compliance with proposed River Quality Objectives

current River Quality Objective, and only two stretches (5.8km of river) which marginally fail; one further stretch fails its long term River Quality Objective.

River	Stretch Name	River Quality Objectives		Parameters causing non compliance (1996 RE Class)			Reasons contributing to non compliance
				RQO Failures	Long Term RQO Failures		
		RQO	LTRQO	Marginal	Significant	Marginal	
Char	Downstream Cards Mill Farm - Charmouth STW	3	2		BOD Total Ammonia		Septic tank discharges from Whitchurch Canonicorum and diffuse agricultural inputs from land runoff in the clay areas.
	Charmouth STW - Sea	2		BOD	n/a	n/a	Diffuse agricultural inputs from land runoff in the clay catchments upstream and unconsented discharges in Wootton Fitzpaine
Wootton Fitzpaine Stream	Source - Confluence with Char	2	1	BOD	BOD	BOD Total Ammonia	Septic tank and unconsented discharges. Diffuse agricultural inputs from land run off in clay areas

6.2 EC Bathing Waters Directive

The EC Directive *concerning the quality of bathing water* (76/160/EEC) seeks to protect public health and the amenity value of popular bathing waters by reducing pollution. The Directive contains standards for 19 microbiological, physical and chemical parameters to assess bathing water quality. Compliance is assessed mainly by standards for bacteria found in sewage.

We are responsible for monitoring the quality of identified, popular bathing waters and providing the results to the Department of the Environment, Transport and the Regions who decide whether the standards in the Directive have been met. Where identified bathing waters fail to meet the Directive, we are responsible for identifying sources of pollution that are causing failures, and making sure that improvements are made.

There are 11 identified EC Bathing Waters in this area, shown below:

Bathing Water	Year(s) of non compliance since 1990	Comments
Charmouth West	None	
Seatown	None	Combined Sewer Overflow improvements on the Winniford Stream have improved freshwater inputs to the bathing water, and pumping station improvements have been made at Seatown
Eypemouth	None	
West Bay (West)	None	
Church Ope Cove	None	
Portland Harbour Sandsfoot Castle	1992, 1993	Investigations were undertaken in 1994 to identify potential sources of contamination. The spill frequency of a number of problematical Combined Sewer Overflows discharging to the Castle Cove outfall has been reduced by Wessex Water Services. Another potential source of contamination from the Doncaster Road outfall is still occurring but there have not been any failures of the Directive since 1993. Wessex Water Services have indicated that they may still consider further improvements
Portland Harbour Castle Cove	None	
Weymouth Central	None	
Weymouth Lodmoor	None	
Bowleaze Cove	1996	The Jordan (which has inputs from holiday camps, campsites and agricultural land) is considered to be the only potential source of contamination to this bathing water. A detailed investigation is currently underway to identify reasons for non compliance
Ringstead Bay	None	

6.3 EC Freshwater Fish Directive

The EC Directive on the *quality of waters needing protection or improvement in order to support fish life* (78/659/EEC) ensures that water quality in designated stretches of water is suitable for supporting certain types of fish.

This Directive contains two sets of quality standards. One set of standards protects cyprinid or coarse fish populations, for example roach and chub. The other set of standards are stricter and protect salmonid or game fish populations, for example salmon and trout. There are two sets of standards for each fishery type: Imperative standards which must be achieved, and Guideline standards that member states should aim to achieve.

We are responsible for monitoring the quality of identified fisheries and reporting the results to the Department of the Environment, Transport and the Regions who decide whether the standards in the Directive have been met. Where the requirements are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

River	Stretch	Length (km)	Designation	Compliance since 1990
Wey	Upwey-Radipole	3.9	Salmonid	All years
Brit	Confluence Stoke Water & Brit-West Bay	12.1	Salmonid	All years
Asker	Confluence-confluence Brit	4.5	Salmonid	All years

6.4 EC Nitrates Directive

The EC Directive *concerning the protection of waters against pollution caused by nitrates from agricultural sources* (91/676/EEC) protects waters from pollution by nitrates used in agriculture.

This Directive requires Member States to identify waters that are or could be affected by nitrates. The land draining to these polluted waters must be designated as *Nitrate Vulnerable Zones*. Action plans must be established to reduce existing nitrate pollution and prevent further pollution. Regular reviews must be carried out of existing and potential new Nitrate Vulnerable Zones; the first must be completed by December 1997, and then at four year intervals. Outside Nitrate Vulnerable Zones, member states must establish and promote a code of good agricultural practice.

We are responsible for advising on the selection and boundaries of Nitrate Vulnerable Zones, but the designation of Nitrate Vulnerable Zones and agricultural measures to be adopted is the responsibility of government. There is one Nitrate Vulnerable Zone in the area, at Langdon Springs, Beaminster (see section 3.2).

6.5 EC Dangerous Substances Directive

The EC Directive *on pollution caused by certain substances discharged in the aquatic environment of the community* (76/464/EEC) protects the water environment by controlling discharges to rivers, estuaries and coastal waters.

This Directive describes two lists of compounds. List I contains substances regarded as particularly dangerous because they are toxic, they persist in the environment and they bioaccumulate. Discharges containing List I substances must be controlled by Environmental Quality Standards issued through daughter directives. List II contains substances which are considered to be less dangerous but which still can have a harmful effect on the water environment. Discharges of List II substances are controlled by Environmental Quality Standards set by the individual Member States.

We are responsible for authorising, limiting and monitoring dangerous substances in discharges. We are also responsible for monitoring the quality of waters receiving discharges which contain dangerous substances and reporting the results to the Department of the Environment, Transport and the Regions who decide whether the standards in the Directive have been met. Where the requirements of this Directive are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

We do not monitor any sites in this area for List I substances. We monitor a single designated site for List II metals on the Bride downstream of Modbury Fish Farm. There have been no exceedences of Environmental Quality Standards at this site since monitoring began.

6.6 EC Urban Waste Water Treatment Directive

The EC Directive *concerning urban wastewater treatment* (91/271/EEC) specifies minimum standards for sewage treatment and collection systems.

This Directive specifies secondary treatment for all discharges serving population equivalents greater than 2,000 to inland waters and estuaries, and greater than 10,000 to coastal waters. Discharges below these population equivalents receive appropriate treatment (as defined in the Asset Management Plan (AMP2) guidance note). We are responsible for making sure that discharges receive the level of treatment specified in this Directive.

The Directive also requires higher standards of treatment for discharges to *sensitive* areas, and allows lower standards of treatment to *less sensitive* areas. Sensitive areas are those waters that receive discharges from population equivalents of greater than 10,000, and are or may become eutrophic in the future.

We carry out monitoring, and present this information to the Department of the Environment, Transport and the Regions who decide whether the watercourse is sensitive. We then ensure that discharges to the sensitive area receive a higher level of treatment.

Less Sensitive Areas or High Natural Dispersion Areas are those estuarine or coastal waters which are naturally very dispersive. In these areas a lower level of sewage treatment may be allowed providing dischargers can demonstrate by Comprehensive Studies that no harm will be caused to the environment by the lower level of treatment. We are responsible for ensuring that these studies are carried out correctly. In addition, protection of Bathing Waters and other recognised uses must be considered separately within the scheme design.

The area contains Urban Waste Water Treatment schemes at Charmouth, Bridport and Weymouth. Wessex Water Services are carrying out the Comprehensive Studies to establish whether primary treatment is sufficient to prevent harm to the environment. We will be working closely with Wessex Water Services when we receive their reports on these studies.

Depending on the outcome of these studies, the discharge from Charmouth outfall must receive a minimum of primary treatment by 2005. Similarly the discharges at Bridport and Weymouth must be treated to a primary standard as a minimum by the end of 2000.

6.7 EC Shellfish Waters Directive

The EC Directive *on the quality required of shellfish waters* (79/923/EEC) protects shellfish populations (defined as bivalve and gastropod molluscs) from harm caused by pollution.

We are responsible for monitoring the quality of designated shellfish waters and reporting the results to the Department of the Environment, Transport and the Regions who decide whether the standards in the Directive have been met. Where standards are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

Two sites within Portland Harbour are monitored for this Directive. In 1996 the standards for zinc and copper were exceeded. A study is underway to identify any sources and long term trends in water quality or bioaccumulation in shellfish tissue (see section 3.3.3).

6.8 EC Shellfish Hygiene Directive

The EC Directive *laying down the health conditions for the production and the placing on the market of live bivalve molluscs* (91/492/EC) protects the health of consumers of live bivalve molluscs such as mussels and oysters.

This Directive defines standards for shellfish quality required in the end product. It also classifies bivalve mollusc shellfish harvesting areas into four categories according to the concentrations of bacteria found in the shellfish flesh. The Ministry of Agriculture, Fisheries & Food and

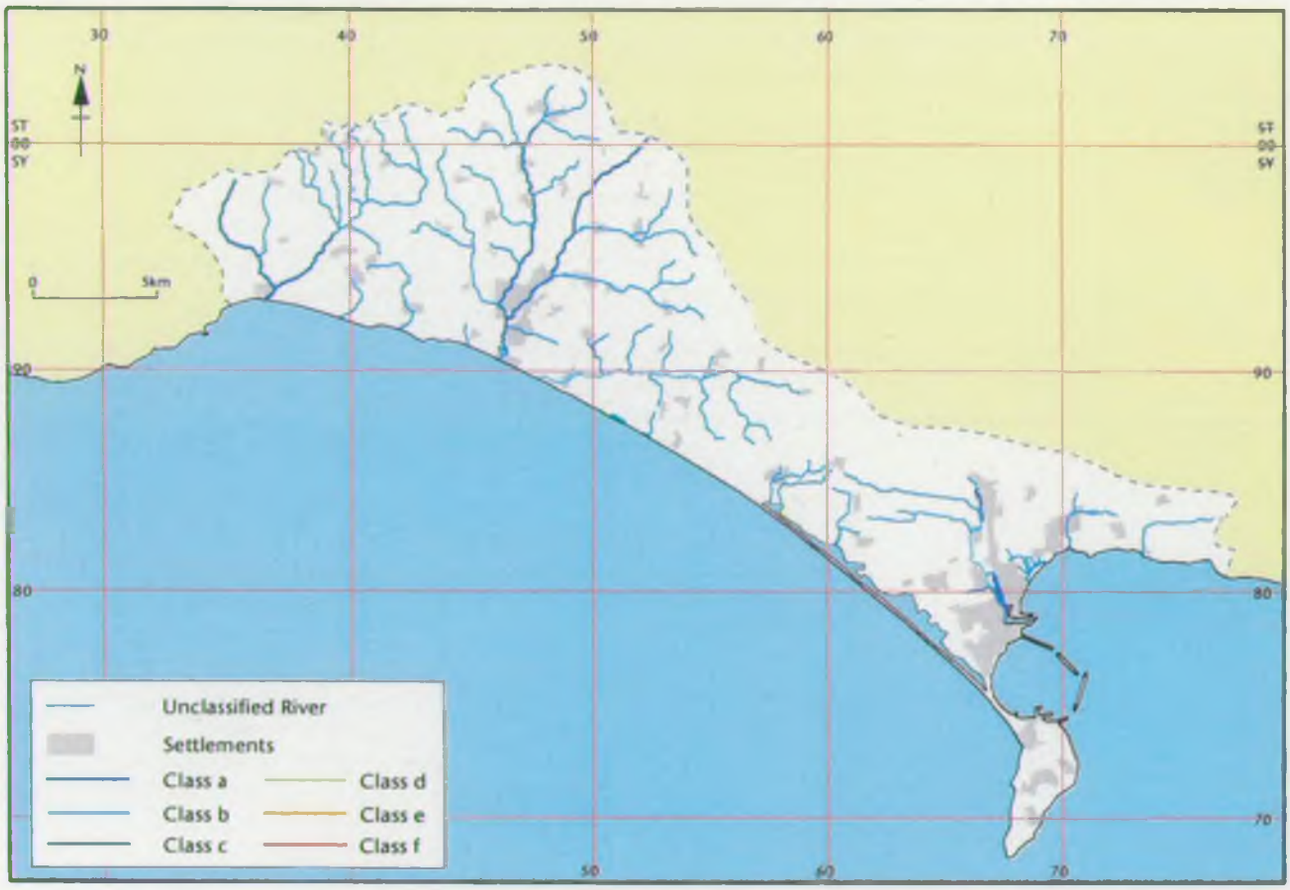
the Department of Health share responsibility for this Directive in England and Wales. Although we provide information on the location of discharges that may affect harvesting areas, we cannot control the quality of polluting discharges under this Directive.

Three sites have been classified in the area; one in Portland Harbour, one within the Fleet, and a deep water offshore site on the Shambles Bank. In 1996, all these sites achieved a B classification, a deterioration from an A classification in 1995.

6.9 Biological quality of rivers

Biological river quality is based on the diversity of aquatic invertebrate life, the small animals present in the river; they are unable to move far and respond to long term conditions within the watercourse. We have devised a General Quality Assessment classification to show biological river quality (Environment Agency 1996).

Map 7. Biological water quality



All of our biological monitoring sites have 25 or more families of freshwater invertebrates, except the Simene. The 1995 biological survey shows that the number of families is lower than in the other main South Wessex rivers. In some cases this may relate to lower water quality, but it is generally a reflection of the different character of the rivers themselves; the large chalk rivers elsewhere are very productive and naturally support rich populations of invertebrates.

The biological quality of the monitored reaches of rivers in the plan area is mostly *very good* (a), or *good* (b); only parts of the Simene are *fairly good* (c) (see Map 7). Since 1990 there appears to have been a general improvement in biological river quality throughout much of the area; the most significant improvements have occurred on the Char, Brit and Bride.

The improvement in the lower Char, from *fair* (d) in 1990 to *very good* (a) in 1995, is due to the transfer of the discharge of Charmouth sewage treatment works from the river to a long

sea outfall. Other surveys have shown that the biological quality of much of the main Char and Brit has improved as a result of water quality initiatives and farm awareness campaigns.

7. Aqueous discharges

We regulate the disposal of liquid effluents direct to surface or groundwater by issuing discharge consents. Discharges which have the greatest potential to affect the quality of the water environment have numeric concentration limits attached to their consents. These limits may apply to individual or groups of substances and are set at levels needed to protect the environment from harm and ensure compliance with River Quality Objectives, EC Directives and International Conventions (see section 6).

We consider applications for consents to discharge on a case-by-case basis, and can refuse to consent a discharge if it will cause an unacceptable deterioration in water quality. It is illegal to discharge sewage effluent or trade waste without a consent; discharges of clean surface water do not normally require a consent, but in exceptional circumstances we can regulate them by prohibition control. We also work with the water industry's regulator, OFWAT, to influence investment in sewerage and sewage treatment by the water companies.

Discharge consents can only be used to control point source discharges; these may be continuous (e.g. sewage works discharges), intermittent (e.g. sewer overflows), or discharges to ground (e.g. soakaways). Diffuse sources of pollution, such as agricultural run-off and much urban and highway run-off, have to be tackled using other regulatory powers.

Map 8. Wessex Water Services sewage treatment works

7.1 Continuous discharges

7.1.1 Treated sewage

In areas served by mains sewerage, both trade effluents and sewage are normally treated at the local sewage treatment works. In this area the sewerage undertaker is Wessex Water Services which operates 12 sewage treatment works (see Map 8); the largest is Weymouth which discharges screened and macerated effluent via a Long Sea Outfall.

There are 15 private sewage treatment works in the plan area that have a consented maximum discharge volume of greater than $5m^3$/day (see Map 9). Extensive parts of the area covered by this plan are unsewered and there are many small domestic plants in operation. Discussions are taking place regarding first-time sewerage schemes at Wootton Fitzpaine and Ringstead.

Map 9. Private sewage treatment works

7.1.2 Sewage treatment improvement plans

Improvements to Wessex Water Services Sewage Treatment Works over the next five to ten years are subject to available funding approved by OFWAT, the water industry regulator. A strategic business plan, known as Asset Management Plan (AMP2) was developed based on guidelines agreed between the National Rivers Authority, the Department of the Environment, Wessex Water Services and OFWAT in 1994. In order of priority, schemes included are:

- those required to meet and maintain current EC and domestic statutory obligations
- those required to meet and maintain new EC and domestic statutory obligations and future legal obligations
- those which have been justified separately to maintain river quality relative to the 1990 National Rivers Authority survey of water quality or to achieve river or marine improvements.

The National Rivers Authority agreed improvement plans under AMP2 (Asset Management Plan) for structured improvements to existing discharges including Shipton Gorge and Osmington Mills Sewage Treatment Works which have now been completed; the AMP2 scheme has effectively finished now. There are proposals for further improvements to Wessex Water Services consented discharges under the AMP3 scheme, but these have as yet to be agreed between the Wessex Water Services, OFWAT and ourselves.

7.1.3 Trade effluents

Most trade effluents are discharged to the area via sewage treatment works, primarily those serving the Weymouth and Bridport Long Sea Outfalls. There are 43 consented trade effluent discharges to surface waters or to ground in this area; most relate to farm effluents.

7.2 Intermittent discharges

These include sewer storm overflows, sewage pumping station emergency overflows and discharges of contaminated surface run-off; these are mainly associated with urban areas. During heavy storms, large volumes of oily water with bacteriological contamination and high Biochemical Oxygen Demand can be generated by run-off from carparks and industrial estates; we carry out pollution prevention visits and surveys to identify such problems.

7.3 Discharges to ground

Remote properties and small villages are not usually connected to mains sewer. Septic tanks discharging to ground soakaway systems as well as small treatment plants and sealed cesspools are used instead (see section 17). Pollution problems in local ditches, streams and groundwater aquifers can result if soil conditions are unsuitable.

Waste oil should be recycled where possible; we publish an Oil Care Code, and provide a telephone helpline on 0800 663366 to supply the location of oil recycling banks. Oil storage areas should be regularly checked for leaks and signs of corrosion. New legislation will soon be available to ensure that relevant oil storage tanks are adequately bunded and that drums of oil and chemicals are safely and securely stored.

Groundwater pollution can arise from a number of sources including disposal of wastes to land, septic tank discharges and fuel spills. Polluting substances can remain in the ground long after the spillage has occurred and appear in boreholes and springs.

7.4 Pollution incidents

During 1996 there were 144 substantiated pollution incidents in this area; only one was classed as a major incident. The causes of these incidents were very varied, reflecting the diversity of activity in the area.

Road traffic accidents can result in spillages of petrol, diesel, milk, chemicals and liquid wastes into surface water drainage systems and watercourses. Incidents also commonly involve discharges of oil, vehicle washings and paint from industrial estates in the area, usually due to the lack of storage facilities, poor maintenance of interceptors and lack of responsibility for overall drainage requirements.

We investigate all reported pollution incidents and, where appropriate, collect evidence to support prosecution. We also carry out follow-up visits to ensure that appropriate remedial actions are taken to mitigate the effect of any pollution, and that the necessary pollution prevention measures are taken.

Pollution incidents are expensive to clean up, but these costs can now be passed on to the polluter to pay. Prevention is better than cure, and we commit substantial resources to site visits to advise local businesses and farmers on the best ways to avoid pollution.

8. Air quality

Air quality is an indicator of environmental quality. Air pollution can damage flora and fauna and buildings, and have significant effects on soil and water. Some pollutants, such as acidic gases, can cause serious problems for those with asthma, bronchitis and similar diseases.

Air quality often involves issues covering a far greater area than our area boundaries. We have produced *The Environment of England and Wales - a Snapshot* which describes the state of the environment in national terms.

We need to work closely with others to achieve environmental improvements. This is particularly important with regard to local air quality where we are only one of a number of regulatory bodies, with a role in helping to achieve the government's air quality strategy:

- the Department of Transport enforces controls on vehicle manufacturers
- the County Council Structure Plan contains policies on the need to control pollution and the County Analyst provides an analytical service for District Council Environmental Health Officers
- District Council Environmental Health departments regulate air pollution (Part B processes) under Part I of the Environmental Protection Act 1990
- District Councils also deal with a range of other forms of pollution, such as smells from domestic and agricultural premises and noise pollution. Many local authorities monitor air quality in their area
- the Police are responsible for controlling emissions from vehicles

8.1 National Air Quality Strategy

In August 1996, the government published a national strategy for air quality including:

- a framework of standards and objectives for the pollutants of most concern
- a timetable for achieving objectives
- the steps the government is taking and the measures it expects others to take to see that objectives are met

8.2 Local Air Quality Management Plans

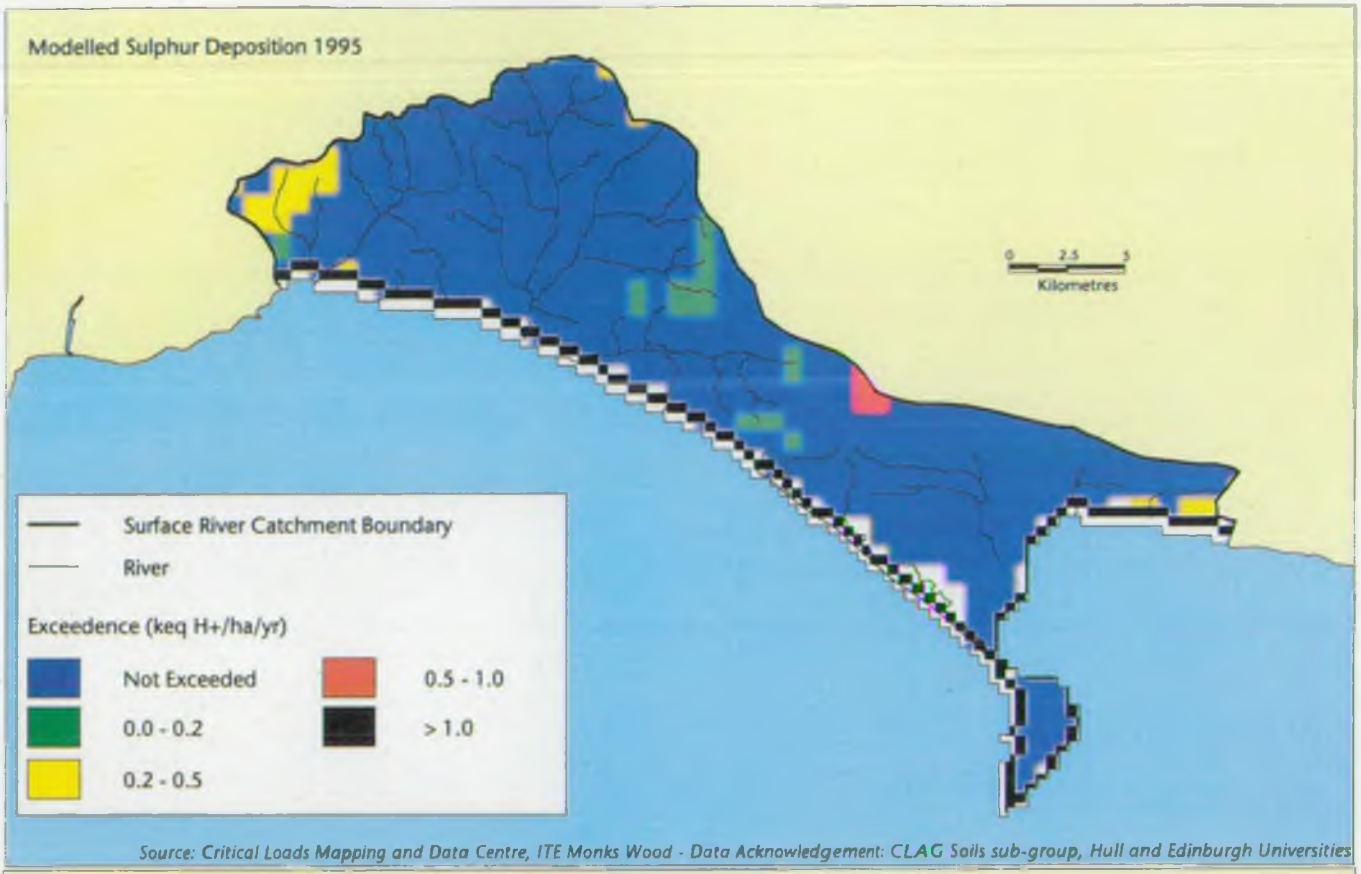
Local authorities took on new responsibilities for assessing and managing air quality in April 1997; they will carry out periodic reviews of air quality in their areas. Where standards are not being met, or are not likely to be met, an Air Quality Management Plan should be produced to improve air quality.

8.3 Ground level ozone

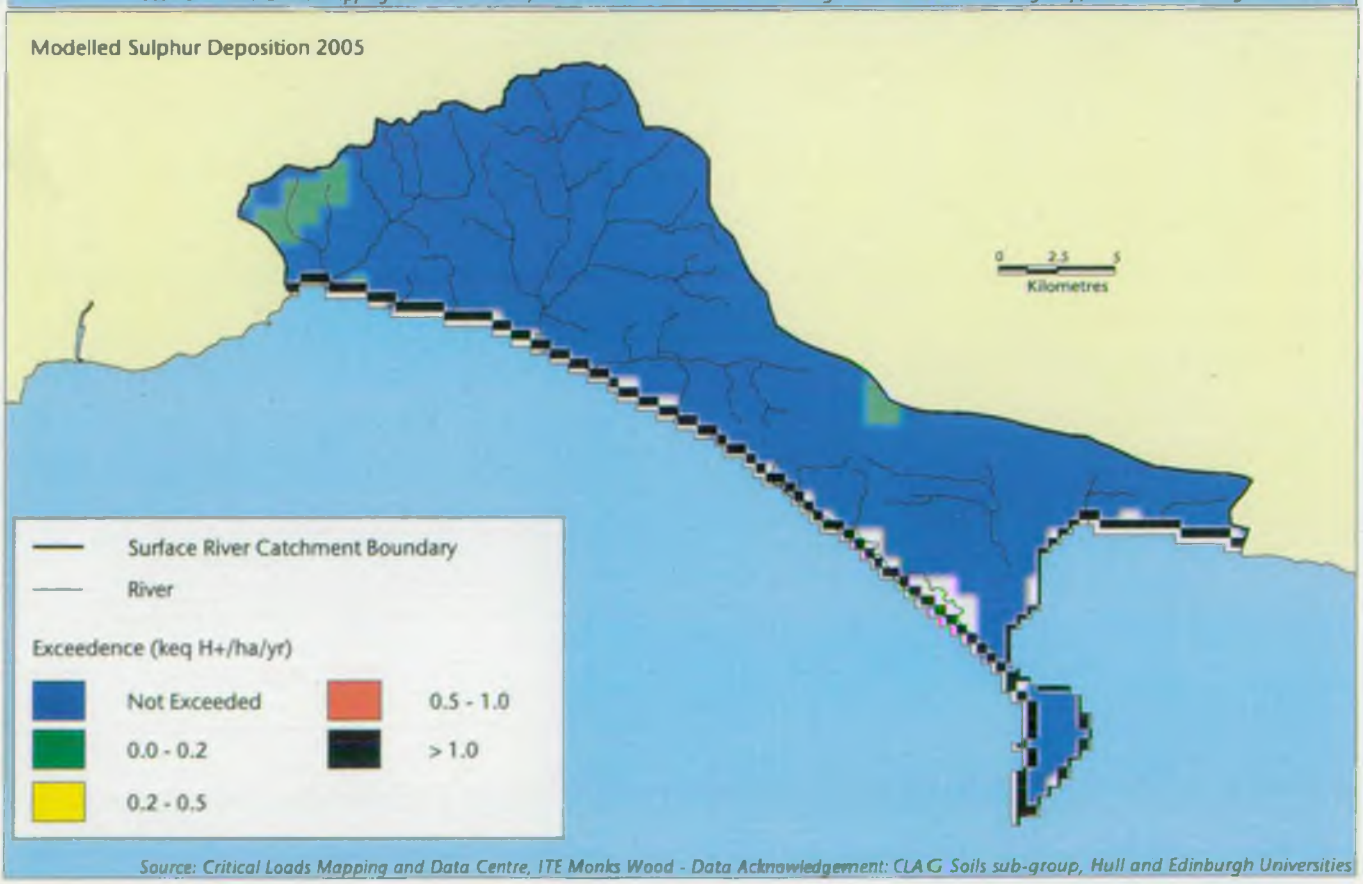
Ozone in the upper atmosphere shields the earth from harmful ultra-violet radiation. At ground level however, ozone can be a harmful pollutant damaging crops and building materials and causing respiratory difficulties amongst sensitive people. Ground level ozone is formed by a chemical reaction between nitrogen oxides and hydrocarbons, derived mainly from vehicle exhausts. These chemical reactions do not take place instantaneously and once ozone is produced it may persist for several days. Consequently, ozone produced at one site may be carried for considerable distances in the air, and maximum concentrations usually occur away from the source of primary pollutants. The highest concentrations of ozone generally occur during hot, sunny and relatively windless summer days.

In common with other parts of southern England, ozone levels in the area may exceed those at which damage to vegetation may occur.

Map 10. Exceedence of critical loads of acidity for soils in 1995 and 2005



Source: Critical Loads Mapping and Data Centre, ITE Monks Wood - Data Acknowledgement: CLAG Soils sub-group, Hull and Edinburgh Universities



Source: Critical Loads Mapping and Data Centre, ITE Monks Wood - Data Acknowledgement: CLAG Soils sub-group, Hull and Edinburgh Universities

8.4 Acid deposition

The main sources of acid deposition are sulphur dioxide and oxides of nitrogen. In the northern hemisphere, these compounds come mainly from burning fossil fuels, but also from natural sources such as organic decay, volcanic eruptions and lightning strikes; these account for less than 5% of acid deposition in the UK.

Emissions of nitrogen oxides are thought to be responsible for about one third of the acidity of rainfall, and the proportion appears to be increasing. Road vehicles are responsible for about half of the emissions of nitrogen oxides in the UK.

Research in the UK over the past 20 years has led to the development of an effects-based emission control policy using a critical loads approach; this involves assigning a critical load of acidity to particular ecosystems which is the amount of acid deposition below which harmful effects do not occur according to present knowledge. Current and predicted acid deposition can be compared with the critical load to see whether it is exceeded (Map 10).

In 1994, a protocol was agreed under the United Nations Economic Commission for Europe to reduce exceedences of critical loads; the UK agreed to reduce its sulphur dioxide emissions by 80% by 2010 from a 1980 baseline. The UK's sulphur strategy, Reducing Emissions of Sulphur Dioxide, A Strategy for the United Kingdom, was published in December 1996 and indicates that the UK will meet interim targets for 2000 and 2005; compliance is also expected with the 80% reduction target for 2010. In January 1997, the European Commission published a draft strategy which aims to further reduce critical load exceedences for both sulphur and nitrogen.

9. Conserving the natural environment

We have duties to conserve and enhance wildlife, especially in rivers and wetlands, and a duty to promote conservation, particularly in the aquatic environment. It is important that we influence land use planners and land managers to look after rivers and wetlands sensitively.

The Dorset *Red Data Book* (Mahon & Pearman 1993) provides a concise summary of the rare and endangered species in the County. Early in 1996, the *Biodiversity of the South-West* was published, and in October 1996, Dorset Environmental Records Centre circulated the first draft of *The Biodiversity of Dorset*. This is the first comprehensive audit of the habitats and species which are rare, threatened, declining or otherwise important for the maintenance of biodiversity in Dorset.

9.1 Designated areas

Areas which have been identified as having special conservation value, whether designated or not, are shown on Map 11 and Map 12.

9.1.1 EC Habitats Directive

The EC Directive on Species and Habitats (92/43/EEC) seeks to protect habitats and species of European importance by designating Special Areas of Conservation. Those parts of Chesil, the Fleet and Portland Harbour shore which are Sites of Special Scientific Interest are a candidate Special Area of Conservation primarily for the marine and coastal species; the lagoon of the Fleet is a priority habitat.

9.1.2 EC Birds Directive

The EC Directive on the Conservation of Wild Birds (79/409/EEC) seeks to protect wild birds and their habitats by designating Special Protection Areas. Those parts of Chesil, the Fleet and Portland Harbour shore which are Sites of Special Scientific Interest are a proposed Special Protection Area.

Map 11. Designated conservation sites and areas

9.1.3 Ramsar sites

Sites identified by the UK Government under the Convention on Wetlands of International Importance, which was ratified by the UK Government in 1976, include Chesil and the Fleet.

9.1.4 Other designated sites

Habitats, sites for individual species, geology and land forms of national importance may be designated Sites of Special Scientific Interest under the Wildlife and Countryside Act 1981. There are 29 Sites of Special Scientific Interest of which 12 have a wetland interest.

Similarly, sites where there are good geological exposures, especially if accessible for educational purposes, are chosen by a joint group as Regionally Important Geological Sites; there are 11 of these in the area.

9.1.5 Non-designated sites

Sites without statutory protection which satisfy a minimum level of County importance for wildlife are identified by the Dorset Wildlife Trust and referred to as Sites of Nature Conservation Interest; there are 137 of these in the area, 74 with a wetland interest.

These sites are shown on Local Plans and there are usually local authority policies to protect them from development. Management is mostly reliant on sympathetic land ownership, volunteers' work and expertise or grants from funds such as the Countryside Stewardship scheme and the West Dorset District Council's Sites of Nature Conservation Interest grant scheme.

Map 12. Designated conservation areas

Environment Agency South West Region

9.2 Local perspective

9.2.1 Lyme Bay

The position of Lyme Bay, at the transition between warm and colder areas of sea, gives rise to a diversity of marine communities. The reefs provide one of the most easterly sites for a number of spe-

cies, like the Ross coral (*Pentapora foliacea*) and the sea fan (*Eunicella verrucosa*). The saw-tooth ledges are one of the few sites in Britain for the sunset coral (*Leptopsammia pruvoti*).

The English Nature draft profile document on the Lyme Bay Natural Area lists the following habitats of importance in West Dorset:

- shingle beaches and bars supporting pioneer strandline vegetation
- rocky reefs in Lyme Bay with large populations of rare species, especially slow growing and fragile species
- brackish lagoons and freshwater lakes with rare plants and invertebrates
- soft cliffs and landslips, mud slides and undercliffs with ephemeral and successional communities and a rich insect fauna
- hard cliffs with maritime grassland, ledge communities and breeding seabirds
- recent natural woodlands and associated scrub on soft cliffs

Limestone reefs are also being degraded by scallop dredging, dumping of dredged spoil, and sewage outfalls which reduce the diversity of communities locally. Protection is necessary for all these habitats.

9.2.2 The Wey, Radipole and Lodmoor

The Wey and Pucksey Brook are typical clay-based rivers which rise on the chalk. They are small watercourses, flowing over gravel with increasing silt deposits as flow slackens. Water crowfoot, watercress and fool's watercress dominate the gravels, while reed grass, bur reed and *Phragmites* dominate the siltier sections downstream.

Radipole and Lodmoor are high-profile Royal Society for the Protection of Birds reserves leased from Weymouth & Portland Borough Council. Snipe do not breed in this area on a regular basis, although there are occasional records from Lodmoor and Radipole, and the bearded tit requires the reed beds found there. Cetti's warbler is abundant in the Wey valley. Lodmoor is also an important site for wetland plants, being one of very few sites in Dorset for the brackish water-crowfoot (*Ranunculus baudotii*). Water level and bed level management are critical for the production and management of healthy reed beds, but at present there is limited control.

At Radipole, Weymouth & Portland Borough Council, in collaboration with the Royal Society for the Protection of Birds, raised sluice levels at the Bridge in 1996, which had beneficial effects on the reed growth and associated wildlife. The river at the upstream end of the reserve requires frequent maintenance; installation of a silt trap might help this, and a Water Level Management Plan must be produced by 1998 (see section 16.5.7). Another problem is that carp which have been introduced to support a fishery are consuming benthic invertebrates which may be to the detriment of the breeding success of the wildfowl and influencing silt distribution (see also section 10.2). Weymouth & Portland Borough Council have recently instigated the Radipole Lake Liaison Committee to consider all the issues; we are represented on this committee.

At Lodmoor, we have contributed to the cost of two sluice gates to control water levels, in compliance with a stewardship scheme and the land drainage consent. The Preston sea wall capital scheme included the repair of a sluice for better control of levels.

9.2.3 Isle of Portland

There are no significant streams on the Isle of Portland, but some of the abandoned quarries hold water and in the past wells would have supplied the residents. The after-use of the quarries and continuing work have a major impact on this small island.

The cliffs are internationally important for their geology, and they also support a varied flora and colonies of breeding seabirds. Inland are the colonies of the limestone subspecies of the silver studded blue butterfly (*Plebejus argus* ssp. *cretaceus*), endemic to Portland.

Portland Bill is a major landfall for birds crossing the channel. The fulmar's stronghold is Portland, but it is also found on other permanent cliffs along the coast. Peregrine falcons and ravens are rare but increasing in these habitats.

9.2.4 Portland Harbour, the Fleet and Chesil Beach

The enclosed waters of Portland Harbour are of high scientific interest for their marine communities and rare species with a southern distribution, such as an anemone (*Scolanthus callimorphus*), a rare sea slug (*Aeolidiella alderi*) and an ascidian (*Phallusia mammillata*). The rich sediment communities are considered to be of national importance and include extensive eelgrass beds (*Zostera* spp.) and mud plains dominated by the fragile sea pen (*Virgularia mirabilis*) and a Mediterranean polychaete (*Sternaspis scutata*). With the departure of the Navy, careful planning is essential to balance the development of industry and recreation with the needs of the precious marine biota. The consequences of a diesel spill or substantial pollution from a refuelling factory ship would be severe.

The Fleet is the largest saline lagoon in England and a candidate Special Area for Conservation. Poor flushing leaves a fine substratum with good stands of all three eelgrasses (*Zostera* spp), both tasselweeds (*Ruppia* spp.) and a rare stonewort (*Lamprothamnium papulosum*).

There are tidal rapids with rich sponge communities and many rare species within the lagoon; the lagoon sand worm (*Armandia cirrhosa*), de Folin's lagoon snail (*Caecum armoricum*), the starlet anemone (*Nematostella vectensis*), the gastropod *Paludinella littorina* and the lagoon sea slug (*Tenella adspersa*) are nationally rare and protected.

The Fleet is a site of national importance for wildfowl and wetland birds. Redshank, as a breeding species, are almost restricted to the areas around the Fleet and Portland Harbour. The ringed plover, oyster catcher and little tern are similarly restricted in distribution.

The Abbotsbury swannery is famous and with the gardens, is a major visitor attraction. The swan herd is believed to be increasing, resulting in excess nutrients entering the Fleet and overgrazing of the eelgrass. There has been a decline in the botanical interest and algal blooms implying eutrophication but this has not been verified by a survey. Other potential threats are from silt, shellfish farming and Japanese seaweed (*Sargassum muticum*).

The Chesil Beach is an exceptional geological feature and it supports extensive shingle habitats with rare plants such as the sea pea (*Lathyrus japonicus*) and breeding little terns. It is the only British site for two invertebrates, the scaly cricket (*Megoplistes squamiger*) and the darkling beetle (*Omophlus rufitarsus*). Babington's leek (*Allium babingtonii*) grows in substantial colonies at Abbotsbury.

9.2.5 The Bride to the Char; the western catchments

The Char is a small meandering silt and gravel bed watercourse with poorly developed plant communities; Phragmites reed dominates downstream, and sparse reed grass and sedge elsewhere. The Asker, Brit and Simene are similar with some modifications, especially through Bridport. Plant communities are widespread but rarely abundant; reed grass, bur reed, brooklime, fool's watercress, submerged water crowfoot and Canadian pondweed are typical. *Phragmites* dominates the tidal reaches. The Bride has a good range of semi-natural morphological features with plant communities similar to the Brit.

One of the larger areas of bulbous foxtail (*Alopecurus bulbosus*) turf in England is at West Bay; this site is at risk from improved drainage, increased recreational use and development.

Narrow leaved water-plantain (*Alisma lanceolatum*) occurs at Burton Mere and West Bexington and the spring snowflake (*Leucojum vernum*) grows at Wootton Fitzpaine where it may be native. Champernhayes Marsh is one of the few acid mires in the area. It was forested in the 1950s and white beaked sedge (*Rhyncospora alba*) has survived, but three other notable species, marsh clubmoss (*Lycopodiella inundata*), greater sundew (*Drosera longifolia*) and the few flowered spikerush (*Eleocharis quinqueflora*) have not been seen for some time.

Two scarce plants in West Dorset, the thin spiked wood sedge (*Carex strigosa*) and the alternate leaved golden saxifrage (*Chrysosplenum alternatifolium*) are characteristic of woods on Greensand with calcareous flushes. Galingale (*Cyperus longus*) has been recorded from one site. The landslips and undercliffs are noted for two rare plants, stinking goosefoot (*Chenopodium vulvaria*) and slender centaury (*Centauriurn tenuiflorum*).

The dipper is established in the west, particularly on the upper Brit and the Bride, with its most easterly site on the Wey. Kingfishers are rather scarce, being most common on the Bride and north of Charmouth.

9.3 Fossils

The sedimentary rocks of the area are rich in fossils. Major stratigraphic and palaeontological work has originated from this coast, most famously by Mary Anning in the nineteenth century. Lyme Bay is proposed as a World Heritage Site. In addition to the scientific interest, there is an increasing recreational interest in collecting specimens. The main sites are near the coast, but inland exposures, such as where the Char crosses the Kimmeridge Clays, are also popular.

9.4 Invasive species

Alien plants are of concern for the damage they can do to habitats when they form dominant stands and exclude native species. The most significant include a large patch of giant hogweed to the north of Charmouth, close to public sites, and large stands of Himalayan balsam in the Brit catchment, near Bridport (see section 3.4.8). The Japanese seaweed (*Sargassum muticum*) poses a potential threat to many inshore habitats, and particularly the Fleet lagoon.

Species		Sites
Heracleum mantegazzanum	giant hogweed	10 sites, Char, Brit
Impatiens glandulifera	Himalayan balsam	Netherbury, Cards Mill Lane, Brit, Char, Bride
Crassula helmsii	Australian stonecrop	Fishpond Bottom, Upwey
Fallopia japonica	Japanese knotweed	Fishpond Bottom, Abbotsbury, and many other sites

Animals too can invade to the detriment of native species. Mink have become a nuisance and are currently prolific around Bridport, and the American signal crayfish (see section 3.4.5) carries a plague which caused the loss of our native species.

9.5 *Phytophthora* disease of alder

Root Alder (*Phytophthora*) disease is now known to be widespread through much of England and Wales. Most of the affected trees are in riparian sites or on land that is subject to flooding from adjacent rivers; however the disease has been found in some alders well away from any watercourse. A leaflet on this disease is available from our offices.

9.6 Landscape

We have duties to conserve and enhance landscape, especially in rivers and wetlands, and to protect and conserve buildings, sites and objects of archaeological, architectural or historic interest. We aim to ensure that these features are not degraded through neglect, mismanagement, or insensitive development and, where we can, to take measures to enhance them. We promote the conservation of landscape through our work to safeguard water quality, manage water resources and provide flood alleviation. An important part of this work is to influence land use planners and land managers to look after rivers and wetlands sensitively.

River Corridor Surveys have been carried out on all designated main rivers and some low flow rivers since 1989. This is a rapid habitat mapping technique that provides detail on the structure and communities of the river, banks and adjacent land. It is used to advise on all operational work in the area. The remainder of the rivers and coast has been described through rapid analysis of aerial photographs.

Sites in the area have been used to pilot the River Habitat Survey technique (Environment Agency 1996) since 1994. River Habitat Survey will produce a national standard basic habitat assessment for rivers, and has classified the Char, Bride, Brit and Wey as low altitude rivers with a low gradient flowing over soft geology.

We screen land drainage consents, abstraction licences, discharge consents, planning applications and our own works for their implications; each has had a major impact in the past.

10. Fisheries

Fish populations are important indicators of the overall health of our rivers. We consider here the conservation of wild populations of freshwater fish, and the maintenance and development of their environment. We aim to protect fish stocks by maintaining water quality, water resources and other physical features appropriate to the area, by protecting the passage of migratory fish, and by managing their exploitation by angling and other forms of fishing.

10.1 Freshwater fish populations

The only confirmed salmon spawning and nursery area in this area is on the lower Asker. They may utilise other parts of the Brit system and are frequently reported in the tidal river and West Bay Harbour. The Avon & Dorset River Board Annual Report of 1970 lists a single salmon caught on the Wey in 1969. Reports of salmon here in recent years are rare and unconfirmed.

Brown trout are present in all the major rivers of this area (Char, Bride, Brit and Wey) and although unconfirmed are probably present in all the minor streams. On the Wey, Char and Brit there appears to be a large migratory component within the population. The densities of trout (both juveniles and adults) are generally lower than those found in streams in the east of the South Wessex Area. There has been little or no stocking of trout in this catchment and the populations should be regarded as natural, wild and of high conservation value.

It is believed that the migratory stocks of salmon and sea trout may be limited by obstructions to migration; we have proposed an action to investigate this further (see section 3.5).

Coarse fish are scarce within the rivers of this area. The last comprehensive survey (1994) recorded dace on the Wey downstream of Nottington. Radipole Lake is known to contain carp, pike and roach, some of which venture into the lower Wey. The only other recorded coarse fish within the area were on the Bride; roach, bream, orfe and some other exotic species were present downstream of Watery Lane and are certainly escapees from a local fish farm. Eels and minor species such as bullhead, stone loach and minnow are ubiquitous.

Marine species, most notably flounder and mullet, frequent the lower stretches of some of these rivers, in particular the Brit and Char. Twaite shad are frequently reported at sea in Lyme Bay, and are colloquially referred to as West Bay herring; appropriate steps will be taken to give them the protection required by the EC Habitats Directive (see section 3.4.7).

10.2 Freshwater angling

There is very little recognised angling on the rivers of this area. Some migratory trout fishing occurs on the Brit downstream of the hatches at the Brewery. There is also some trout fishing on the lower reaches of the Wey. Elsewhere angling is unrecognised, opportunistic and perhaps not consented by the riparian owners.

Radipole Lake is one of few coarse fisheries in this area and contains specimen carp. However the Royal Society for the Protection of Birds are concerned about the impact of the carp on birds and have commissioned an investigation with a view to reducing fish biomass in the lake if monitoring and studies of experimental enclosures indicate that carp are the prime cause of the problem (see also section 9.2.2). There are a small number of stillwater trout and coarse fisheries elsewhere in the area.

10.3 Commercial fishing

Southern Sea Fisheries District Committee is the statutory Sea Fisheries Authority in the area and as such have full responsibility for shellfish and fin fish in the harbours and coastal waters, and for the East Fleet as far as the Abbotsbury Parish Council boundary. We are the Sea Fisheries Authority in the West Fleet.

Boats operating out of the coastal towns and bays in the area generally constitute a mixed fishery. The inshore fleet is versatile, using several fishing methods corresponding to seasonal fisheries throughout the year with bigger and better boats enabling them to travel further for their catches. Chartered angling trips are popular, involving boats of all sizes virtually all year round.

Stocks tend to be heavily, although not excessively, exploited. The high value species such as bass, crab and lobster attract a high degree of both part- and full-time effort. As marketing opportunities expand, demand has increased for species like velvet crab, cuttlefish and whelks.

Boats greater than 10m have quotas imposed on their catches of certain species, where stocks are under pressure and are required to provide catch returns to the Ministry of Agriculture, Fisheries & Food for the quota species. When quotas are allocated a proportion is kept back for the small boats (less than 10m) which are not registered and may submit voluntary returns.

There is concern over the general state of UK fish stocks. Conservation measures such as landing quotas have been set for most fish species other than shellfish, bass, dogfish and skate; and size limits for species such as bass and lobsters.

10.3.1 Weymouth and Portland

The pot fishery provides the principal source of revenue from these two ports, supporting over 90 boats. The larger boats, over 10m, set between 400 and 1,000 pots each, out to 30 miles offshore, principally for brown and spider crabs. Whelks have become important recently given increasing demand from the Asian market.

A small number of potters also set longshore nets for marketable fish such as flatfish and pot bait, although netting is generally restricted by strong tides. When conditions are right these boats also trawl for flatfish, whiting, and, increasingly, for cuttlefish and squid, especially when quota restrictions apply to prime fish such as sole. The smaller boats are confined inshore and each set 100-500 pots between Ringstead and Chickerell for lobsters, brown and velvet crabs.

A Southern Sea Fisheries District Committee Byelaw prohibits boats over 12m from fishing within 6 miles of the coast. The large mussel bed off Portland Bill is dredged by one boat greater than 12m which was in operation before the Byelaw was introduced and is therefore considered exempt. The shells are large but the actual mussels remain small; they are not considered a commercial product at this stage, and are retained with permission from Southern Sea Fisheries Committee and re-laid in Poole Harbour where they are fattened for sale.

The Several Fishery Order in Portland Harbour expires in the year 2000; this was granted under the Sea Fisheries (Shellfish) Act 1967 and severs the public right of fishery in favour of the grantees of the order to maintain and develop a fishery. The fishery changed hands recently and the new owners (Quest Underwater Services) intend to develop the fishery further incorporating scallops and mussels.

The future of this fishery, as well as that of other fisheries in the area, depends very much on the outcome of the public inquiry into the application for a Harbour Revision Order by Portland Ports, who bought the port after the Ministry of Defence withdrew. If the Harbour Revision Order is granted Portland Ports may intend to charge all boats transiting the Harbour; this has obvious far-reaching consequences for the local fishermen who are opposed to the idea.

Some boats occasionally dredge for scallops, although most inshore scallop beds have been cleared of marketable-sized scallops and are being left to regenerate. There is a good prawn fishery along the Harbour walls which is fished from 15 foot punts. Grey mullet are a by-catch.

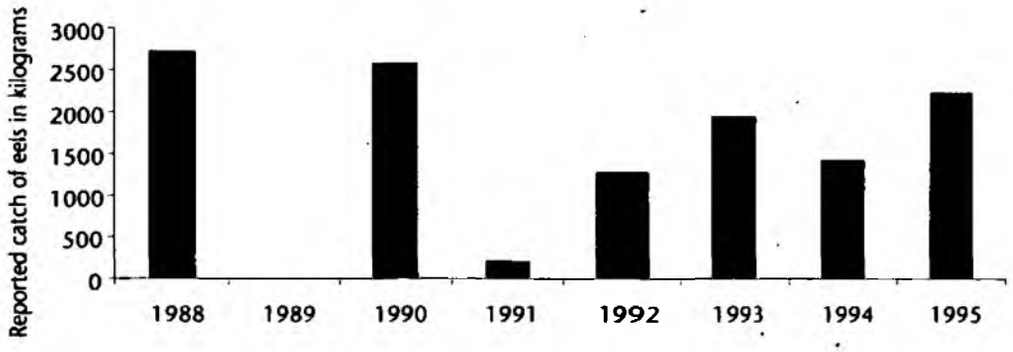
There are 10 boats of 6-10m using handlines primarily for bass, fishing in the Portland Race-Shambles Bank area between June and August, and 4-6m open boats drift through the Race at speeds of 7-8 knots handlining for bass. This latter practice is becoming less popular.

Scottish boats land mackerel, scad and pilchards to Russian and East European klondykers anchored in Weymouth Bay in the winter; these are purely processing plants and do no fishing.

10.3.2 The Fleet

The Fleet is a designated bass nursery area (HMSO 1990) and fishing from boats is prohibited at all times. This prohibition does not apply to the shore and there is one fisherman using a tidal net for bass in this area, which is not abiding with the spirit of the designation. There is also a prawn fishery off the old Ferrybridge, known locally as the Billy Winter Fishery.

The private fish farm within the Fleet is not governed by the Sea Fisheries Committee restrictions. The Environment Agency issues eight licences (for ten fyke nets each) annually for eel fishing on the Fleet. The yield for the period 1988-95 is shown below (no data are available for 1989):



10.3.3 West Bay

The small sheltered harbour supports a few otter trawlers of 9-11m that take demersal fish within Lyme Bay all year. During the summer, landings comprise mainly sole, plaice, rays, brill and whiting, and in winter rays, cod, whiting and some flatfish. They sometimes target queen scallops after Christmas when, if the weather is bad, they may work from Brixham.

Activity increased here during the 1980s and there are now 10 boats of 6-10m using pots for crabs and lobsters or taking out angling parties. There are 15-20 small (4m) boats setting nets or pots during the summer with about 6 working throughout the year. The crabbers set 500 pots at a time. There are good lobster sites along West Bay attracting boats from Lyme Regis.

10.3.4 Lyme Bay

Four otter trawlers work out of Lyme Regis fishing for sole, plaice, turbot and whiting in Lyme Bay and take by-catches of queen scallops and scallops. These are greater than 10m in length and are therefore subjected to a quota for each species, and hence operate a mixed fishery.

Lyme Regis boats set pots for brown crabs and lobsters out to 6 miles offshore and as far east as Portland Bill, with velvet crabs taken as a by-catch. Spider crabs are taken from Lyme Bay. Other visiting boats include the Brixham beam trawlers which come in up to the 6 mile limit. These take flatfish up to their quota availability and export their catch.

The sprat fishery used to be a regular occurrence during the frosts of January and February, and catches of 20-30 tonnes were common. Recently this regular pattern has disappeared, and the last sprat fishery occurred about three years ago. When they do turn up, however,

they attract almost every boat from the surrounding area. Herring, controlled by quotas, form a by-catch nowadays and do not turn up every year. Red mullet normally appear in Lyme Bay in July and are caught in otter trawls.

11. Recreation and amenity

Many people spend their spare time enjoying our rivers and coasts. Where we can, we try to improve facilities for these people but we must always safeguard the environment from the damage they might cause. We work with other organisations such as planning authorities and sports associations to develop recreation facilities; at all times we should cater for the needs of the chronically sick or disabled.

11.1 Local perspective

The recreational demand is concentrated on the coast and the main resorts of Charmouth and Weymouth, and several smaller places with easy access to the sea. The intense demand for water-based activity and the use of wetlands has the potential for conflict.

There is a management proposal for Portland Harbour to provide sports activities whilst conserving the wildlife. Lodmoor has developed as a country park complex, with a local nature reserve close to more structured attractions such as the Sealife Centre. The sea defence works which we have recently completed at Preston beach provide a much improved beach, promenade and cycle track. There are visitor centres at Radipole and Ferrybridge providing interpretation and starting points for guided walks or informal enjoyment of the scenery and wildlife.

The coastline is spectacular visually and of immense interest to geologists, naturalists and climbers; the South West Coast Path runs the full length of the plan area.

There are fewer obvious attractions inland. Here, walking and quiet enjoyment of the countryside and small villages is important for many residents and visitors to the County; the importance of this type of recreation is probably under-estimated. The medieval village of Abbotsbury with the abbey remains, gardens and swannery is a major attraction.

The West Dorset Heritage Coast Plan recognises the need to safeguard the tourist industry, including angling on the Chesil Beach. Positive plans to reduce *wild parking* have been successful in reducing conflict, though litter remains a concern.

11.1.1 Agency owned sites

We own five small areas of land associated with flood defence structures at Charmouth, West Bay, Burton Bradstock, Ferry Bridge and Chiswell; these form part of the beach and are used informally. Maintenance is generally carried out in the winter months and the impact is small. There appears to be no further opportunity to develop recreation or amenity use in these areas.

12. Archaeology

We have duties to conserve and enhance sites and objects of archaeological, architectural or historic interest associated with rivers and wetlands. We aim to ensure that these features are not degraded through neglect, mismanagement, or insensitive development and, where we can, to take measures to enhance them.

12.1 Local perspective

The area is rich in archaeological remains, mostly on the high ground. There are at least 136 Scheduled Ancient Monuments in the area which have an equivalent protection to Sites of Special Scientific Interest (see section 9.1), including Neolithic barrows (e.g. The Grey Mare and her colts) and ample evidence of Bronze Age barrows, especially near the Ridgeway. Iron Age hill forts such as Lambert's Castle, Eggardon Hill, Coney's Castle and Pilsdon Pen are prominent on the watersheds. There are fewer finds on lower ground, but Mesolithic flints have been found around the Fleet.

Map 13. Scheduled ancient monuments

At Charmouth, the remains of a submerged forest have been found exposed at low tide. Finds have included undated organic matter including branches, clay and antlers, and a medieval wooden bowl. Prehistoric remains have been found beneath the Fleet and the Chesil Beach, showing the beach to have had more pine and the Fleet more alder in the past.

The pottery finds at the mouth of the Bride have been interpreted as a Romano-British settlement. However they may be one of the numerous Roman and medieval salt making sites thought to be along the coast, many of which have been eroded away entirely. Radipole may have been a Roman harbour, but there is little evidence of this.

Quarrying has been an important source of stone on Portland since Roman times. Old quarries abound, but not long ago agriculture would have been far more visible than it is today. The surviving strip fields, known as lawnsheds, may be unique. They result from a three or two field rotation system in use until communal management ceased in the last century.

12.2 Settlements

Nearly every village in the area is thought to be at least medieval in origin; a number of deserted villages are marked on the maps, and earthworks from hamlets and farmsteads are visible on the ground. The remains of medieval field systems are very evident at Burton Bradstock.

The ancient town of Bridport, may have had a harbour for a short time, and the rope and net-making industry continues to this day. Charmouth, laid out at the river crossing, may have had a small harbour at the river mouth when the river was once navigable. Melcombe Regis is a planned medieval town and is infamous as the port of entry for the Black Death.

Abbotsbury is a medieval village built to serve the Benedictine abbey which was founded in Saxon times. The duck decoy is by far the best and one of only three surviving in the County. The Tithe Barn is still used for storing reed cut on the estate for use in thatching.

13. Water abstraction and supply

Within the plan area, water is abstracted from the surface and below the ground for public water supply, industry, and other uses. We aim to manage these water resources to achieve the right balance between the needs of the environment and those of the abstractors. We have duties and powers to ensure that water is used properly by regulating abstractions using licences, and to conserve water supplies and protect them from over-use.

13.1 Local perspective

The table below shows the number and volume of licensed abstractions in this area. Although there are more groundwater than surface water licences in this plan area, the licensed quantity from surface water is almost 6 times greater than that from groundwater sources. However, if we examine the use to which the water is put (see section 13.2 & 13.3), we see that 73% of the total licensed surface water quantity is for non-consumptive uses (e.g. fish farming and power generation for milling) where the water abstracted is returned to the watercourse. Groundwater abstraction tends to be for more consumptive purposes such as public and private water supply and general agricultural purposes.

	Number of licences	Licensed daily quantity (Mld)	Percentage of daily total	Licensed annual quantity (Mly)	Percentage of annual total
Groundwater	137	22	17	5,649	15
Surface water	91	110	83	33,263	85
Total	228	132	100	38,912	100

Daily licensed quantity represents how much could legally be abstracted per day but is not necessarily a straight multiplication to annual quantity. Where no daily quantity is stipulated, the average of the weekly licensed value is used for indicative purposes

The above data are based on total licensed quantities; at present many abstractions actually take considerably less than they are allowed to.

Data for 1995-1996	Number of licences data based bn	Actual annual quantity (Ml)	Licensed annual quantity (Ml)	Percentage use
Groundwater	13 (10%)	4,318	5,326 (91%)	81
Surface water	25 (28%)	3,351	8,763 (26%)	38
Total	38 (17%)	7,669	14,089 (36%)	54

Figures in brackets indicate % of the total number of licences and authorised annual quantities

13.2 Public water supply abstractions

Wessex Water Services are the sole providers of mains water within this area. Their abstractions represent 93% of the total daily licensed quantity for groundwater and 17% for surface water. The locations are shown on Map 14, and the quantities (rounded values) in the table below.

Wessex Water Services source	Ground/ surface	Daily licensed quantity (Ml)	Annual licensed quantity (Ml)	Comments
Sutton Poyntz springs	S	12	4546	2 spring sources
Portesham	G	1	279	Borehole
Friar Waddon	G	14	3,000	3 boreholes 1 May -31 Oct abstraction not to exceed 2/3 annual authorised quantity
Litton Cheney	G	3 (+1)	1,250 (+300)	2 boreholes & 1 heading. The extra 1Mld, 300Mla may be abstracted when the flow in the Litton Cheney Stream exceeds 150 l/s
Langdon	G	1	409	Spring source
Watford Bridge	S	4	1,095	Flow in the Brit not to be reduced below 104 l/s

Map 14. Public water supply abstractions

13.3 Other abstractions

Use	Licensed daily quantity (Ml)		Licensed annual quantity (Ml)		Comments
	Ground	Surface	Ground	Surface	
Agriculture	0.93	0.48	307	161	
Spray irrigation	0.01	2.86	21	148	
Industrial	0.06	40.04*	9	14,609*	* includes non-consumptive mill abstraction
Private water supply	0.16	6.82	56	2,429	
Leisure - commercial - public services	0.13	17.23	17	175	
Fish farms & fisheries	-	41.40	-	10,100	Non-consumptive

13.4 Water resource management

The Water Resource Development Strategy for South Western Region - *Tomorrow's Water* (NRA 1995) sets out how our predecessor would like to see water resources developed in the future, following the principles of sustainable development with proper safeguards for the environment. We have adopted this strategy for the region, and we will:

- encourage the efficient use of water
- expect abstractors to use existing sources efficiently before new sources are developed
- approve developments that cause the minimum problems for the environment
- study rivers stressed by abstraction and solve existing environmental problems where benefits outweigh the costs and funds can be found

Here are three examples of our approach to managing water resources in the area :

- we plan for the sustainable development of water resources, developing criteria to assess the reasonable needs of abstractors and the environment
- we plan the future use of water on the basis that water supply companies reduce leakage to an acceptable level and make best use of available resources
- we study the spending plans of the water supply companies (AMP), to ensure that they do not overlook opportunities to improve flows in rivers which are stressed by their abstractions

13.5 Future demand

Current predictions show that demand in Wessex Water Services' Dorset Supply Zone might rise by almost 40% from the current 138Mld to as much as 193Mld by 2021 without change to the present level of household metering and leakage control, and with high growth in household, industrial and commercial consumption.

In the event of slower consumption growth and Wessex Water Services reducing leakage to 120 litres per property per day then demand should fall from 138Mld to 137Mld by 2021.

The present surplus in the Dorset Supply Zone will be reduced to 23Mld by 2021 under the low demand forecast. A deficit of 33Mld is forecast for 2021 under the high demand forecast.

13.5.1 Meeting this demand

To meet any deficit or to alleviate stress on resources, *Tomorrow's Water* lists the following options in descending order of preference :

- demand management
- resource management
- resource development

We encourage the installation of water meters in all new households and selective metering of existing properties where there is significant stress on water resources. We will be examining water company demands at the local area scale to identify potential problem areas. We also encourage the more efficient use of water and, in the our publication *Saving Water* (NRA 1995), a national forum of interested parties was promoted to secure a common approach.

Arising from the 1997 Water Summit called by the Deputy Prime Minister, John Prescott, Wessex Water Services issued a 10 point Water Efficiency Plan. We are pleased that this Plan is likely to reduce demands and produce real savings over the longer term, significantly reducing the likelihood of a local water resources deficit arising in this area. Some Wessex Water Services' customers have already received free *Hippo* bags for reducing toilet flush volumes, for instance, which may result in long-term savings in demand of between 3 and 8%.

In the second option, we are keen to see better management of existing resources to increase the quantity of water that is deliverable to customers. Leakage control (see section 13.5.2), where economic, should be actively pursued by the water companies. Wessex Water Services' 10 point Water Efficiency Plan includes tighter targets for reducing leakage which we welcome.

13.5.2 Leakage and pressure control

Wessex Water Services will be paying increasing attention to these aspects of their water management responsibilities as a result of the increased political pressure generally on water companies to set examples to their customers. Mandatory total leakage targets are expected to be agreed with the Director General of Water Services, for 1998-99 onwards, which will drive this.

Wessex Water Services are offering a free leakage detection and repair service to their customers for leaks in their supply pipes; we support this as a measure which will further reduce the scale of leakage.

13.6 Watermills

Despite the absence of large rivers in the area, there is no shortage of records of watermills. The Domesday Book records at least 41, and there are later records of at least 29 (Dewar 1959) including flax mills at Netherbury and sailcloth mills at Beaminster. In 1401AD, the rents for the mills at Abbotsbury and Portesham were limited *because in summer they cannot grind for want of water.* There are still operational mills at Mangerton, Litton Cheney and Upwey.

13.7 Alleviation of low flows

The problems of low flows are not as acute in most of these catchments as elsewhere in Dorset. Where aquatic habitats and species are reported to be at risk we will investigate and try to modify the abstraction where appropriate. The upper reaches of the Wey have been defined as an Alleviation of Low Flow river.

We have welcomed Wessex Water Services' commitment to modify the pumping regime at its Friar Wadden groundwater source to minimise impacts on the Wey. The aim of these modifications is to smooth out the effects of pumping on stream flows at Upwey which in turn affect operations at the fish farm. We will continue to monitor the success of these arrangements.

14. The management of waste

We regulate the treatment, recovery, storage, movement and disposal of controlled wastes, which include household, commercial, and industrial wastes. This excludes waste from agricultural, mining and quarrying operations although some of these may soon become controlled.

The government strategy for sustainable waste management was published in December 1995 as a White Paper *Making Waste Work*. This sets out the waste hierarchy:

- reduction
- reuse
- recovery - recycling, composting, energy
- disposal

The overall objective is to move the management of waste up the hierarchy thus reducing the quantity of waste that is finally disposed to landfill. Landfill, however, will remain as a method of solid waste disposal in the UK for wastes that cannot be recovered and for the residue of some recovery methods such as incineration with energy recovery. A number of targets have been set in the White Paper, including:

- reducing the proportion of controlled waste going to landfill from 70% to 60% by 2005
- recovering 40% of municipal waste by 2005
- by the end of 1998, to set a target for overall waste reduction
- recycling or composting 25% of household waste by 2000
- having easily accessible recycling facilities for 80% of householders by year 2000
- encouraging 40% of domestic properties with a garden to carry out home composting by year 2000

We support the government's strategy and will play a key role in achieving more sustainable waste management. Nationally, we will carry out Waste Surveys to provide accurate, consistent data on waste arisings; a pilot survey began in February 1997 and a full survey will start in 1998.

Government initiatives to move waste management up the hierarchy include legislative as well as financial incentives. Mechanisms already in place include the requirement on local authorities to draw up Recycling Plans to detail how recycling targets are to be met, and the Landfill Tax which was introduced on 1st October 1996.

14.1.1 Producer responsibility

The Producer Responsibility Regulations (HMSO 1997) were introduced to place responsibility on some businesses that handle packaging to recover and recycle certain proportions of packaging materials. This initiative will be a key tool for promoting the recovery of value from waste. It is designed to ensure that industry assumes an increased share of the responsibility for the waste arising from the disposal of its products. The target is to recover 50-65% of packaging waste by 2001.

We will play a lead role in implementing, monitoring and enforcing this legislation. Businesses will have to register with us and provide data by August 1997, start to meet interim recovery and recycling targets in 1998-99, meet an interim recycling target by 2000 and full targets by 2001. All businesses involved in the packaging chain will share the responsibility if they:

- have a turnover of more than £5 million and handle more than 50 tonnes of packaging each year during 1997-99
- have a turnover of more than £1 million and handle over 50 tonnes of packaging materials each year from the year 2000

14.1.2 Waste minimisation

Waste minimisation is the first priority for more sustainable waste management; this includes reducing the amount of waste produced that would otherwise need to be processed or disposed and reducing the degree of hazard represented by such wastes.

By adopting good waste reduction practices, industry and commerce have an opportunity to improve their business performance. Many individual companies have successfully introduced waste minimisation practices, and removed hazardous material (e.g. mercury in domestic batteries) from the waste stream.

In October 1996, we held a Waste Minimisation Seminar for local industry and businesses. The aim of the seminar was to illustrate the commercial benefits of looking after their operations and reducing waste. Following on from the seminar a waste minimisation group has been established which held its first meeting in December 1996. The group will aim to carry forward a structured programme of waste minimisation in order to produce tangible benefits for industry.

A workshop was held in February 1997 for the group and any other interested companies, which gave practical advice on how businesses can develop their own waste reduction programmes. The group, which is chaired by a local industry, has established a steering committee which agreed on the following areas for the group to cover:

- to create a common ethos in the area of waste minimisation
- exchange of experiences
- exchange of ideas
- mutual encouragement
- interaction
- clarification of waste legislation
- cooperation

We will continue to support such initiatives and encourage further participation by industry.

14.1.3 Registration of Carriers and Brokers

People and companies who transport controlled wastes in the course of their business must register with us as waste carriers. There are exceptions for householders carrying their own domestic waste, charities and voluntary organisations (who must register but this is free of charge), and the transport of waste produced by your own company (unless this is building or demolition waste which should always be registered). People or companies who arrange for the collection, recovery or disposal of waste on behalf of another person may need to be reg-

istered as a waste broker. There are about 1,800 registered carriers and 86 registered brokers. in our South Wessex Area.

14.1.4 Exempt activities and the Duty of Care

A number of waste management activities are exempt by statute from the requirements for licensing. There are currently 45 exempted activities which include the spreading of industrial waste to benefit agricultural land, certain small to medium scrap yards and a range of construction and recycling activities.

Although not subject to full licensing, these activities are only exempt if there is no risk to the environment or human health, and most are subject to registration and inspection by the Agency. Information in the register of exempted activities is available to the public on request.

The Environmental Protection Act 1990 Duty of Care provisions apply to any person who handles waste (with the exception of householders handling their own waste). The system is designed to be self-regulating, placing a duty on all those in the waste chain to properly describe their wastes, keep wastes secure, fully document waste transfers and transfer waste only to authorised people. All parts of the disposal chain, including the original waste producer, must also make a reasonable attempt to ensure that the waste is finally dealt with at an authorised waste management facility.

14.2 Waste arisings

It is difficult to accurately quantify the amount of wastes arising within the area because the boundary of this plan does not match the boundary of West Dorset District Council. Weymouth & Portland Borough Council lies entirely within this plan area.

Waste Type	Wastes arisings (tonnes per year) 1995-96		
	West Dorset District Council	Weymouth & Portland Borough Council	Combined total
Household and amenity (1995-96)	39,645	30,398	70,043
Commercial and industrial (1992-93)	156,000	73,000	229,000
Total	195,645	103,398	299,043

14.2.1 Household waste

It is the duty of each waste collection authority (District and Borough Council) to arrange for the collection of household waste in its area. The waste disposal authority (Dorset County Council) arranges for the disposal of household waste in the area. Local authorities also provide civic amenity sites where the public can deposit household waste free of charge.

The combined total household waste figure given in the table above comprises waste collected from households by the waste collection authorities and those wastes taken by householders to the local civic amenity sites.

Household waste collected by Weymouth & Portland Borough Council is taken to the Westham Depot, Weymouth for bulking and transfer to landfill outside the area near Warmwell. Kerbside recycling collections, including the recently introduced green bins, are similarly bulked at Westham and sent to the composting site at Lodmoor (see section 14.3) or out of the area for processing.

Of the household waste collected by West Dorset District Council, 17,529 tonnes was sent directly to landfill at Bothenhampton and the remainder to landfill near Warmwell; recycling collections are sent directly out of the area for processing.

In 1995-96, 9% of collected household materials was recycled in the two local authority areas, compared with 67% of civic amenity waste.

14.2.2 Commercial and industrial waste

Commercial and industrial waste arisings in 1992-93 amounted to 156,000 tonnes for West Dorset District Council of which 17% was recycled, and 73,000 tonnes for Weymouth & Portland Borough Council of which 15% was recycled; the remainder was disposed to landfill.

14.2.3 Special Waste

Special Waste was defined as any controlled waste which either contains a listed substance and, by reason of the presence of such a substance, is dangerous to life, has a flash point of 21°C or less, or is a medicinal product available only on prescription. The new Special Waste Regulations (HMSO 1996) extended this to include, among others, hard asbestos products, waste mineral oils and some photographic chemicals.

Special Waste arisings in this area in 1995-96 amounted to 520 tonnes, 379 tonnes for the whole West Dorset District Council area and 141 tonnes for Weymouth & Portland Borough Council. This was all transported out of the area for disposal.

14.2.4 Mining and quarrying waste

These do not fall within the definition of controlled wastes at present; a survey of disposals was carried out in 1992-93 and the arisings were estimated to be 321,000 for the whole West Dorset District Council area, and 165,900 tonnes for Weymouth & Portland Borough Council.

14.2.5 Agricultural waste

All waste from agriculture premises is controlled by the Ministry of Agriculture, Fisheries & Food; this includes manures and silage effluent, sheep dips and pesticides. Discharges of agricultural wastes are controlled under the Water Resources Act 1991. Further guidance on handling, storage and disposal of these wastes is contained in the Ministry of Agriculture, Fisheries & Food Codes of Good Agricultural Practice (HMSO 1992, 1993).

14.3 Waste management sites

There are 25 operational licensed waste management facilities within this area, and 29 closed licensed facilities (see Map 15). There are also four operational transfer stations, eight scrapyards and three bulky household waste sites in the area and these currently handle a wide range of wastes.

Approximately 72,554 tonnes of waste materials were deposited at the landfills within this area during 1995-96 and some 49,168 tonnes of this was soils and clean construction and demolition wastes. In the same period, 5,857 tonnes of commercial and industrial waste was deposited and 17,529 tonnes of household waste. Key sites within the area include:

14.3.1 Lodmoor, Weymouth

This large commercial, industrial and domestic landfill was completed in stages. Landfilling commenced prior to 1974 but was completed under the terms of a County Council Resolution under previous legislation. Although the use of this site has ceased, concern has been expressed over the dilute and disperse waste disposal methods used, and we continue to monitor the outflows from the area for the potential of harmful leachates and gas. A housing estate has been constructed very close to the perimeter of this area, and part of the northern site has been identified for the route of a relief road and some reclamation of the old tip may occur.

Weymouth & Portland Borough Council also operate a licensed composting scheme for green wastes at Lodmoor. A total of 5,321 tonnes of material was composted in 1995-96, of which 5,171 tonnes came from civic amenity sites and 150 tonnes from park management.

14.3.2 Long Lane, Bothenhampton

This is a commercial, industrial and domestic landfill originally operated under the terms of a County Council Resolution. The site is now licensed and accepts only domestic refuse from the household collection rounds and bulky household waste. It is a former brick pit which has a substantial clay layer below it, and site engineering works have been carried out at this site. Routine gas and water monitoring take place at this site to ensure that pollution prevention

measures are adequate.

14.3.3 Green Lane, Chickerell

This site has two current licences permitting the disposal of construction and demolition wastes; each forms part of the infilling of a single quarry. This operation is near completion.

14.3.4 Withies Croft, Portland

This is a large former stone quarry being landfilled in three stages. Phases I and II were licensed under previous legislation; these licences were surrendered but a current licence is in force for Phase III. All three licences permitted non hazardous commercial, industrial and household wastes and construction and demolition wastes to be deposited. Routine gas monitoring occurs at this site, and disposal activities have now ceased.

Map 15. Waste management sites

14.3.5 Bottomcombe Works, Portland

This has a current licence for soils and naturally occurring materials plus filter press cake resulting from processing of stone cutting slurry.

14.3.6 Westham Depot, Weymouth

This is licensed to Weymouth & Portland Borough Council for road repair waste, street sweepings, litter bin, domestic and beach cleaning wastes, and is an important location for the bulking of wastes in transfer. It is currently the subject of proposals to upgrade and improve site operations.

14.3.7 Disposal to land

Agricultural land in the area is used for the spreading of various industrial waste liquids and sludges (such as blood, septic tank and milk wastes) and sewage sludge. The land proposed for spreading must be registered with us and proof provided of the agricultural benefit of the waste and the suitability of the land to ensure that there is no risk of pollution. There are no

records of the disposal of industrial sludges in the Weymouth & Portland Borough Council area in 1995-96. In the part of West Dorset District Council area covered by this plan, 2,253 tonnes of industrial sludges were recorded as disposed to land in 1995-96; these comprised mainly septic tank, abattoir waste and milk washings.

Wessex Water Services keep a register of land used for the spreading of sewage sludge and the amounts deposited. We have no records for disposing of sludge to land in 1995-96 in either Weymouth & Portland Borough Council area or the part of West Dorset District Council area covered by this plan.

14.3.8 Fly tipping

Fly tipping is a increasing problem as waste disposal costs increase and controls over waste carriers and brokers are enforced. The Landfill Tax has recently added to disposal costs and unscrupulous contractors may seek to find unauthorised sites to fly tip their wastes. We have powers to prosecute fly tippers for illegal disposal of waste and enforcement officers are continually following up leads provided by the general public over potential illegal incidents.

14.4 Waste planning

Strategic aspects of waste disposal in the area will be defined in plans produced by Dorset County Council. The Draft Minerals & Waste Plan, which deals with geographical, population and planning issues in this area was published in 1994 (see section 15.2).

We are involved in waste management planning and assess the consequences of different options in transportation, treatment and disposal of waste, which provides the underlying foundation for sound decision making. This entails the collection, analysis and periodic presentation of information relevant to the management of waste at the local, regional or national level.

15. Development and land use planning

Local authorities and ourselves have responsibilities for minimising the impact of development on the environment. We maintain a continuous dialogue with officers of the planning authorities so that issues of common interest can be pursued and potential conflict avoided, in a way that makes effective use of resources.

15.1.1 *Liaison with Local Planning Authorities*

In March 1997, we published our *Liaison with Local Planning Authorities* manual which has been distributed to all planning authorities in the area and describes our role (see section 15.3). We are also currently in the process of preparing a *Strategy for Development Planning* which will set out a framework for the way in which we will progress over the next few years.

15.2 Structure plans

This plan area lies entirely within the County of Dorset. It covers the whole of the Weymouth & Portland Borough Council area, and a substantial part of the West Dorset District Council area.

Town & Country Planning legislation requires all planning authorities to produce Development Plans for their area. County Councils produce Structure and Minerals & Waste Plans and District Councils produce Local Plans; we are a statutory consultee for all these plans.

Plan Type and Authority	Current Stage
Dorset County Council Structure Plan	Deposit to March 1996, examination in public to November 1996, Inspector's Report received January 1997 and modifications will go on deposit in early 1998 (period to 2011)
Dorset County Council Minerals & Waste Plan	Public Inquiry to August 1996, Inspector's Report received March 1997 (period to 2001)
West Dorset District Council Local Plan	Deposit to Summer 1994, Public Inquiry to March 1996, Inspector's Report due (period to 2001)
Weymouth & Portland Borough Council Local Plan	Adoption March 1997 (period to 2001)

Planning Policy Guidance Note 12 *Development Plans and Regional Planning Guidance* (PPG12) and *Regional Planning Guidance for the South West* (RPG10) identify the need for planning authorities to take account of the environment when preparing their development plans.

Discussion at an early stage in the development plan process is needed to ensure that policies reflecting our interests are incorporated and that site allocations will not be detrimental to the environment or compromise our position at a later stage. This is particularly important as the land use planning process is based on a *plan-led* approach which dictates that planning applications should be determined in accordance with the policies and allocations contained within Statutory Development Plans unless material considerations indicate otherwise.

The National Rivers Authority, one of our predecessor organisations, published *Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment Through Development Plans* in 1994 which suggested policies for protecting the water environment. We are currently revising this to include all of our responsibilities, including air quality and waste.

The new Section 105 Survey data (see section 16.3.1) and revised Groundwater Source Protection Maps (see section 17) need to be included in these plans as the best available data and form an important part of these discussions.

15.2.1 Sustainable development

In order to achieve sustainable development (see section 1.1.1), environmental, social and economic issues need to be addressed as part of the decision making process employed by the local planning authorities for land use planning. *South West Regional Planning Guidance* (RPG10), published in June 1994 and covering the period up to 2011, encompasses the principles of sustainable development and indicates the need for planning decisions to take account of issues such as the quality and quantity of water resources, waste disposal, reduction and recycling, pollution, flood risk and nature conservation. Words used in relation to these issues include protection, conservation and enhancement, and efficient management. We seek to encourage sustainable development by offering advice on these subject areas at the forward planning, pre-application and development control stages.

15.2.2 Sewerage and water supply

Relevant policies should be included in local plans to ensure that developers can demonstrate that an adequate water supply and sewage disposal systems are available without adversely affecting the environment. We need to comment on the availability of these resources before the site allocations are made in the Local Plan.

We use our Water Resources strategy *Tomorrow's Water* (see section 13.4) for guidance when commenting on the availability of water supplies, but consultation with Wessex Water Services is also important. We will model flow and water quality data to comment on the adequacy of watercourses and sewage treatment works to receive additional flows of effluent; consultation with Wessex Water Services is again important.

15.3 Development control

We are a statutory consultee for a number of types and locations of development at the planning application stage. We provide an integrated response to the planning authorities on each of these development proposals, seeking to minimise detrimental development and encourage environmental gain.

The Department of the Environment has issued guidance in the form of *Planning Policy Guidance Notes* to planning authorities on a number of planning issues where our views should be sought. To assist the planning authorities, we have compiled a *Baseline Development Schedule* contained in our *Liaison with Local Planning Authorities* manual (see section 15.1.1) which contains a list of these types of developments:

- within or adjacent to any watercourse or which includes a discharge to a watercourse
- involving land raising in areas at risk of flooding from rivers including tidal lengths and the sea
- on, under or adjacent to any flood bank, sea defence or other flood control structure
- which may affect an aquatic or wetland site of conservation interest
- on contaminated land e.g. gas works, historic industrial use, bulk fuel storage, chemical production and landfill
- involving the disposal of sewage other than to a public sewer, including the use of septic tanks, cesspits, private sewers and private sewage treatment works
- which could affect groundwater protection zones
- which could exacerbate existing sewerage, or sewage disposal problems
- within 250 metres of land which is or has, at any time in the 30 years before, been used for the deposit of refuse or waste and has been notified by the Agency
- on the site of or within 500 metres (measured from site boundary) of a process subject to Integrated Pollution Control, or subject to the Control of Industrial Air Pollution (Registration of Works) Regulations 1989
- involving the raising or reclamation of land
- which falls within the Environmental Assessment Regulations 1988
- residential, industrial or commercial developments, greater than 0.5 hectares in area or which incorporate an access road
- major infrastructure schemes, e.g. highways, railways, power stations, wind farms, airports, tunnels, oil refineries and pipelines and any associated facilities
- waste management operations including landfill, waste transfer stations, incinerators, scrap yards, baling and recycling plants and solvent recovery plants
- mineral workings and exploratory works to include oil and gas exploration and land restoration projects
- petrol filling stations or other bulk storage facilities for petroleum products, and chemicals including hazardous substances, fertilisers and pesticides (above or below ground)
- vehicle parks including plant hire and transport depots
- agricultural developments to include intensive livestock and poultry units, chemical and fertiliser storage, the making and storage of silage and the storage and disposal of manure and effluent
- kennels, catteries, stables, etc.
- camping and caravan sites
- timber treatment plants
- cemeteries and crematoriums
- fish farming activities, fish stocking or relocating of fish or works which will restrict the movement of fish
- water-based recreation facilities or developments affecting access to water or waterside areas
- ponds, lakes and reservoirs including water storage for irrigation
- golf courses
- swimming pools
- forestry activities

We also comment on pre-application enquiries, providing advice to developers which should help ensure that the subsequent planning application takes full account of any concerns we may have. When commenting on planning proposals and applications, we advise planning authorities and developers on many aspects, including:

- the need for Land Drainage Consents (see section 16.3.2)
- the environmental constraints of a particular site and potential environmental enhancements. Much of the natural environment benefits from conservation designations; this includes areas of local, national and international importance (see section 9.1)
- appropriate pollution prevention measures in order to guard against pollution of ground and surface waters. If necessary, we request the imposition of conditions to ensure that adequate facilities are provided as part of the development to achieve this e.g. petrol/oil interception facilities, bunding of oil tanks etc.
- the likelihood of contaminated land due to previous uses of the site. Redevelopment may pose a risk to the environment and we would advise that investigations are carried out to determine the extent of contamination and to recommend acceptable remediation measures (see section 18)
- the need to ensure adequate provisions for the disposal of foul effluent. Connection should be made to the public foul sewer, if this is available and functioning satisfactorily; upgrading of works to provide additional capacity and the provision of new sewerage infrastructure may be necessary (see section 15.2.2)
- advice on the disposal of foul effluent from developments which, especially in rural areas, may not be served by a public sewerage system. Private treatment facilities may need to be installed and we have our own legislation to control discharges from them. At the planning stage we advise on whether the method of disposal proposed is appropriate and request that a notification is included on the Decision Notice to ensure that the applicant is aware that a Consent to Discharge is likely to be required for the facility
- the need to ensure adequate provisions for the disposal of surface water (see section 16.3.3). Attenuation measures may need to be installed before surface water is discharged to a watercourse to avoid an increased risk of flooding
- works that release suspended solids to a river are not normally permitted between 1 November and 1 May where habitat is of importance for salmonid spawning, and between 15 March and 1 August in order to protect spawning coarse fish and fry

15.4 Development in the plan area

Development will normally be permitted within the development boundaries indicated in the West Dorset and Weymouth & Portland Local Plans; however, site allocations are identified to guide appropriate development to certain areas and meet the development needs of the settlement. Settlements identified for development which have potential to impact on the environment include:

15.4.1 Slape Mills

This site operates as a scrap yard, part of which is in the floodplain of the Brit. A risk of pollution exists from the scrap yard, and in the past, vehicles have found their way downstream in times of heavy rainfall, blocking the river. We would resist any development encroaching into the floodplain of the Brit; there is potential for redevelopment at this site outside the floodplain, increasing the ability for the river to pass high flows, removing the potential for pollution and increasing the environmental and amenity value.

15.4.2 Pymore

Following the May 1979 flood, Pymore was identified as being at risk; a legal agreement (under Section 106 of the Planning & Compensation Act 1991) between the local authority and the potential developers of the site was entered into ensuring that the redevelopment of Pymore would incorporate a flood alleviation scheme.

It has recently been agreed that some development can take place prior to the construction of the full flood alleviation scheme. Works are being carried out to reduce the risk of flooding including construction of a berm and bridge alterations. We will, however, object to any further proposals that do not protect the site from inundation. For any further development to take place, a flood alleviation scheme will need to be constructed for the site.

15.4.3 Industrial development around Chickerell

Several sites are allocated for employment use on the boundary of the West Dorset and the Weymouth & Portland Local Plan area, at Chickerell. Sites at Chafey's Lake and Granby Industrial Estate have the potential to cause pollution in Chafey's Lake itself and subsequently drain to Radipole Lake and Weymouth Harbour if adequate pollution prevention measures are not employed when the site is developed.

The Crook Hill Brick Works site includes two large ponds which need to be protected; this also offers an opportunity for enhancements to the wetland habitat in accordance with Policy L5 of the West Dorset District Local Plan.

15.4.4 Housing land in Weymouth

Sites for 510 dwellings have been identified within Weymouth for the plan period to 2001. Several of the housing allocations are defined adjacent to Radipole Lake and one adjacent to the Inner Harbour. We will advise on these sites at the planning application stage to ensure that each of the developments incorporates appropriate pollution control and surface water attenuation measures, and includes environmental enhancement where possible.

15.4.5 Royal Naval Air Station HMS Osprey

The planned closure of Royal Naval Air Station HMS Osprey in 1999 has resulted in enquiries for redevelopment of the site. Following consultation with ourselves, consultants are currently assessing the land use potential of the site. The report produced will take into account the balance between economic, conservation and flood risk issues as this area is at risk from tidal flooding in a similar way to Chiswell (see section 3.7). Constraints placed on development in this area would include protection from a 1:200 year tidal event, and for development not to cause or exacerbate flooding elsewhere.

15.5 Road schemes

We are a statutory consultee to the Department of Transport for new trunk roads and advise County and District Councils on their own road schemes. We are involved throughout the process, from route choice to design and construction; we try to protect all our interests by consultation and negotiation, and where appropriate to secure environmental enhancements.

Particular areas of concern are pollution risks during and after construction, flood risk as a result of road construction and from surface water runoff, and damage to the amenity and wildlife value of rivers and wetlands.

16. Flood defence

Rivers carry surplus water from land to the sea as part of the natural water cycle. They can only cope with a certain maximum flow and flooding occurs when this is exceeded. Flooding can be caused by prolonged rainfall, thunderstorms or rapid snowmelt. The peak flow of a flood is measured and expressed in terms of the frequency at which that flow is statistically likely to recur, e.g. on average 1 in 10 years or 10% chance in any one year.

Seemingly similar types of watercourse respond differently to the same rainfall conditions due to variations in catchment areas and land use. An urban area with a high proportion of paved surfaces and drains will have rivers whose levels respond relatively quickly to rainfall. More open countryside will often allow more of the rain to soak into the ground and thus slow down runoff, so river levels will rise less rapidly but remain at the higher level longer; however; a clay catchment will respond much faster to rainfall than will a chalk catchment.

Localised flooding may also occur where watercourses become blocked at particular points such as under bridges or in culverts. Debris gathering at these points may include garden waste and other rubbish which has been deposited on river banks, and can be a major problem in urban areas. Flooding can also occur where surface water drains are unable to discharge into swollen watercourses, or further back in the surface water drainage system where their capacity is exceeded.

When watercourses flood, water flows onto the floodplain. These natural floodplains, which are as much a part of the river system as the channel which carries normal flows, provide extra capacity for the storage and passing downstream of flood water. This capacity is reduced if significant areas of floodplain have been raised, embanked, or built upon. This loss of storage volume can lead to higher river levels elsewhere and for this reason it is not possible or desirable to alleviate flooding in all areas. The priority for flood alleviation lies in urban areas and undeveloped floodplains should be allowed to play their natural role, as the continuity between the river and its floodplain is an essential part of the water cycle.

Flooding can also occur when meteorological conditions such as low atmospheric pressure, wind speed and direction combine with topography to produce tide levels that are greater than the defence levels. In estuaries a combination of freshwater river flows and tidal surges can also cause flooding.

Sea defences are constructed to alleviate the flooding of land by the sea. We have powers for carrying out sea defence works except where defences are privately or local authority owned. Local authorities have powers for protecting the coast from erosion by the sea, but sea defence and coast protection cannot be isolated from one another. This has led to the development of Shoreline Management Plans (see section 4.2.2).

16.1 Main river

All watercourses are classified as either main river, defined on maps held by ourselves and the Ministry of Agriculture, Fisheries & Food, or ordinary watercourse, sometimes referred to as non-main river. Main river includes all watercourses which contribute significantly to a catchment's drainage, though ordinary watercourses may be more significant locally.

We supervise all flood alleviation matters but have special powers to carry out or control work on main rivers and sea defences. There are 48.5km of main river in this plan area (see Map 16). Proposed revisions to the extent of main river are dealt with through a consultation and advertising process with the decision being made by the Ministry of Agriculture, Fisheries & Food. Local authorities have powers for flood defence on ordinary watercourses, and also for protecting the coast from erosion by the sea.

River	Length of main river
Brit	17.1km
Bride	11.5km
Wey	11.4km
Asker	5.5km
Pucksey	1.6km
Simene	1.4km

16.2 Flood risk areas

It is preferable to avoid increased risk from flooding through control of development rather than to alleviate problems once they occur. The relevant authority for controlling development in the floodplain is the local planning authority, and we work with them through the planning process (see section 15.3).

16.2.1 Policy and Practice for the Protection of Floodplains

This document describes our flood defence policies in relation to river and coastal floodplains, and explains the reasoning behind them. It reinforces and complements current government guidance on flood risks in relation to development planning. These policies will be of interest to planning authorities, developers, environmental bodies and members of the public.

Map 16. Main river and flood defence Standards of Service

This policy precludes most development in areas which flood more frequently than once in a hundred years. Development which is allowed in these areas must meet the following criteria:

- flood flows must not be impeded
- the storage capacity of the floodplain must not be reduced
- the number of people at risk from flooding must not be increased
- land required for maintenance of or access to watercourses must not be obstructed
- adverse environmental impacts must be avoided

We will continue to seek to influence structure plans, local plans and individual development proposals to help safeguard people and alleviate flood risk.

16.2.2 Department of the Environment Circular 30/92

Local planning authorities and ourselves are required by the Department of the Environment in Circular 30/92 Development and Flood Risk to liaise on flooding and surface water runoff matters to ensure that flooding risks that might arise from a development are recognised and made an integral part of the decision making process undertaken by the planning authorities.

This Circular directs local authorities to use their planning powers to guide development away from areas that may be affected by flooding, both from fluvial and tidal effects, and to restrict development that would itself increase the risk of flooding. Flooding and drainage issues are also to be taken fully into account during the preparation of development plans, and we prepare surveys under Section 105 of the Water Resources Act 1991 to define the nature and extent of flood risks (see section 16.3.1).

16.3 Development control

16.3.1 Section 105 Surveys

We have carried out flood risk surveys as required in Section 105 of the Water Resources Act 1991, and produced maps which are intended to show the estimated flooding extents along certain river reaches of the 1:100 year flood event (1:200 for tidal reaches) or the most significant historical flood, whichever is the greater.

The maps for this area have recently been published and sent to the local authorities who have helped identify flooding hot spots. The surveys have initially looked at main rivers and major conurbations. Over the next four years, we will, in consultation with the local authorities, extend this to non-main rivers and, for specific areas of concern, carry out further investigation and mathematical modelling at a higher standard.

These surveys are not fixed in time, and will be constantly updated as new flood information and modelling becomes available. We intend updating these once per year and will forward copies to local authorities when available. The planning authorities will use this information in deciding whether to consult us at the planning application stage, and will include it on their Local Plan proposals maps.

16.3.2 Land drainage consents

Many development proposals which may affect the flow of water or impede any drainage work, such as culverting or bridging, require our formal consent under the Land Drainage Act 1991 and the Water Resources Act 1991, as consolidated by the Environment Act 1995.

Our consent is required for works on or near the bank of a main river. This includes construction in, over, under or within 8m of the watercourse, including such activities as mineral extraction, and within 7m for the planting of trees. On ordinary watercourses, consent is only required for building any structure that would affect the flow. These powers are used to ensure that people both upstream and downstream of the proposed works are not exposed to an increased risk of flooding.

Access along river banks for staff and equipment needs to be preserved wherever possible especially for emergency works, and to ensure this is kept clear we will not grant a consent to any development on a main river which would compromise our activities.

We also have powers to prevent the obstruction of floodplains, and a duty to safeguard flora and fauna and to further these and the natural beauty of rivers and their floodplains. This forms a basis for the determination of consent applications.

16.3.3 Surface water control

In dealing with planning matters which involve surface water runoff, we normally require some form of attenuation to be included to remove oil and grit and to reduce runoff rates into the receiving watercourse. In some cases, developers are encouraged to include additional pollution protection measures such as reed bed ponds as well as monitoring equipment. We also encourage developers, where possible, to discharge clean surface water to ground to assist the recharge of the aquifer.

Surface water runoff is likely to increase as a result of development as more impermeable surfaces such as roofs and pavements are created. The impacts of such development, however small, add up and can lead to significant problems in due course. Increases in both the amount and rate of water reaching rivers can, if not managed, lead to greater risk of flooding and exacerbate the problem of polluting materials being washed into the watercourse.

We will seek, in conjunction with the local planning authorities and the developers, to ensure that new development is carefully located and designed. Where appropriate, we will require measures to control surface water to be incorporated into the overall development.

A Guide to Surface Water Best Management Practices (SEPA 1996) has recently been produced by the Scottish Environmental Protection Agency in consultation with ourselves. It provides guidance on source control techniques and infiltration systems, and we encourage the use of these techniques in controlling the potentially harmful effects of increased surface water runoff resulting from development. A video is also available.

16.4 River control structures

During 1995-96 we carried out a comprehensive survey of all river control structures situated on statutory main river including the present condition of assets which will be considered in future capital or revenue expenditure either for maintenance, refurbishment or replacement.

16.4.1 Agency owned structures

River control structures generally control water levels upstream but can be adjusted to allow storm water to pass downstream. We and our predecessor organisations have constructed a significant number of gates, weirs, pumping stations and other such structures to complement river channel improvements (see Map 17).

16.4.2 Privately owned structures

Privately owned structures are common on watercourses, for a variety of traditional water uses such as operation of mills, creation of navigation channels, fish farming and amenity. By law these must be maintained and operated properly by their owners if they affect river levels and flows. The condition of privately owned structures can be of concern to us, and we have powers to give reasonable directions under our byelaws.

Map 17. Flood defence structures

16.5 Flood defence works

We aim to provide effective protection for people and property against flooding from rivers and the sea and to provide adequate arrangements for flood forecasting and warning.

16.5.1 Permissive works

We do not own watercourses except in a few locations where flood alleviation structures have been constructed and their ownership retained. The ultimate responsibility for the upkeep of a watercourse rests with the person who owns the adjacent land (the riparian owner).

We have permissive powers to undertake works on main rivers, and exercise these powers according to available resources and priorities. Regular maintenance is essential if the river system and sea defences are to operate properly at times of high water levels, and can contribute significantly to reducing the risk of flooding. This includes vegetation control, repairs to earth embankments and other floodwalls, obstruction and blockage removal and dredging. Approximately £300,000 was used to fund routine (i.e. annual) and non-routine maintenance works in this area during 1995-96, the split being roughly two thirds routine (including emergency work) and one third non-routine.

16.5.2 Flood defence Standards of Service

As an aid to decisions on priorities for works we have determined Standards of Service for flood alleviation and drainage based on land usage within the floodplain. Five land use bands have been established, based on the presence and concentration of certain features of land use. These include housing, commercial property, agriculture and transport networks. Such features are each allocated a financial value (based on the potential losses that would ensue if the features were subject to flooding or waterlogging) which allows comparison of different features on the same basis, using standard units called House Equivalents (HE).

Each land use band has a target for the maximum flood risk to which it should be exposed. The standards are expressed as a frequency which reflects the likelihood that during any year a flood event may occur which exceeds the magnitude for which protection is available or should ideally be provided. Hence a 1 in 10 year flood can be expected to be equalled or exceeded once every ten years on average. This is also described as the return period, although the interval before another similar event returns only averages out over a long period.

Standards of Service land use bands and design targets

Land use band	Description of typical land use	Target standard of protection (return period)	
		Tidal waters	Freshwaters
A	High density urban, containing significant residential and non-residential property	1:100-1:200	1:50-1:100
B	Medium density urban	1:50-1:200	1:25-1:100
C	Low density or rural communities	1:10-1:100	1:5-1:50
D	Generally arable farming with isolated properties	1:2.5-1:20	1:1.25-1:10
E	Low productivity land with few properties	<1:5	<1:2.5

River reaches were classified by this methodology in 1990. Map 16 shows the various land use bands for main river in this area. A target Standard of Service at a location is expressed as a range between 0.5 to 1.0HE per kilometre per year. The area is due to be re-surveyed in 1997 to update and extend the Standard of Service data.

Different types of land and property need different levels of protection; a comparison of the target and actual Standards of Service allows improvement and maintenance works to be prioritised. Indicative standards are only a guide, however, and they may not always be appropriate. It is also important to note that flood alleviation schemes alleviate flooding up to a design period, but a worse event may still occur.

16.5.3 Routine maintenance

Routine maintenance is carried out throughout the area and is summarised below.

Location	Nature of Work
East Beach, West Bay	Recharge beach to maintain height and width of crest to protect West Bay from flooding
Freshwater	Unblock mouth of Bride to prevent flooding of caravan park and village due to river retaining overtopping salt water and river water. The beach is reshaped in autumn each year to prevent or delay major blockage
Wey to Radipole	Removal of silt and aquatic weed in channel along entire length of river each autumn to improve channel capacity and so reduce flood risk
Preston Sea Defence Scheme	Reshape beach at Overcombe end as required after southerly storms. Loss of beach crest width and height are made good by moving displaced material back to original position
Flood Alleviation Scheme Maintenance	Maintenance works are carried out throughout the year including vegetation removal to inspect structural integrity and checks for vermin damage. Built in or associated conservation features require a degree of maintenance. Schemes normally require a low level of channel maintenance. Desilting will be undertaken to return schemes to design level if required. We check to ensure flapvalves and penstocks will operate properly in a flood event
Various Locations	Checks (majority on a weekly basis), to ensure sluice and radial gates, and hatches will operate properly in a flood event

At times of heavy rainfall our operational priorities are to check and operate our own water level control structures and clear debris and identified obstructions where possible.

16.5.4 Non-routine maintenance

Sections of channel are identified which are in need of maintenance to reduce the risk of flooding; this work is done relatively infrequently and may involve dredging, tree trimming and debris removal. Work is undertaken in consultation with our fisheries and conservation staff, and landowners and conservation bodies where possible enhancements to the river corridor are carried out. These works often return a semi-urban scheme to its design standard; in some instances a reduced level of service is acceptable if land use has changed.

Dredged material is normally disposed of on site, but in urban areas it is sometimes necessary to remove material to a licensed waste site. Where disposal of material is required, we place details of the works on the public register (see section 1.2.1).

It is also necessary to maintain channel capacity by clearing collected debris, for example fallen trees, at sites throughout the area including Ham Weir Beaminster, North Mills Bridport, Gundry Bridport, South Bridge Bridport, Jessops Avenue Bridport and at most of the structures on the Wey at Upwey, Broadwey and Nottington. This requires regular inspections especially in periods of wet weather. Clearance is on a *best endeavours* basis and is only undertaken when it is safe for our operators to do so.

Supermarket trolleys can cause an obstruction to flow and are a problem in and around all the main towns, in particular Bridport. Where they do cause an obstruction they are removed and if possible returned to the supermarket to which they belong. In other places, self-help groups are encouraged so that maintenance is frequently carried out. It is an offence to deposit debris in or near any watercourse. Where debris is not causing an obstruction to flow then the landowner is expected to clear it, though the Local Authority may take action if there is a threat to public health.

16.5.5 Capital improvements

In addition to general maintenance work, we can build new flood defences if flooding is a serious problem in a particular area. Nowadays we usually only build new defences to protect built up areas from flooding. Most new flood defence schemes attract grant from the Ministry of Agriculture, Fisheries & Food, and we follow their detailed guidance when developing our proposals. All schemes must be technically, economically and environmentally sound. We keep a list of schemes called a programme of Capital Works which helps us to plan for the future.

In recent years we have carried out major flood alleviation schemes at a number of locations including Bridport (after major flooding during 1979) and Burton Bradstock (after flooding in 1979 and 1989). In addition we have just completed sea defence schemes at Chiswell and Preston Beach, near Weymouth.

Flooding along the Wey in 1993 extended along the whole valley, but was not intensive enough to cause sufficient damage to warrant a comprehensive flood alleviation scheme. We are currently working with West Dorset District Council investigating possible improvements to the sea defences at West Bay (see section 3.8.3), and with Weymouth & Portland District Council on possible improvements to the tidal defences in Weymouth Harbour.

Continuous liaison with planning authorities at these locations is carried out to ensure that development does not create new flood risk problems or reduce the effectiveness of the flood alleviation schemes. Liaison with planning authorities is also undertaken throughout the rest of the area whenever flood risk issues arise (see section 4.1).

16.5.6 Duty of care for conservation

All new schemes and maintenance works must be carried out in an environmentally acceptable manner, and we consult extensively. There are three duties which arise when we are formulating or considering proposals for works:

- to take into account the impact of proposals to natural features
- to have regard to protecting features of historic interest
- to further the conservation and enhancement of flora, fauna and other natural features

16.5.7 Water Level Management Plans

The government has recently issued guidance on the preparation of Water Level Management Plans for Sites of Special Scientific Interest or other areas of high ecological or landscape importance. Where we are the operating authority, we will liaise with English Nature to prepare a plan to ensure appropriate key water levels are safeguarded. The lead authority for the Radipole Water Level Management Plan is West Dorset District Council, as they control conditions in the estuary.

16.5.8 Reservoirs Act supervision

The supervision of large non-natural bodies of water is laid down under the requirements of the Reservoirs Act (1975). From April 1998 we will become the enforcement authority for all reservoirs holding over 25,000m^3 above the lowest adjacent ground level, with a duty to supervise reservoir inspection by a qualified engineer twice each year to ensure they are safe.

16.6 Potential effects of climate change on the environment

A Review of the Potential Effects of Climate Change in the United Kingdom was published by the UK Climate Change Impact Review Group for the Department of the Environment in July 1996.

We have had a policy guidance note on climate change since 1992 which allows for increases in sea levels of 5mm per year until 2030, and 7.5mm per year thereafter, within this Region.

The Climate Change Impact Review Group defined scenarios under which:

- temperatures are expected to rise 0.2° Centigrade per decade
- extremely warm seasons and years are expected to occur more frequently
- annual precipitation as a whole is expected to rise by about 5% by 2020, and by 10% by the 2050s
- winter precipitation increases everywhere, but more substantially over the southern UK. Summer precipitation decreases over the southern UK
- average seasonal windspeeds are expected to increase over most of the UK
- sea level is expected to rise at the rate of 5cm per decade. This is likely to be exacerbated in southern and eastern UK by sinking land and mitigated in the north by rising land

Effects which may be anticipated include:

- reduced protection for sea defences
- impeded drainage to tidal waters
- greater overtopping and damage to coastal defences
- changes to wetland hydrology, flora and fauna
- possible increased flood risk in some catchments
- possible increase in drought

16.7 Flood warning

From 1 September 1996, the Agency took the lead role in passing flood warnings to people who are at risk, so that they can take action to protect themselves and their properties. Where there is a risk that flooding could occur, flood warnings will be issued for the area affected. These warnings are issued to the Police, local authorities and the media, and in places directly to those at risk. Detailed arrangements are documented in the *Dorset Floodwarning Dissemination Plan* which can be viewed at our offices.

16.7.1 Flood warning responsibilities

We recognise that irrespective of attempts to minimise the risk from flooding through the implementation of various policies and actions, flooding can occur and on occasion represents a risk to human life. With regard to public safety, we operate a flood forecasting service which uses raingauge and river level data from a number of sites, radar and rainfall forecast data from meteorological agencies, and information from our staff in the field.

Flood warning is not an exact science. We use the best information available to predict the possibility of flooding, but no warning system can cover every eventuality. It is the responsibility of those who live in flood prone areas to be aware of any risk and to know what action they should take to protect themselves if flooding occurs. Warnings are issued for flooding from most major rivers and the sea. There are other types of flooding for which a warning service cannot be provided, for example, road flooding caused by blocked drains.

There are three principal means of issuing flood warnings:

- high risk properties receive a recorded telephone message directly when a flood warning is issued
- flood warnings will be broadcast by most local BBC and commercial radio stations
- the Floodcall Warning Information Line (telephone 0645 881 188) is a recorded information service which provides regularly updated information on flood warnings

A leaflet containing further information is available from our offices.

As well as issuing flood warnings, we have the lead role in making sure that they actually get through to the people at risk. Arrangements are agreed in consultation with local authorities and the emergency services. Annual flood warning seminars are also held to review the effectiveness of the flood forecasting and warning process.

16.7.2 Flood warning Standards of Service

In order to ensure that timely warnings are issued to the right people, we operate a system of flood warning Standards of Service. By defining lengths of river with common landuse interests, those areas with a high population concentration can be treated as priority. It is our aim to provide a two hour warning of commencement of flooding wherever practicable.

16.8 Emergency response

At times of high water levels, in addition to our flood warning role (see section 16.7) we patrol the defences, operate flood alleviation structures, remove blockages and carry out any emer-

gency repairs needed. Our operational response is concentrated on closing flood gates at locations where a flood alleviation scheme is dependent on them, for example West Bay, Bridport and Chiswell. Tide watches are frequently mounted at West Bay and Chiswell when the operatives on site action the following:

- measure wind speed
- report on wave and weather conditions
- close flood gates
- report on the conditions of the defences
- liaise with local authority and emergency services on site
- report on flood conditions
- report on effect of wave action on defences to assist with flood warning decisions

Our priorities are to:

- ensure that flood alleviation schemes, both river and coastal, operate to their design standard
- manage high flows on the main rivers within the area
- respond to flood situations on ordinary watercourses, where resources allow, in support of local authorities

District Councils have permissive powers to offer assistance during floods. This may include placing sandbags, moving possessions, or evacuating people. Each Council has a different policy on the type and amount of help they give. Dorset County Council are responsible for public highways and deal with any flooding problems associated with road drainage. County Councils have Emergency Planning Officers who may become involved in more serious floods.

The fire service provides help in flood emergencies if they are able to do so. The local station will be able to advise the public on what help is, or is likely to be, available and whether or not a charge will be made. Public surface water sewerage systems are the responsibility of Wessex Water Services, who may sometimes use District Councils as their agents.

17. Groundwater protection

The protection of aquifers from pollution is of great importance as it is extremely difficult or impossible to clean up once pollution has occurred. Contamination of groundwater may put public supplies at risk and affect river water quality where the flow depends on groundwater.

17.1 Policy and Practice for the Protection of Groundwater

This document contains policy statements on the following aspects of groundwater protection:

- physical disturbance of aquifers affecting quality and quantity
- waste disposal to land
- contaminated land
- disposal of sludges and slurries to land
- discharges to underground strata
- diffuse pollution
- other activities affecting groundwater quality

We commit substantial resources to groundwater protection, and apply this Policy through the authorisations we issue. Many of the policies are not supported by any of our formal roles, but rely on us to persuade and educate landowners to the benefits of

good practice. We also seek to protect groundwater quality in our role as a statutory consultee to the planning authorities (see section 15).

The Policy is supported by Groundwater Vulnerability Maps which show the Source Protection Areas and the location of aquifers, and classify their vulnerability according to the properties of the soil and underlying strata. These publications allow planners, developers and regulatory bodies to make informed judgements for the location of new developments, avoiding potentially polluting activities in high vulnerability areas. The published Maps include most of the plan area, and the remainder will be available by May 1998.

Source Protection Areas are defined for all major abstractions for supply and other human consumption, and are subdivided into up to 3 zones of proximity indicating the risk to the source. Local plans do and will contain policies relating to groundwater protection, and Source Protection Areas are being reproduced on the proposals maps. These Zones will never be definitive, but always represent the best information available at the time of drafting. It must not be overlooked that all aquifers need protection not just those parts supplying abstractions.

17.2 EC Groundwater Directive

The EC Groundwater Directive (80/68/EEC) controls the release of certain substances to groundwater. There are two lists of substances: List I substances, which should not be released and List II substances, which can only be released in limited amounts. Currently the principles of the Groundwater Directive are implemented only through our waste management activities and by controlling the discharge of effluents to soakaways.

Other potential sources of these substances are currently unregulated, such as the disposal of spent sheep dip (organophosphorus compounds and nowadays synthetic pyrethroids) and sewage sludge to land (heavy metals and ammonia). Consequently the Department of the Environment, Transport & the Regions is currently consulting on new regulations under the European Communities Act 1972 to bring all such discharges under control. The anticipated date for implementation is early 1998.

There are no statutory standards for the quality of groundwater, and because of the difficulties in obtaining and interpreting information we have only limited data on the impacts of human activity on groundwater quality. However in drought conditions most of the flow in rivers is derived from groundwater and our river monitoring data indicate that there are no known major areas of contaminated groundwater in this plan area.

17.3 Discharges to ground

Remote properties and small villages are often not connected to mains sewer, and septic tanks discharging to soakaway systems, small treatment plants and sealed cesspools are used instead.

Our current policy is to consent septic tanks and soakaways where appropriate, taking into consideration the nature of the underlying aquifers and the public and private groundwater abstractions used for potable supply. Sealed cesspools have to be installed where soakaways do not work well due to ground conditions. With a consent, the owner is responsible for the quality of any discharge, and this gives us a measure of control.

Sewage sludge and septic tank emptyings can be disposed of into licensed sludge holding lagoons prior to being spread onto farmland (see section 14.3.7); cesspool emptyings must be disposed of at sewage treatment works.

18. Contaminated land

The Environment Act 1995 contains new provisions for dealing with contaminated land which will be implemented by spring 1998; local authorities will be the key regulators and we will act as a consultee and advisor, and take responsibility for *special sites.*

Contaminated land will be defined as any which appears to a local authority to be in such a condition, because of the substances it contains, or that either water pollution is being or is likely to be caused. This interpretation will be subject to guidance issued by the Secretary of State. Local authorities will be required to carry out a survey to identify contaminated land in its area, and when these have been carried out we have a duty to publish a report on the state of contaminated land periodically.

Some sites may be designated as special sites and will become our responsibility; this includes those which are likely to cause serious water pollution. The draft Statutory Guidance indicated that contaminated sites should continue to be remediated wherever possible on a voluntary basis or through the normal development planning process and existing pollution legislation whereby we can prosecute if pollution is actually occurring or take action to effect clean-up and recover costs from the polluter or landowner. For those sites not meeting the more rigid new definition in the Guidance, these will be the only routes for clean-up that remain available.

19. Mineral extraction

The extraction of minerals from quarries, mines and pits for sand, gravel or clay can damage underground water resources and rivers and streams. The damaging effects of mineral extraction are often long term and sometimes permanent. The influence of a deep quarry which removes material from below the natural water table may extend many kilometres. Public water supplies and flows from springs that feed streams and rivers can be threatened when aquifers are either removed or disturbed.

Water is purified as it percolates through aquifers and surface layers of soil and rock. Removing these materials can degrade the quality of water in the aquifer and provide an easy route for pollution to reach groundwater.

Water resources may not recover immediately after closing a deep sub water-table quarry. A large deep quarry may take years to fill with water to the point where springs that it dried up begin to flow again. Until that time pumping may be needed in dry weather to support river flows. Some springs may never recover because the stable lake surface in a flooded quarry may be below the highest levels of the sloping pre-quarry water table. Using an abandoned quarry for industry or housing introduces a new risk of contamination to water resources.

We aim to control the impact of mineral winning and quarrying activities on the water environment and to promote suitable after-use activities. We have duties and powers to consent discharges from quarries and operational mines, and to respond to Mineral Plans as a statutory consultee of the planning authority.

In considering proposals, we will refer to our *Policy and Practice for the Protection of Groundwater* (see section 17). We will also object to a new proposal for mineral extraction when there will be demonstrable harm to water resources or to the water environment, unless measures to mitigate any harm can be agreed in planning controls.

19.1 Local perspective

Most of the mineral working in this plan area is concentrated on the Isle of Portland. The *Dorset Minerals & Waste Monitoring Report 1996* (Dorset County Council, May 1997) only identifies a single, non-operational chalk working at Long Bredy within the West Dorset District Council part of the plan area. At present, seabed dredging for sand and gravel is confined to areas outside the area.

On Portland, there are 11 sites with planning permission for the extraction of Portland limestone, and a further two which combine this with inert or skip waste disposal. The total area involved is 335.1ha.

There are no significantly utilised water resources on Portland, but consultation on any new planning applications and adherence to the *Policy and Practice for the Protection of Groundwater* (see section 17) would ensure the protection of important resources of water.

There is currently no oil production taking place within this area, but surveys of Lyme Bay have been carried out by Amoco and Kerr-McGee. This is licensed by the Department of Trade and Industry, but we are involved in contingency planning at the time of licensing, working to the aims of minimising environmental harm and no increase in risk to the environment.

The Marine Safety Agency have recently been working on the designation of an area 9 miles offshore in Lyme Bay for the purpose of ship-to-ship transfers of bulk oil, concentrating these activities in an area where they can be monitored. We have been involved in discussions regarding this proposal.

20. Rural land use

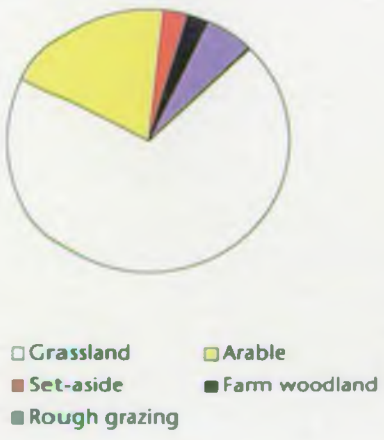
86% of the land in this plan area is farmed, and the way this land is used affects the quality of our environment. We aim to protect the environment from potentially damaging farming activities and to encourage agricultural practices that improve the environment. A sustainable farming system that conserves the soil and minimises and recycles wastes will reduce the risk of damage to the water environment.

We also consider here the use of riverside beds or ponds to rear fish or crayfish, or to grow watercress. We aim to ensure there is no impact from this use on groundwater or surface water quality or quantity, and the associated fauna, flora and wild fish stocks.

Well-managed woodland in the right places does not harm the environment and will often bring benefits. We aim to protect the environment from the negative effects of forestry activities and to encourage forestry practices that improve the environment.

20.1 Farming

Dairy farming is still the predominant activity, though sheep are becoming more common again. Maize is becoming increasingly common, being grown on 1,195ha of the area in 1995 (compared with 149ha in 1985), and this may have an influence on water quality. Farm systems continue to specialise and intensify with an increasing number of part time farms. Set-aside land, on which agricultural activity is severely limited, has increased to 761ha.



Changes in use 1985-1995	hectare/units	%
Cattle and calves	-5,075	-11.3
Sheep and lambs	16,869	41
Pigs	-2,784	-12.8
Fowl	13,221	42.5
Cereal (ha)	-2,030	-37.7
Set-aside (ha)	761	N/A

This information was taken from census statistics provided by the Farming & Rural Conservation Agency. The data are derived from parishes and do not correspond exactly to the plan boundaries.

We are concerned about the pollution of surface and groundwater from animal wastes, fertilisers and pesticides. Soil erosion, land drainage and other forms of intensification, and stock damage to riverbanks can also lead to problems.

There are a limited number of ways we can influence how farmers use land. Other agencies, such as the Ministry of Agriculture, Fisheries & Food can encourage sensitive farming practices

using financial incentives (see section 4.4). However we can control and prevent pollution in the same way as we do with any other industry.

We issue authorisations to regulate the abstraction of water for use on farms. We encourage farmers to regard waste as a resource, and to use slurries in conjunction with artificial fertilisers to improve the land rather than discharging treated waste into rivers (see section 14.3.7).

The *Codes of Good Agricultural Practice for the Protection of Water* (MAFF 1993), Air (MAFF 1992) and *Soil* (MAFF 1993) provide farmers with advice on how to avoid pollution; the disposal of slurry and sludge should comply with these codes.

The nature of the soil and topography of the area means that at times waste is unable to be spread on the land. During wet or cold weather farmers should provide adequate storage for their farm waste. Unless applications of slurries are made onto suitable ground under favourable conditions, there is a great risk of release from the land.

Up to the mid 1980s, under-investment in waste containment, handling facilities and animal housing led to significant pollution incidents and persistent low level water pollution. Particular pollution problems have arisen in the Brit, Jordan and Wey catchments, and the Fleet-Portland Harbour. Land runoff in the clay dominated catchments of the Char, Brit, Bride, Simene, and Mangerton Brook can also cause discoloration and turbidity (see section 6.1).

Since then, there has been a concerted programme of activity in the farm community, coupled with our intensive monitoring of surface waters. The Farm and Conservation Grant Aid Scheme helped farms greatly in this area; this is now much reduced and grants for installing or improving waste handling facilities are no longer available. The positive response of the farming community in investing in buildings and equipment suitable for the task and in using precise waste management techniques has led to major quality improvements. Free advisory visits will continue to be made available funded by the Ministry of Agriculture, Fisheries & Food.

Land left fallow over winter is responsible for silt being washed into rivers. There is a high nitrate loss from ploughed grasslands to groundwater. Some of these changes are due to farming policy. Maize, for instance, is now subsidised and as a result more fields have little protection against soil loss for most of the year. Buffer strips along the watercourses could be important, but these will not be fully effective where land drains have been previously installed. In target areas, Stewardship schemes (see section 4.4) are available which can help to arrest soil erosion, reduce fertiliser input and retain humidity, leading to more species-rich communities.

One Nitrate Vulnerable Zone has been designated because of groundwater contamination by nitrates (see section 3.2), and there has been contamination of private wells at Friar Waddon.

20.1.1 Agrochemicals

There are a small number of approved agrochemical stores in the area which comply with the *British Agrochemical Standards Inspection Scheme* regulations; this means that pollution prevention measures are incorporated into their design.

The *Code of Good Agricultural Practice for the Protection of Water* (HMSO 1993) contains advice for farmers on the safe application and disposal of pesticides, herbicides and sheep dips.

20.2 Aquaculture

There are fish farms at Burton Bradstock on the Bride and Upwey on the Wey, an oyster fishery within the Fleet, and an associated holding and purifying unit at Ferrybridge. There are no cress farms in the area, and we are unaware of any crayfish units.

We exercise control by issuing abstraction licences to protect the river flows, and by issuing discharge consents to protect the river from pollution. In some situations we can control the

movement of fish to prevent the spread of diseases. However the Ministry of Agriculture, Fisheries & Food are responsible for registered fish farms.

Discharges from fish farms may contain surplus food, organic wastes, ammonia, antibiotics from the fish food, or chemicals used to control pests or diseases, and the large volumes of effluent could affect the quality of the receiving water.

20.3 Forestry

In some circumstances woodland planting and management can cause problems. Acidification, soil erosion, pollution, water yield, increased flood risk and damage to wildlife habitats concern us in some parts of England and Wales but in this area the planting and management of new woodland does not usually cause problems for the environment.

The Forestry Authority regulates forestry in the UK by licensing some operations using felling licences and providing grant aid through the Woodland Grant Scheme. The Forestry Authority has published a series of guidelines on forests and water, nature conservation, landscape design, archaeology and recreation. The Guidelines encourage environmentally sympathetic planting, management and harvesting. The Farm Woodland Premium Scheme operated by the Ministry of Agriculture, Fisheries & Food also provides grant aid for new woodlands on farms.

We have duties and powers to regulate some forestry works using land drainage legislation and to deal with pollution incidents. We work with the Forestry Authority and local authorities to ensure that the most significant forestry schemes consider effects on the water environment. We welcome the opportunity to comment on these schemes and on Indicative Forestry Strategies where they are being developed.

20.3.1 Local perspective

In the plan area, there is no forest managed by Forest Enterprise, and the Ministry of Agriculture, Fisheries & Food have recorded 739ha of farm woodland (1995). There are no designated acid sensitive areas in this area.

We would wish to be consulted about any future development of forestry within this area which might impact on the water environment. The *Forests & Water Guidelines* (HMSO 1993) detail potential problems for the water environment, and the Forestry Authority will only grant aid schemes which fully comply with these Guidelines.

21. Controlled industrial processes

21.1 Integrated pollution control

We are the statutory authority in England and Wales for regulating the largest and most complex industrial processes which discharge potentially harmful waste to air, water and land. We regulate controlled processes by considering discharges to land, air and water in the context of their effect on the environment as a whole.

We use a system known as Integrated Pollution Control which requires the use of best available techniques not entailing excessive cost (BATNEEC) to prevent the release of particular substances into the environment or, where not practicable, to minimise their release and render them harmless.

Two lists of processes have been prescribed by regulations made under the Environmental Protection Act (1990)(Part 1); we control Part A processes under Integrated Pollution Control. Operators of these controlled processes are required to have an authorisation to discharge waste, and authorisations also cover plant design and operation. Part B processes are controlled at a local level under a system of Local Authority Air Pollution Control.

There is one Integrated Pollution Control authorisation in this area, the Defence Research Agency at Bincleaves, Weymouth. The authorisation is for the use of a flare stack used to burn the exhaust emissions from testing of torpedo propulsion engines. Cooling water used during the tests is discharged to the sea.

We have received an application from Southern Electric Power Generation for an open circuit gas turbine power station at Chickerell; this application is currently being determined.

We are also required to determine referrals for discharges of special category effluent to sewer; there are no sites within this area where such referrals have been made.

21.2 The storage, use & disposal of radioactive material

We are the principal regulator in England and Wales under the Radioactive Substances Act (1993). This is concerned with the storage, use and disposal of radioactive substances, and in particular, the regulation of radioactive waste. Radioactive substances are present in the environment as a result of both natural processes and of technological developments. The uncontrolled and incautious use of these substances can pose both immediate and long-term effects.

We ensure that registrations for keeping and using radioactive substances are granted on the basis that their use is justified and that operators are prepared to abide by conditions to safeguard human health and protect the environment. We also issue certificates of authorisation for the accumulation and disposal of radioactive waste. We embrace the concept of best practicable environmental option (BPEO) in our regulation of radioactive substances.

There are no authorisations for the accumulation and disposal of radioactive waste in this area.

22. Glossary

AMP	Asset Management Plan
Aquifer	A layer of water-bearing rock
BOD	Biochemical Oxygen Demand
EC	European Community
EU	European Union
HE	House Equivalents per kilometre
HMSO	Her Majesty's Stationery Office
LEAP	Local Environment Agency Plan
MAFF	Ministry of Agriculture, Fisheries & Food
NRA	National Rivers Authority
OFWAT	Office of Water Services, the government regulatory agency for the water industry
R&D	Research and Development
RE	River Ecosystem
RQO	River Quality Objective
SEPA	Scottish Environmental Protection Agency
WWS	Wessex Water Services Ltd

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MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

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