CHAPTER 4: ENVIRONMENTAL PROFILE

BACKGROUND

This Chapter was developed by the Cornwall Objective 1 Environment Topic Group, consisting of the key partners in the region, including the principal environmental agencies. Various drafts of the Chapter have been the subject of wide consultation. The Group has met on 8 occasions, and a key member of the group was a member of the main Plan Team from its inception. This ensured that the environmental dimension has been fully incorporated in the SPD development process.

The Chapter has three sections:
- An environmental profile
- Environmental baselines; and
- An environmental impact assessment of the Programme at Priority and measure level.

The last section of the Chapter will be used in the Programme Complement to set appropriate targets at the measure level, and also to influence the appraisal and selection criteria.

INTRODUCTION

Geographically the Programme Area is distinct from every other part of the UK. In the case of Scilly it is some 43 km offshore and in the case of mainland Cornwall it is surrounded on three sides by sea and separated from neighbouring Devon by the River Tamar, which is a significant physical and cultural divide.

The Area's geography and geology combine to produce a unique coastline, landscape and settlement pattern. It is the coast that has helped Cornwall and Scilly develop one of the most powerful tourist images in Britain, as well as play host to the still important fishing industry. The landscape of inland Cornwall is less well known and appreciated, yet rich in contrasts and surprises within a very compact geographical area. If its landscape can be described as small scale then so can the Area's towns and villages based on a settlement pattern that is Celtic in origin, overlain by a history of mining and fishing communities and twentieth century bungalow sprawl.

OVERVIEW

Sustainable development is about ensuring a better quality of life into the long-term. In environmental terms, this necessitates looking at the global issues such as climate change, bio-diversity conservation and the use of natural resources as well as issues at a more local scale.

To achieve greater prosperity with less environmental damage requires:
- tackling the efficiency with which we use resources;
- promoting thriving towns and villages based on strong economies; and
- enabling good access to services and safe surroundings.

It is important to enhance economic performance through sustainable growth and development. The environment is not a passive physical entity, but influences and responds to changes in society. It provides a sense of place and is a vital source of existing and potential economic prosperity and human activity.

KEY POINTS: ENVIRONMENTAL AIMS

To protect the environment by:
- limiting global environmental threats;
- protecting human health and safety; and
- protecting our natural and historic environment.

To use natural resources prudently by:
- more efficient use of non-renewable resources` including energy, and the development of alternatives
- use of renewable resources in ways that do not endanger the resource
- minimise waste and prevent pollution

It is important to recognise:
- the role of the environment as a key economic driver and therefore the need to ensure its quality both as a resource for existing businesses, including the tourist industry, and an opportunity for future prosperity.
- the environment as a key part of the quality of life for residents and visitors alike.
- that environmental regeneration contributes to sustainable economic and social well being.
- to take advantage of business opportunities afforded by trends in environmental management

Hence in the strategy and implementation of the Programme the protection and enhancement of the environment will inform all aspects of the Objective 1 process and we will place particular emphasis on:
- protection and wise use of the environment as a resource for existing business activity and the attraction of new investors;
- transforming patterns of economic development in the Programme Area by reducing the environmental impacts of all business sectors, and by promoting education, training and public involvement in delivery of integrated solutions; and
- exploiting the increased potential of key environmental industries as a growth sector of the economy and on addressing current opportunities and tackling weaknesses.

The OECD put the size of the global market for environmental technology (excluding services) at c.£120 bn in 1992 with projected growth to over £180 bn in the year 2000 and c£325 bn by 2010. In the UK the DTI / DETR joint environmental markets unit (JEMU) estimate the market at c£5 bn in 1992 and c£9 bn by the year 2000 and c£15 bn by 2010.

The Environmental Prospectus for South West England estimates that the environment contributes over 3% to the GDP of South West England and has the potential to grow by 40%. The SWERDA recognise this as a conservative estimate.

THE APPROACH

The approach adopted has been one in which drafting has been carried out by the Cornwall Objective 1 topic group and associated specialists. For example, the natural environment section was drafted by the responsible statutory organisation, English Nature, the landscape section by a local authority landscape architect. This has enabled suitable expression of a sense of place, that is, the "distinctiveness" of the Region. This text was then edited and commented upon by the other members of the environment group. Following this, the profile was then made available for comment within the partnership. In addition, the environment group (with additional invitees) also specifically looked at the emerging SPD framework to identify the environmental issues that should be addressed in the Programme. The results of this process were fed into the SPD.

Each section presents narrative and key information, sets out the relevant environmental strategies, identifies and concludes with the key opportunities for the Programme, and finally where appropriate indicators for tracking the Region *(Ref: Environment and Sustainable Development – "A guide for the ex-ante evaluation of the environmental impact of Regional Development Plans" DG16 May 1999)*

The sections of the environmental profile set out below include Landscape; Quality in New Development; Derelict and Contaminated Land; The Natural Environment; Coasts, Marine and the Marine Environment; The Historic Environment; The Water Environment; Energy; Transport; Waste Management; Air Quality

LANDSCAPE

INTRODUCTION

Cornwall's special and unique identity has been shaped by natural forces, (rock, sea and the climate), and by 'layers' of history. The landscape is varied, from remote and 'harsh' areas, to sub-tropical gardens, sheltered areas, creeks and heathlands. Also, the villages often contribute to the attractiveness of the landscape, with many characterised by soft killas stone. The landscape is built up over years through the interaction of people and their environment.

KEY FEATURES

Climate - Cornwall is a peninsula 120km long with no part being more than 25 km from the sea, resulting in an extreme maritime climate with mild winters and cool summers. Rainfall is varied, ranging from 750 mm on the north coast to over 1800 mm on Bodmin Moor. Much of the County is exposed to salt-laden winds and frequent gales which have not only had a marked effect on the vegetation but also on the way people have used the landscape. In contrast the presence of the warmth generated by the Gulf Stream enables sub-tropical vegetation to flourish in the sheltered parts of the county.

Geology - Cornwall's geology is very complex for its size being mainly derived from Devonian rocks that have been heavily folded and metamorphosed by igneous intrusions.

Soils - These vary from being thin, acidic and impoverished over the granite to deeper clay loams over the Devonian and Carboniferous grits, shales and slates based on well stratified slates and sandstones.

Topography - through geological processes over vast periods of time, the land has been eroded into wave-cut platforms creating flat horizons or ending abruptly at the sea. The Cornish landform has been further shaped by its river systems; deeply incised streams, more mature rivers rising in basins in the uplands, which widen out into the rias.

Moorland - the most extreme, exposed, open landscapes are found on the granite uplands and moorlands. These include the wide-open areas of unenclosed rough grass and wet heathlands. The stacks of eroded granite rocks form very particular landmarks.

The Coast - much of the coastline of Cornwall is unspoilt and of high quality visually and environmentally, for the essence of the county's special landscape character and atmosphere. The distinctive coastline includes rocky coves, gaunt headlands, large, sweeping, sandy beaches, and many miles of rugged cliff-lines. Many of the original ports have become the main tourist resorts and other areas, especially the dunes and agricultural land close to the sea, have been developed for caravan sites and other holiday accommodation. The surroundings to these areas are fragile, and remedial work has been required to retain the general attractiveness.

Wildlife and Nature Conservation - the visual landscape is inextricably associated with a variety of natural and semi-natural habitats and their wildlife.

Woodland and Tree Cover - woodland covers about 5.5% of the County (In England the average is c7.6%). This low coverage is due to both timber production for smelting tin and copper and the more recent Dutch elm disease. Despite this low cover the geography of the County and its exposure is such that trees and woodlands are of great importance in terms of the landscape, shelter, amenity and nature conservation. Woodland is mainly concentrated on the valley slopes and in the sheltered areas generally unsuitable for farming. Many sites are Ancient Woodlands. In some cases these are a striking feature, for example, the oak woodland growing down to the water's edge on the steep slopes of the south coast estuaries.

Cornish Hedges - a notable component of the farmed landscape of the County is the distinctive Cornish Hedge throughout the countryside. The construction varies in different parts of the County depending on local materials and methods of construction that have led to some extremely decorative and singular designs to the stone facing. In some areas such hedges have been in existence for many thousands of years creating the very individual field patterns of these areas. The method of construction falls into three categories: the 'dry' stone walling of the exposed west and uplands / the stone face soil-bank topped with woody growth found over the majority of the County / the turf bank to the north and east of the County. The construction is especially suitable for tree growth and they provide incredibly rich and varied habitats.

Churches - during the medieval period, many churches were built, and around them developed the small church-towns or nucleated villages so typical of the Cornish landscape. The square towers of these many churches, often with pinnacles, now form subtle focal points throughout much of the Cornish landscape.

Nonconformist Chapels - perhaps more particular to the Cornish landscape are the numerous Methodist chapels seen throughout the county, both in isolated rural and urban situations. Typically, these are simple buildings with a high ridgeline and plain gable ends, with symmetrical central door in the centre of the gable, balanced on either side by a round-topped window. Over 800 chapels are recorded and there is a high concentration of chapels around the old mining areas.

Holy-wells - Christian chapels were often built on or near the sites of places already sacred to the pre-Christian inhabitants.

Fortifications - apart from the Iron Age cliff castles and hillforts, there are few castles from later periods but those which exist are quite dominant in the landscape.

Bridges and Viaducts - the viaducts built during the period of early railway construction through the county, which were necessitated by the hilly terrain and steep valleys, now form an accepted and integral part of the Cornish landscape. Throughout the County, there are numerous smaller bridges, spanning streams and rivers, and built of local stone. Their pointed arches, humped profile and pointed cutwaters make them important local features

Mine Buildings - the 300 years of deep shaft mining in Cornwall have left a legacy of many built structures which form important visual elements within the county's landscape. The most visible and characteristic are the mine engine houses with their tall tapering silhouette and high circular chimneys set to one side. Apart from those which have been restored, these stand roofless, often crumbling and ivy-covered, perforated by window openings, and silhouetted against skylines or rugged landscapes. They provide a symbol for Cornwall's former world-dominating industry and the character of its people and the subject of a bid for World Heritage Site recognition.

Farmsteads - the pattern of scattered and isolated farmsteads and farming hamlets occurs very generally throughout Cornwall, except on the more exposed uplands, and these buildings form characteristic clusters, often dating back to the medieval period, as does the pattern of enclosed land to which they relate. Typically, farmsteads are accompanied by groups of trees which form landmarks within The local landscape.

Modern features - in places, large modern structures form important visual landmarks, often visible for many miles distant, e.g. the large, circular satellite dishes at Goonhilly Downs on the Lizard. Equally prominent but not necessarily so attractive are the lines of pylons that stride across the countryside and the steel lattice work towers of the communications industry set on high ridges of ground. More recently, the development of windfarms with large wind turbines to exploit the abundant natural resource in Cornwall form prominent landmarks, presenting their own challenges in terms of visual impact.

Plants and Gardens - Cornwall is the home of many fine gardens which benefit from the mild climate. Many have remarkable collections of plants from all over the world; including some of the finest and largest specimens in cultivation outside their native regions. Designed landscapes make a special contribution to local landscape character. Mature deciduous and mixed woodland, and parkland with scenic vistas and glimpsed landscape features enrich the perceptions and experience in several areas.

Farming - 86% of the land area of the County is in agricultural use with grassland regimes predominating. There is a significant though small amount of high-grade agricultural land but most of the County is grade III together with poor upland heathlands. Dairying is the primary farming type followed by livestock (cattle, sheep, pigs and poultry), cropping, horticulture and mixed farming. Farm sizes tend to be small with 60% less than 30 hectares; the average size is some 33 hectares compared with the national average of 106 hectares.

Trends in modern farming - production subsidies (under the Common Agricultural Policy) have encouraged a rapid growth in agricultural yields, but have a range of environmental impacts and failed to prevent rising agricultural under-employment and unemployment. The loss of mixed farming, removal of hedges, small woodlands and other landscape features have all affected the constituents of the landscape, including its biodiversity and historical coherence.

Extractive Industries - apart from the towns and villages land uses associated with the extractive industries play an important role in determining the landscape. There are approximately 70 active mineral workings. The hard rocks are centred on the granite areas and the Lizard, rustic stone to the north of the County, and china clay in central Cornwall, with the former metalliferous mining area to the west. The scale and nature of the China Clay workings make a significant contribution to the landscape.

Tourism - this has flourished throughout the county based on its wealth of sandy beaches and coves. Early landmarks of this economic mainstay are the large Victorian hotels, often situated on prominent high ground around the coast. Ironically some of the more recent tourist caravan parks and car parks can detract considerably from the very landscape which draws the visitors, as well as impacting on water quality and land drainage. As an alternative to beach based holidays other themed tourist attractions have been developed focussing on the county's historical and natural attributes.

Key Points

- Cornwall's unique geographical location
- the long exposed coastline with its great variety of coastal features
- the open, windswept character giving a wildness to the landscape
- bold landforms with the remarkable pattern of historic field boundaries *(c50,000km of Cornish hedges),* standing stones, settlements, remnants of former industrial activities and wealth of semi-natural habitats.
- its atmospheric nature
- the distinctive local culture reflected in place names, language, festivals, food and folk lore.
- the mild maritime climate and unusual flora
- its strong association with the visual and literary arts.

KEY INFORMATION

Landscape Designations

Areas of Outstanding Natural Beauty (AONB*)* - many of the most scenically valued parts of Cornwall are recognised as of national importance and designated as an AONB. (Originally designated in 1959 and extended to include the Camel Estuary in 1983.)

The AONB consists of 12 separate parts of the County including 10 stretches of some of the finest coastal scenery in Britain. It covers 958 square km and the coastal sections are largely coincident with 10 areas of nationally defined Heritage Coast.

In addition the Tamar Valley AONB was confirmed in 1995 with the Cornish part covering 92 sq. km.

Areas of Great Landscape Value (AGLV) - these are promoted at the Cornwall level to draw awareness to the beauty of the Cornish landscape. These areas were most recently reviewed as part of the1997 Cornwall Structure Plan. The are 25 individual AGLVs.

Access –

access to the landscape is available through land in protective ownership, public rights of way, public access agreements etc

intellectual access - this is an important aspect to access and can be made possible through art and literature, and 'interpretation' in the widest sense, including the availability of information and data for use in economic development, including individual businesses.

RELEVANT STRATEGIES

Cornwall Landscape Assessment: 1994 - the document assesses the character of the landscape at a strategic scale. Forty five landscape character areas are identified, some of which are closely associated by similar characteristics and form groups. This work pioneered the integration of the historic nature of landscape into conventional landscape assessment.

Each landscape character area description encapsulates:

- the particular characteristics of the defined area, identifying the essential elements;
- guidelines for the management of change, with special consideration being given to conserving and where appropriate re-enforcing the visual identity that gives each area its special strength of character.

In addition general guidelines include:

- use of local materials, native species and vernacular features;
- encouraging shelter planting around farm developments and settlements;
- maintaining structural features such as field boundaries, copses, hedges and stiles;
- maintain historical landscape features such as archaeological sites, designed landscapes and mining relics as well as smaller features;
- maintain existing wildlife habitats , extending and creating new areas where feasible;
- encourage the creation of wildlife corridors;
- encourage the spread of local wild flowers along the highways;
- manage the existing tree stock and create new woodland;
- reclamation of derelict land should have specific objectives including the conservation and enhancement of wildlife habitats and historic features as well as more traditional end-uses.

Management of Change

It is important to recognise that there is an evolutionary process at work where landscape change takes place – from the pressures of human needs and activities as well as the forces of time and nature. In order to retain the landscape that excites our admiration it is necessary to manage it and look after it by building on its inherent character. It should always be the aim to add to the landscape and enhance it rather than degrade it.

It is vital that not only are areas of acknowledged landscape importance such as the AONB protected but also in terms of positive landscape management the Cornwall Landscape Assessment characterisation is used in the Objective 1 process not only for assessing the landscape impact of development proposals but also in the design of schemes to enable landscape change.

Culture & Heritage Strategy - This provides a framework document which sets the context for development in the cultural sector over the next six years. Individual authorities may develop area specific action plans which will complement the overall strategy enabling cohesive and effective development to take place in this sector.

KEY OPPORTUNITIES FOR THE PROGRAMME

- Protection and enhancement (including the prevention of erosion) of the character and quality of the landscape, particularly the coastal zone
- Support of appropriate agri-environment schemes and the development of integrated (social/environmental/economic) rural development projects
- Promotion of sensitively designed development
- Promotion of environmentally friendly tourism, taking advantage of the sustainable development of resources such as freshwater fisheries
- Increasing the area of and appropriate management of wildlife habitats
- Promoting opportunities, for all, for open-air recreation, including the development of sustainable transport links
- Promotion of a greater understanding of landscape amongst both those responsible for the management of change (eg through agricultural advisory schemes) and visitors
- Positive management of existing woodlands and the development of new woodlands appropriate to the character of the landscape

TRACKING THE REGION

Indicators

- Access to the Countryside – *see also, however, derelict and contaminated land / natural environment / historic environment*

Programme Indicators

Measure indicators and targets are presented in the Programme Complement**.**

QUALITY IN NEW DEVELOPMENT

INTRODUCTION

New development affects the character and quality of an area, and defines public space, streets and vistas and creates the context for future development. It need not necessarily have a negative environmental impact. It influences: public perception, the quality of the surroundings and way of life, and conservation of the environment in settlements and rural areas in order to safeguard their distinctive character and future viability.

In recent years there has been increasing concern over the loss of natural and man-made features which give the Cornish countryside and towns their special character and sense of place. Fresh emphasis on the importance of siting and design is vital if this concern is to be addressed. The careful placing of buildings in relation to topography, natural features such as woods and rivers, and man-made features such as roads and hedges, and the use of landscaping and tree planting, can do much to reduce the visual impact of development on surrounding areas. Large developments should, where feasible, be sited in such a way as to minimise the overall visual impact and to conserve individual landscape features. Major elements in design include scale, proportions, form, materials and colour. Sensitively chosen colours are particularly important in helping to blend large buildings into their settings.

Good design can help promote sustainable development, improving the quality of the existing environment, attracting business and investment and reinforcing civic pride and a sense of place. It can help secure the public acceptance of necessary new development. We should reject poor design and reinforce local distinctiveness.

DEVELOPMENT CHARACTERISTICS

Vernacular architecture – typified by many modest farmhouses and cottages which provide a vernacular architectural style which has firmly established the character of most of the villages.

Examples vary from long terraces of stone built and slate roofed miners' cottages to the whitewashed stone and cob houses.

Art and the Community - art creates a pleasurable and stimulating experience for people and capitalises on the creation of a sense of place as well as developing the County's local distinctiveness. Public Art has a strong role to play in the delivery these qualities and can go beyond the commissioning of pieces of art; sculpture or painting, to include murals, street furniture, signage, floor designs and textiles.

Building Design and the Environment **-** Improving the environmental performance of new buildings involves:

- Making sensitive use of land resources
- Sustainable urban drainage techniques – minimising impacts on water quality and flood risk
- Minimising the use of natural resources including water and energy in construction and operation
- Using environmental benign materials in construction
- Facilitating good management in the use of buildings

KEY OPPORTUNITIES FOR THE PROGRAMME

- Emphasis on the importance of design and siting
- Physical regeneration of town centres
- Protection and enhancement of landscape character and local distinctiveness through the use of local materials and respect for local vernacular architecture
- Environmental best practice in building design
- Promotion of Percent for Art in major developments

DERELICT AND CONTAMINATED LAND

INTRODUCTION

There is considerable dereliction in Cornwall not only from metalliferous mining and other mineral extraction but also urban, military and other past development. Cornwall's landscape has been strongly influenced by its long history of mining, extensive areas of which are of international value for their archaeological interest as recognised by the Cornish Mining proposed World Heritage Site.
Cornwall has the most complete 18th-19th century metalliferous mining landscape in the UK; including: ruined engine houses, arsenic works and associated buildings. Also surviving are the historic buildings of associated industries, for example, smelting, foundries, drill manufacturing, gun powder and explosives, tramways. Allied to the industrial mining economy was the development of mining towns and villages with their characteristic miners terraces, institutes, technical schools and Methodist chapels.

Many abandoned mined sites have developed a rich wildlife and are also of interest to geologists. They are often colonised by scrub and heathland vegetation which provide a significant contribution to Cornwall's area of these wildlife habitats.

Reclamation therefore needs to be undertaken in an appropriate, imaginative and environmentally sensitive manner – this can be very low key in approach, with an end use of environmental conservation and public access and enjoyment. However, derelict land can be dangerous, unproductive and spoil the visual amenity of landscapes which consequently detract from the image of Cornwall as an attractive place to live, visit and work. Land reclamation schemes may offer opportunities both for creative nature conservation and habitat creation, archaeological restoration or protection, or creative and imaginative industrial, commercial or residential uses. It will not always be viable or desirable to aim for such 'hard end-use' given the nature of Cornwall's landscape and the importance of tourism.

However out of the total derelict land that exists it is appropriate to expect its reclamation to make valuable contributions to the land required for economic development - especially given the policy of the UK Government to use brown-field rather than green-field sites.

In addition to the land that is formally notified as derelict there is a considerable amount of land within the St Austell China Clay area – where there are extant planning permissions covering some 88 square kilometres – which is severely degraded as a result of open-cast china clay and china stone mineral workings and the deposit of mineral wastes.

There is a high potential for contaminated land in Cornwall because of history, including mining and also military use and armaments and explosives manufacture. If land is contaminated it may put at risk human health, surface and ground waters, wildlife and building structures and services. Contamination may also affect the way that land can be used.

KEY INFORMATION

- Cornwall has more derelict land than any English county with 10% of the total.
- Cornwall has 3871 ha of derelict land (70% of the South West regional total) of which 2262 ha justifies reclamation.
- This total includes 2207ha of metalliferous spoil heaps, 757 ha excavations and pits, and 298ha derelict railway land
- These figures do not include any land in the St Austell China Clay area (circa 88 km).
- Contaminated land contains substances in sufficient quantities or concentrations that are likely to cause harm directly or indirectly to people or the environment.
- Derelict land is land that is so damaged by industrial or other development that it is incapable of beneficial use without treatment
- The Cornish suite of minerals is 440, which is 15% of the world's total, five of which are unique to Cornwall. Apart from their intrinsic value their study can enable the understanding of the locations of new deposits, the development of recovery techniques as well as developing the understanding of geology.

RELEVANT STRATEGIES

Cornwall Land Reclamation Strategy – 1999-2000

specific objectives include

- to preserve and enhance industrial heritage
- to improve environmental quality
- to create and enhance facilities for public recreation and leisure

with priorities of

- enhance economic and employment potential
- economic development
- aid for World Heritage Site status
- development of recreational corridors

KEY OPPORTUNITIES FOR THE PROGRAMME

- The targeting of available Objective 1 funding on the features that help define the distinctiveness of Cornwall and Scilly in particular the former mining areas and their natural and historic environments
- "Interpretation" of these areas
- Enable the development of economic opportunities that arise from the remediation of sites and buildings including opportunities for training and developing the local skill base
- Land reclamation schemes that enable access to the historic and natural environment
- Support for pilot restoration / reclamation techniques
- Build on local expertise to reclaim derelict land to beneficial uses, both amenity and economic

TRACKING THE REGION

Indicators

- Area of derelict land and that requiring reclamation

Programme Indicators

Measure indicators and targets are presented in the Programme Complement.

THE NATURAL ENVIRONMENT

INTRODUCTION

Geological and earth science exposures and wildlife of the Region are the products of past geological, climatic and bio-geographic, more recent but less intensive human activity, and two centuries of dramatic large-scale human intervention.

Recent human intervention has included: large-scale agricultural intensification; the rise and collapse of mining for metals; the expansion of mining for china clay and other inert minerals; road building and domestic development associated with a growing and increasingly mobile population and the expansion of coastal activities related to port development, fishing and tourism.

GEOLOGY

The geology of the region is an undulating plateau of between 100m and 200m, incised in places by river valleys and perforated by higher intrusions of granite. The largest granite mass is Bodmin Moor, from which flow most of the major rivers of Cornwall, the majority of which flow into the sea along the south coast. The westernmost mainland granite outcrop forms the Penwith Moors, to the west of which lies Scilly.

The underlying rock of most of mainland Cornwall is made up of slates and shales of Devonian age, known locally as Killas. Exceptions occur in the north east of the County, around the source of the River Tamar where an extensive area is underlain by mudstone of Carboniferous age. These are known as the Culm Measures. The Lizard Peninsula in the South West is formed of entirely unrelated ancient rocks from deep in the earth's crust, including the well-known serpentine.

Where granite has been forced up through the killas, extreme temperatures and steam under pressure have caused the solution and re-deposition of minerals. Tin, copper, silver, arsenic and a large range of rare minerals are concentrated in these 'areoles' around the granite intrusions. In some areas, notably north of St Austell the granites themselves have been altered to form kaolin, the parent mineral of china clay.

The spoils, soils and rock exposures of old mining sites provide a specialised niche for a number of very rare lower plants. Amongst the most important of these are Cornish Path Moss - known only from two copper-rich sites in East Cornwall and Western Rustwort, a liverwort and European Habitats Directive' priority species' which grows in china clay workings.

HABITATS

Much of the coastline supports nationally and internationally important cliff and cliff-top vegetation with large numbers of rare and local plant and animal species. In places extensive sandy beaches lie at the foot of these cliffs and, where the land-ward topography permits, wind-blown sand has formed dune systems of national and international nature conservation value.
The vegetation of the granite uplands, cleared of their primaeval woodland cover, was once moorland but many years of livestock husbandry on Bodmin Moor has changed it to a vast tract of acid grassland. The granites of Hensbarrow have been largely re-sculpted by the clay industry, those of

Carnmenellis brought into mining and dairy farming while only the hills of West Penwith retain a significant proportion of their natural heathland vegetation.

The formerly extensive lowland heathlands of the killas are now largely re-seeded and farmed for arable or dairy. However, important pockets of heathland and mire remain including the internationally important Dorset Heaths. On the culm measures of north east Cornwall occurs a scatter of 'culm grasslands' many of which have national SSSI designation.

The heathlands and coastal grasslands of the Lizard Peninsula are one of the most important biological sites in the Country. They support large numbers of rare plants and invertebrates and the Cornish Heath habitat is of European importance.

Fine examples of Atlantic woodlands are found both on the fringes of Bodmin Moor and particularly along the ria estuaries of the south coast. On the estuaries woodlands meet saltmarsh and intertidal mudflats, which in turn support important numbers of wintering and passage waders and wildfowl.

Many of the Area's estuaries support important intertidal and subtidal communities of plants and animals. The Fal, Percuil and Helford are particularly important with the Maerl beds of the lower Fal being listed in the European Red Data Book of endangered habitats.

The Isles of Scilly have important subtidal rocky reefs and rich submerged sandbanks with extensive beds of eelgrass. The remote rocks provide important breeding sites for Atlantic Grey Seals and for many seabirds, including Manx Shearwater and Storm Petrel. The dunes, beaches and maritime heaths of the islands support many rare plants.

SPECIES

Many of the significant conservation priority species are found in natural or semi-natural habitats and are thus afforded some protection by site designation. Two categories are not adequately protected in this way. These are:

- mobile marine species such as whales and dolphins, wintering seabirds, marine turtles and basking sharks, for whom site meaningful designation is difficult and possibly inappropriate; and
- animals and plants which are either mobile or are thinly spread across the farmed landscape. This category includes declining birds such as Corn Bunting and Barn Owl, animals like the otter as well as formerly common weeds of arable land whose range has been hugely reduced by intensive farming practices.

WILDLIFE CORRIDORS

Two forms of linear feature are particularly important in the Region. These are hedges (which may be primarily stone and earth built structures), for which Cornwall and the Isles of Scilly are justifiably famous, and river valleys. In mainland Cornwall wet valley woodlands are an important wildlife resource which provide corridors for the animals and which link wetlands, heathlands and moors.

Outside the Penwith ESA no statutory designations exist to protect linear features, though their management can be supported by agri-environment schemes. Buzzards, greater horseshoe bats (and other bats), otters, barn owls, many songbirds and gamebirds can all benefit from sensitive management of hedges and field boundaries.

TRENDS AND ISSUES

Natural processes cannot keep up with the present rates of change to our environment caused by people. We must learn to live in harmony with our environment -- there is therefore a need to learn how to manage our biodiversity in a sustainable way.
Change in the extent and quality of Cornwall's biodiversity have been identified in the audit phase of the Cornwall Biodiversity Initiative. Wildlife habitats on land are being lost, particularly to agriculture, marginal land, built development and mineral extraction.

It is not only losses of habitat which are adversely affecting wildlife: the wildlife value of habitats is being degraded due to the type of management. Fragmentation of habitats is also a common feature, causing isolation of key species, increasing the risk of loss.

Farming practices over centuries have shaped the landscape of Cornwall and helped to create a diverse range of habitats for wildlife. Much of Cornwall is unsuited to modern intensive farming methods and consequently there is still a substantial reservoir of wildlife friendly countryside. Current economic pressures on beef and sheep farming in particular will cause many traditional farmers to leave the business. We will need to seek ways of ensuring that land no longer required for traditional agricultural purposes is still maintained as a viable landscape and wildlife resource.

The trends are not all negative. Public awareness of the importance of Cornwall's environment is continuing to grow. In addition, areas of wildlife habitat are being created or restored in the County, with the increasing introduction and effectiveness of agri-environmental schemes. Sadly, the quality of this restored habitat is often not comparable to the areas of prime wildlife habitat that have been lost.

The overall effect of these trends is a significant reduction in the quality and extent of the most valuable areas for wildlife.

KEY INFORMATION

In common with much of lowland Europe little of the Programme Area can be described as ***wilderness.*** With the exception of coastal cliffs and of the rocky shores and shallow sublittoral zone, which are relatively unaffected by human activity, the character of Cornwall and the Isles of Scilly is largely agricultural.

The Government's landscape and nature conservation advisers (the Countryside Agency and English Nature) recognise 5 distinct character areas within the Area, these ***'Natural Areas'*** are The Culm, Cornish Killas and Granites, Bodmin Moor, The Lizard and West Penwith. A further 3 maritime Natural Areas occur within, or partially within, the Region: the Isles of Scilly, Land's End to Start Point and Land's End to Minehead. These areas support characteristic wildlife and geological assets.

Many geological Sites of Special Scientific Interest (SSSI) have been designated around the coasts of Cornwall and the Isles of Scilly to provide protection and management for nationally important cliff exposures of ***geological formations*** which provide sites for study and research to increase our understanding of geological processes.

Cornwall has more ***mineralogical*** SSSI and a greater variety than any county in England. These protected sites range from in situ exposures of rock, through artificial quarry exposures to spoil tips containing rare minerals.

Several SSSI have been notified at old mine workings for their populations of lower plants. Two sites in west Cornwall contain most of the UK's population of Western Rustwort and are candidate Special Areas for Conservation (cSAC).

Much of the ***undeveloped shoreline*** of the area has national designations as SSSI, while a significant proportion is considered to be of European importance and is a cSAC.

The ***dunes*** at Penhale support habitats and two species of European interest and are designated as SSSI and proposed as a cSAC.

The ***upland landscape*** of Bodmin Moor is protected by SSSI and, in the case of the Penwith Moors, by Environmentally Sensitive Area. These designations seek to encourage positive management which benefits both wildlife and archaeological features.

A cluster of ***heathlands*** to the north and west of Truro support Dorset Heath, a European Priority Habitat part of which are cSAC. Many, more typical lowland heaths are designated as SSSI.

Much of ***the Lizard Peninsula*** is in positive management for nature conservation, either as National Nature Reserve, as cSAC, or as SSSI. A significant proportion of the coast is in the ownership of the National Trust.

Many of the Cornish ***estuaries*** are SSSI. The Fal complex is a cSAC while the Tamar is both cSAC and a Special Protection Area (SPA) for birds.

The ***Isles of Scilly*** are a cSAC and are proposed as a SPA for their breeding seabirds.

Several offshore areas, including the seas off the Isles of Scilly, regularly maintain large populations of coastal or ***pelagic birds***. Harbour porpoises, bottle nosed dolphins and other ***cetacea*** are also regularly seen in small numbers, as are leatherback turtles, basking sharks and grey seals.

The ***River Camel***, its adjacent semi-natural woodland and wetlands, and many of its tributaries are a cSAC for the otter and bullhead (a freshwater fish).

The ***'Tomorrow's Heathland*** Heritage' Project in the China Clay Area is a good example of a statutory agency (English Nature) forming a partnership with industry to re-create a lost habitat., and deliver UK BAP targets.

The importance of Cornwall's and Scilly's wildlife is demonstrated by the high number of SSSIs and cSACs proposed as part of the Europe-wide Natura 2000 network of sites. (Only two counties in the UK having more such sites than Cornwall.)

- 3 National Nature reserves, covering some 2162ha
- over 160 Sites of Special Scientific Interest, covering some 22197ha
- 13 cSACs, covering over 45,000 ha
- 2nd most heathy County in England, with the Cornish Heath unique to the UK
- Isles of Scilly and nearshore waters of south Cornwall of national and international importance for seabirds
- Rivers and streams of importance for salmonids and other fish
- National Trust managed land for nature conservation, c9000 ha
- 45 CWT Nature reserves
- 2 RSPB Nature Reserves
- IoS Environmental Trust manages 95% of SSSI land on the Isles of Scilly

RELEVANT STRATEGIES

The statutory and operational **hierarchy of nature conservation priorities** in UK together with the national and local programmes of designation, policy guidance and formulation provides a ready guide to local priorities and includes consideration of the EC Habitats & Species Directive and the Bird Directive, Sites of Special Scientific Interest and local wildlife sites.

Cornwall Biodiversity Action Plan (which builds on the UK response to the UN Convention on Biological Diversity) sets out the priorities for the conservation of biodiversity and makes recommendations for action to conserve and enhance Cornwall's biodiversity.

Natural Area Profiles – define the local distinctiveness of an area by identifying their characteristic wildlife and natural features and sets objectives for the nature conservation of the area.

KEY OPPORTUNITIES FOR THE PROGRAMME

- Advisory services with environmental base, building on and developing existing services and providers – to include advice on environmental issues such as water, energy and waste management and the positive conservation management of biodiversity – for both businesses and farmers. In the case of farms to include advice about agri-environmental measures, integrated farm management and conversion to organic production. Biodiversity is an increasingly important component of farm assurance.
- Training and skills within organisations and for farmers and landowners

- Promotion of and enabling intellectual and physical access
- Better co-operation and shared funding for environmental audit and monitoring is required.
- Application of European and National funding should require 'cross-compliance'
- Agri-environment schemes should be supported and new initiatives started.

TRACKING THE REGION

Indicators

- number of designated sites and 'favourable' or improving status on designated sites (SSSI, cSAC and SPA) also by type of site – biological / geological / mineralogical. Including percentage of land and designations in agri-environment schemes
  C.f. landscape
- Achievement of quantified targets from Biodiversity Action Plans.
- Loss, damage or deterioration to designated sites
- Loss or decline of species and semi-natural habitats.

Programme Indicators

Measure indicators and targets are presented in the Programme Complement.

COASTS, MARITIME & MARINE ENVIRONMENT

INTRODUCTION

Cornwall, bordered on virtually all sides by coasts and estuaries, and the Isles of Scilly have a distinctive maritime identity and cultural heritage. The sea has provided a means of transport and communication, a diverse and year round harvest, a playground and a source of inspiration, a waste disposal facility and a grave. It has drawn communities to settle and develop close to its shores whilst still influencing the hinterland between Cornwall's two coasts. The Isles of Scilly are England's only marine archipelago where the rhythm of life is completely dominated by the sea.

NATURAL ASSETS

The wildlife habitats and species of Cornwall and Scilly's coast and seas are internationally renowned. The vegetated sea cliffs are amongst the most species rich in the UK and are admired by the many people who use the coast path. The south coast is fissured by the drowned river valleys or rias. All the estuaries contain areas of inter-tidal mudflats and saltmarsh, both of which are endangered European habitats whilst the sea caves of West Penwith and North Cornwall and the reefs of Scilly contain important breeding areas for grey seals.

Washed by the mixture of the warm Gulf Stream rising from the south and cooler northern waters, this region's shores, estuaries and open seas support one of the richest assemblages of marine wildlife anywhere in Europe.

THE MARITIME ECONOMY

Predominantly rural in character, the open coast is punctuated by numerous small coves and harbours around which settlements have developed. Many of which were originally sustained by fishing. Many of Cornwall's towns are located on the coast, generally reflecting the prior importance of maritime activities in their prosperity, although Newlyn and Falmouth are still important ports for fishing and shipping respectively, whilst St. Ives is world famous for its maritime artists and Newquay for its of surfing. Increasingly, the maritime economy has become dominated by tourism and recreation. The small harbours becoming a focus for visitors rather than the fishing industry alone.

Maritime industry and fishing -- Shipping activity is focused in Falmouth, Fowey and Par. Falmouth has a large bunkering operation, ship repair facilities, mixed cargoes and cruise liners.

There are also a variety of boat building and repair yards in the Fal Estuary and its upper reaches are used for laid up shipping. Fowey and Par export 80% of china clay by sea via road and rail links and Fowey also receives visiting cruise liners. Truro handles freight, while Penzance is the base for the Scillonian ferry which supplies freight to the IoS. The majority of fish is landed at Newlyn although significant amounts are also landed into Looe and Padstow and virtually all the smaller harbours and coves have fishing fleets.

Allied businesses supplying both fishing and other maritime sectors are based throughout Cornwall as not all require a coastal location. Marine sand extraction is limited to small scale dredging in the Camel and the Hayle, calcified seaweed extraction in the Fal (c30000 tonnes pa) whilst the coastal quarries on the Lizard export stone by sea.

Recreation and tourism -- Most ports and harbours support recreational use with the majority of moorings and marina facilities concentrated in the estuaries most areas are full and facilities are being upgraded and expanded, particularly on the south coast. Recreational activities such as boat trips, shore and sea angling and diving are important to the local economy and benefit from the diverse estuaries and marine habitats and species of the Cornish coast. Many recreational events are held regularly on both coasts, attracting large numbers of visitors and there are a wide range of water-sports training facilities available. Both the cliffs and coast path, and the beaches remain the major visitor attraction. Cornwall is also the base for a number of manufacturers of water-sports equipment, mainly based inland on industrial estates.

Cornwall's coastline offers some of the best surf conditions in Britain, especially on the north coast between St. Ives and Polzeath. Surfing has grown from a local, cottage industry into a more mainstream sport.

Gig rowing in traditional wooden pilot gigs is a well established sport with boats based in most coastal villages across Cornwall and in the Isles of Scilly, where the gigs originated. Races take place throughout the summer and the IoS host the World Championships which attracts thousands of participants and spectators.

KEY INFORMATION

Designations -- In recognition of the international importance of these coastal and marine habitats, several areas have candidate Special Area of Conservation (SAC) status, including the Isles of Scilly, Penhale Dunes, the cliffs of the Lizard Peninsula and between Tintagel and Clovelly and the rias of the Fal, Helford and Tamar. In addition, there are 5 Sensitive Marine Areas (non-statutory nationally important areas), as identified by English Nature, and 5 Voluntary Marine Conservation Areas. Whilst these latter two types of marine area do not have any statutory protection, their presence reflects the outstanding quality of the marine environment of this region, and the importance attached to them by the local communities. Other designations such as bass nursery areas seek to protect individual species and to ensure their long-term value as an economic resource.

Management -- A wide range of both public and private sector organisations and agencies are involved in the management of the coast and inshore waters. Much of this management is dictated by a complex suite of often over-lapping legislation, originating from European, national and local levels. Equally complex is the precise geographical jurisdiction of the organisations involved. In recognition of these factors, recent Government policy has encouraged partnership working on coastal issues. Whilst the basis of many of the resultant coastal, estuary or shoreline management plans is voluntary, they have generally been successful in addressing a variety of coastal or marine issues within a specific area.

Within European marine sites (SACs), there is a statutory duty for the relevant organisations to develop management schemes to guide the future use of these sites and the first of these in Europe has been produced for the Fal & Helford SAC. The Cornwall Structure Plan recognises the importance of planning within the coastal zone and the need to reconcile development with the protection and enhancement of the environment and enabling access to the coast.

RELEVANT STRATEGIES

Local Environment Agency Plans (LEAPs) **--** Promoting the vision of sustainable catchment management, where a healthy economy leads to:

- Enhanced biodiversity and physical habitats for wildlife
- Growing enjoyment and appreciation for people
- Needs are met sustainably

Shoreline Management Plans (SMPs) -- These are non-statutory strategic documents developed by local partnerships of the statutory organisations responsible for coastal defence.

Single Scheme of Management for marine cSACs eg Fal & Helford **-** These are the mechanisms by which the statutory aims of the Habitats and Species Directive are translated into management actions within a marine SAC.

Voluntary estuary strategies and plans e.g. Falmouth Bay and Estuary Initiative

OPPORTUNITIES

Coastal Water quality is an important issue driven by public health concerns either relating to recreational uses or shell-fisheries, particularly in the estuaries. Plans to develop mariculture operations in estuarine waters will be dependant upon water quality and the investment which may be required to fulfil areas designated under the Bathing Waters, Urban Waste Waters Directives and Shellfish Waters Regulations.

Upgrading of sewage treatment infrastructure that falls outside the water company investment programme for 2000-2005 could be expedited if matched up to company investment providing it was not fulfilling a statutory duty, perhaps moving to Bathing Water Guideline as opposed to Mandatory standards. In particular, the connection of private discharges to mains sewerage would be beneficial in many catchments. There may also be scope for adding value to new schemes in terms of enhancing access provision or other improvements with a wider benefit than just water treatment.
Further improvement to coastal water quality could arise from increased investment in improved waste management in ports for both commercial and other wastes, building on existing waste management plans eg pump out facilities for public slips, berths and marinas.

Diffuse discharges from run-off from agricultural land through estuaries or directly can influence coastal water quality. Investment to address run-off containing fertilisers, pesticides and nutrients and poor management and storage of farm waste needs to be addressed on a catchment basis. More positive help and encouragement is required to promote existing codes of practise, the increase and improvement of storage facilities, and the establishment of whole farm plans and buffer strips to reduce inputs into coastal waters.

Cornwall is at risk from sea borne oil pollution. Sufficient investment in equipment, co-ordination and training is essential to reduce the impact of an incident. New legislation will require the larger ports to implement oil spill contingency plans in 1999 but smaller ports and undeveloped coast are also vulnerable. Oil spill contingency plans are in place for a number of Cornwall's high environmental value estuaries.

Port development - The need and proposed markets for goods and services must be proven through detailed, strategic research before investment in port infrastructure takes place. The peripheral nature of Cornwall's ports, rather than the associated road and rail networks, seriously limits their ability to compete with other British ports in handling freight. Investment should be targeted in areas that Cornish ports have an advantage or in upgrading existing viable operations.

Expansion of port facilities in any of the estuaries will generally require capital dredging and ongoing dredging. Contamination of the sediments in many cases is causing problems with disposal either to sea or to land, particularly in the Fal. Further research into practical methods of addressing dredge

disposal issues, including novel uses of dredge spoil, would support the ongoing commercial viability of these ports.

Available waterside sites for development around ports have been limited by alternative, non-maritime developments. Further reclamation of inter-tidal land is not sustainable due to the associated habitat loss and the future need for coast defences to protect low lying land from global sea level rise. Maritime industries not requiring coastal locations have prospered on inland industrial sites and opportunities should be sought to identify further businesses that can use these sites in order to free up waterside locations.

Recreation and tourism - Demand for berthing and mooring has led to the expansion of existing pontoon and marina berthing facilities. As space is limited in the estuaries which offer the most suitable and sheltered locations, these areas may need to be used more efficiently although not at the expense of the landscape surrounding them. Any new developments must be sensitively located so as to minimise their visual impact as well as pressure upon existing infrastructure, particularly on the water, sewerage and road networks. The cost of access to the water and associated facilities is steadily increasing beyond the reach of many local residents or younger people wishing to become involved. Infrastructure in coastal villages is placed under pressure during the summer season and ways are needed to ensure both equality of access and spread demand, either temporally or spatially. The popularity of the coast path has led to high maintenance requirements which is being addressed through the SW Coast Path Forum and specific management plans. There is a clear role for expanded use of ferries in tourism transport and inter-modal links.

Fisheries – Quota restrictions and other operational regulation is reducing profitability and leading to diversification into new stocks or out of the industry. If inshore stocks are targeted, this places pressure upon both the existing local fisheries and the environment in these areas. The Industry and its regulators are exploring management methods.
Potential for branding of fisheries products and eco-labelling based upon establishing sustainable fisheries. Also need to market fisheries products to develop local and national markets as exports are subject to currency fluctuations

Data -- The knowledge base for marine environment is very limited in comparison to terrestrial. MARLIN (Marine Life Information Network) project will make a large amount of information available on the Internet but still have limited baseline information for most of coast and virtually all inshore waters of the Programme Area. This will impede informed decision making with respect to new development/activities.

Allied to the issue of data availability is a lack of awareness and appreciation of the marine and coastal environments. With the growth in water based activities, it is important to promote conservation messages including codes of conduct and interpretation etc for the marine environment. It also improves visitor experience immeasurably. Similarly there is a need to promote issues such as those relating to oil care and sewage disposal on small yachts and vessels etc.

KEY OPPORTUNITIES FOR THE PROGRAMME

- Mari-culture and innovative management and sustainable development of the fisheries resource
- Sector based environmental information and interpretation
- Coastal protection and enhancement that conforms with the SMP management unit statements
- Adding environmental value, including opportunities for access, to water and other infrastructure investment
- Enhance waste management for commercial and other wastes eg pump out facilities
- Catchment-wide approach to the management of diffuse pollutants
- Up-grading of larger ports, refurbishment of smaller harbours and coves and re-development of water-side industrial sites
- Enhancement of water-based recreation and development of coastal access

TRACKING THE REGION

Indicators

- Numbers and types of designations (cSACs / SMAs)
- Percentage of Bathing Waters and compliance with mandatory and guideline standards

Programme Indicators

Measure indicators and targets are presented in the Programme Complement.

THE HISTORIC ENVIRONMENT

INTRODUCTION

The historic heritage is the physical remains of past human activity. There are a variety of historic buildings, historic towns, great public buildings, and historic monuments in the region, along with buried sites.

The appearance of buildings, the topography of towns, the patterns of hedges, stone walls, ancient roads and lanes, and the myriad boundaries of Cornwall's public administration are all reflections of past development. All of the built environment, the very cultural fabric of the county, has been woven over many centuries and is at the heart of defining our sense of place and belonging. It is in no small measure responsible for Cornwall & Scilly's distinctiveness and cultural identify.

THE CULTURAL SETTING

The cultural heritage of the region is distinct from other parts of the UK through its mild climate, Celtic affinities, coastal connections, mineral wealth, and isolation.

For much of prehistory, the Area's affinities were with the western seaboard. The history is paradoxically of far flung trade contacts and folk movements set against domination by others and defiance to outsiders, and an often uneasy relationship with England, the central authority. After the Romans left, Cornwall was a kingdom for over four hundred years. This relationship with the Crown, first through the Earldom and later the Duchy of Cornwall has continued to the present day. The Stannary Parliament and the extraordinarily large number of MP's (44 until 1832), when taken together with the Cornish Language and its own flag, give Cornwall a unique character that is reflected in its historic heritage.

All of these have combined in the past to create a relatively isolated, poor County where evidence of the past has not been swept away through subsequent agricultural intensification or urban growth. The strategic importance of the Area for defence and its mineral wealth ensured a special accommodation within the fabric of English governance. And yet the cultural roots of Cornish people have threaded their way through the spiritual and economic fabric of society to produce an historically distinctive ecclesiastical heritage and an extraordinary contribution to the Industrial Revolution of world significance.

STEWARDSHIP

The historic heritage is non-renewable and finite. It requires positive planning and management. The judicious management of change can only be based on:

- An adequate knowledge of heritage assets (i.e.: databases).
- Land use planning policies and guidance.
- Statutory protection.
- Targeted financial incentives.
- Education and access.
- Community involvement

HERITAGE ASSETS

The historic landscape - It is straightforward to identify the principal land use types of modern Cornwall. By giving an indication of time-depth through identifying the origins of land use patterns it is possible to characterise the landscape in such a way that models of past land use can be proposed.

Nearly 60% of Cornwall has patterns of settlement, field boundaries and roads and tracks that are at least medieval in origin. In areas such as West Penwith, parts of the Lizard and the edges of Bodmin Moor these field patterns are prehistoric in origin. The modern map is in a very real sense representing a truly ancient landscape. At the same time, the majority of field boundaries of recent origin (17.5% of total) are the result of the huge increase in miner's smallholdings in the early parts of the 19th century when Cornwall's mining industrial revolution was at its height. These boundaries are an integral part of Cornwall's bid for World Heritage Site status for Cornish Mining.

The following historic landscapes are of national importance:

- Relict prehistoric, medieval and industrial landscapes surviving in moorland.
- Farming landscape still exhibiting a recognisably prehistoric character
- Medieval farming landscape.
- Mining related smallholdings of the late C18th and early C19th.

Buildings, monuments and sites - The majority of Cornwall's buildings are over one hundred years old and whilst the number of 'polite' buildings are relatively few, it is the strength of the local vernacular style that is important. This is the result of the use of local building materials, the relative isolation from contemporary architectural fashion up country and the lack of subsequent re-development until the post-war years. Cornwall in 1950 would have been very familiar to a visitor from 1850. The mining boom of the 19th century represented the most dramatic change from an earlier more rural medieval landscape, yet both elements are readily identifiable in the landscape of today.

The great range of archaeological monuments and sites are well known, recognised and appreciated. Whilst their survival had much to do with lack of subsequent development, their quantity is of national significance. Whilst the ancient heritage may not be evidence of great wealth and contemporary cultural significance, the fact that so much survives in such a small area is now regarded as culturally significant – providing a real insight into the past life of a distinctive culture, important in its own life but at the periphery of national affairs in the historic period.

The survival of so many sites and monuments from prehistory is undoubtedly a legacy of profound significance. In very few other areas in Europe is it possible to glimpse such a clear picture of land use, settlement and spiritual life in the two millennia before the Roman conquest.

HISTORIC DISTINCTIVENESS

The historic heritage of Cornwall and Scilly is distinctive from the rest of England. The principal influences are:

- Early cultural affinities with the western seaboard, megalithic monuments, Iron Age settlement types, early Christianity and language are all connected with Brittany, Wales and Ireland.
- Strategic location in the Atlantic approaches - very early fishing connections with the New World, pilchard fishing and the strategic importance of the South West regarding the defence of the Realm.
- Prodigious mineral wealth -- World Heritage Site -- Cornish Mining is on the list of sites to be submitted to UNESCO for recognition as a World Heritage Site. The designation will cover seven areas of considerable size.

    - St Just Mining District
    - Tregonning -Godolphin Mining District
    - Camborne-Redruth Mining District

- St Agnes Mining District
- Gwennap-St Day Mining District
- Caradon Mining District
- Tamar Valley Mining District

- A mild climate - giving rise to distinctive agriculture and the early development of the tourist industry.
- Geology - the abundance of hard building stone, in contrast to the historic lack of tree cover, has meant that the fabric of the past is still with us today, built of durable materials.

RELEVANT STRATEGIES

The statutory and operational **hierarchy of conservation priorities** in UK together with the national and local programmes of designation, policy guidance and formulation provides a ready guide to local priorities.

Culture and Heritage Strategy - This provides a framework document which sets the context for development in the cultural sector over the next six years. Individual authorities may develop area specific action plans which will complement it.

KEY OPPORTUNITIES FOR THE PROGRAMME
♦ Intellectual Access: The data systems and databases recording the environmental assets and resources are currently underdeveloped and under resourced, particularly in terms of meeting business needs for data, information and interpretation. It will therefore be difficult to monitor the state of the environment let alone make information more available inappropriate forms. Systems for making information available to the various business sectors as well a visitors and public are underdeveloped, for example there is no existing internet facility that makes available a full range of environmental data to businesses, visitors, educational establishments or the general public.
♦ Physical Access: Access to sites is improving at heritage facilities. Access to sites in the countryside is improving, but still a concern e.g.: there is no easy disabled access to any prehistoric megalithic monument in Cornwall
♦ Support for the regeneration of the vernacular built environment – both for business use and as key features in the landscape.

TRACKING THE REGION
Indicators
♦ Quality – number and area of designations (SMs / CAs / LBs / AGHVs)
♦ Positive management -- Area in sympathetic management (e.g.: National Trust, ESA, Countryside Stewardship, English Heritage / English Nature management agreement). (C.f. landscape)
♦ Access – Number of Sites accessible.
♦ Loss of designated sites -- Number and area of loss.
♦ Condition monitoring -- Number of buildings and sites on the “At Risk” registers.
Programme Indicators
Measure indicators and targets are presented in the Programme Complement.

THE WATER ENVIRONMENT

INTRODUCTION

A healthy environment requires sufficient water of suitable quality in rivers, lakes and aquifers. Clean water is essential not only for human consumption but also to support the aquatic environment and promote an environment as a driver for new investors.

Increasingly the solutions to site specific issues relating to low flows, droughts, flooding or poor water quality need to be addressed through whole catchment planning. The development of this approach needs to be supported.

WATER RESOURCES

Public water demand and supply - Cornwall County is supplied by South West Water Services Limited (SWWL). SWWL has split their company into three strategic supply areas (SSA) for water resources management. The majority of Cornwall is supplied by Colliford SSA although the north east of the County is supplied by Roadford SSA. Colliford SSA has seven impounding reservoirs, eight river intakes and four groundwater sources.

A resident population scattered in small towns and villages gives rise to challenges and problems in providing services. An influx of summer visitors to the region changes the pattern of demand for the summer season.

As part of a Government Initiative in 1997, SWWL re-assessed the amount of water which they would be able to securely supply in a drought year; this figure is c160 million litres a day to Cornwall.
Water companies have recently forecast the demand for water in their area to 2025 and compared this with the amount of water available. They can now plan to meet any potential shortfalls by considering a range of options, including demand and resource management and leakage control. SWWLs plan shows that new resource developments are unlikely to be necessary until close to 2019/20.

Minimising use and reducing leakage with the aim of reducing the demand on water supplies, will not only support Cornwall's water resources, particularly with the uncertainty over the impact of climate change, but also create potential environmental improvements through the alleviation of low flows in rivers and provide economic gains to businesses and householders. As part of the environmental and quality objectives that the Government has set the Water Companies to carry out before 2005, SWWL are to investigate the impact of their abstractions at De Lank on the River Camel.

From April 2000 SWWL will be fitting water meters free of charge. This allows people to choose to pay for the water they use as opposed to paying a fixed charge for unlimited use. As simple water efficiency measures can help reduce the amount of water we use this can help reduce water bills. Adopting these measures can provide significant benefits for a County with predominantly surface water supplies at risk from drought conditions; however, public involvement needs to go wider than utilising economic tools to require reductions.

Private Water Supplies - Cornwall has a large number of private water supplies -- these range from wells or boreholes supplying single dwellings without mains connections, to large scale abstractions for irrigating crops or providing for large dairy herds. While regulated there are risks to the environment from these abstractions that are in many cases defined by land use and changing agricultural practices.

Flood risk – There is a constant risk of flooding from rivers and the sea. Flooding frequently occurs very quickly and with little warning. It is part of the natural cycle with rivers acting as a conveyance for rainfall and floodplains a storage area for flood water.
The environmental impact of development in floodplains can cause:

- Destruction of ecological and archaeological value of the land under the footprint of development
- The break-up of linear habitats such as river corridors
- Effects on the natural recharge of groundwater
- Effects on the natural beauty and amenity value of the river corridors.

The need to protect floodplains has not always been recognised and inappropriate development has taken place. There are significant environmental and economic risks and costs in protecting these developments. Further development in floodplains will be unsustainable in relation to the economic

impacts following a flood event or the additional capital investment in schemes to protect such developments, and the ongoing maintenance burden of continuing that protection.

Sustainable flood and coastal defence schemes need to be supported, taking account of natural process and other defences and developments within the river catchment or coastal cell. Water Level Management Plans have, or will be drawn up to promote environmentally sustainable solutions to flood risk and management in risk areas. Complete catchment solutions should be sought identifying the impacts of surface water run off from development, highways and agricultural land, in association with flooding problems. Such schemes may entail higher capital costs but should be supported because of their further long-term environmental and economic gains.
Local Authorities and the Environment Agency develop and maintain flood defences and provide flood-warning services to areas at risk.

Future pressures - recent and continuing research is showing that climate change is likely to change rainfall patterns in the future. Predictions are suggesting that winter rainfall could increase, becoming more intense and summers may be drier and warmer. Without the storage provide by large aquifers this could impact on Cornwall's supply for peak demand in the Summer.

The small but steep catchments in Cornwall are extremely vulnerable to flash flooding at present and this change could exacerbate the situation. A further potential effect of global climate change is that of increased storminess, which could lead to increased wave action and peak flows, resulting in greater flood risk, both on rivers and the coast.

WATER QUALITY

Rivers and seas have a natural ability to render the main constituents of many effluents harmless, providing that effluent disposal is properly controlled.

The major risks of pollution to water quality in Cornwall are from sewage treatment works, agriculture and land use practices. The Environment Agency consents the discharge of effluent into surface waters (freshwaters, estuaries and coastal waters) and groundwater. Discharge consents only apply to point source discharges: specific, identifiable discharges of effluent from a known location. Improvements are put in place by SWWL who will be investing in the following improvements
Other impacts, often more locally significant include: mining and quarrying; industry; application of waste to land; landfill leachate; urban runoff; diffuse runoff from agriculture. Cornwall also has a number of isolated communities which do not benefit from connection to the mains sewerage system.
These areas may experience environmental degradation through the proliferation of small scale septic tanks and treatment works. In many cases it is not economic for the community or the water company to establish connections, these areas would benefit significantly from connection.

General Quality Assessment - In biological terms, there was no deterioration in the 1486 km monitored in Cornwall monitored by the Environment Agency in 1995 – 84% were good/ very good and a further 10% fairly good.

Bathing Waters Compliance - Cornwall has a large proportion of the UK's designated bathing beaches. This is a vital factor in the economy of the tourism sector, particularly with increased public awareness of water quality issues. The quality of bathing beaches is effected by coastal sewage inputs, but also other inputs such as the rivers that flow out and over them.

River ecology and physical characteristics - In today's landscape, rivers and wetlands provide refuge for many species. Fish are an integral part of this environment and often provide good indicators of a well-balanced ecosystem. Many of the rivers in Cornwall support salmon and trout fisheries; not only are these an indication of good river water quality, but these fisheries represent a considerable economic resource for Cornwall.

Management – management of the causes of poor water quality and maintenance of appropriate river flows are vital. In addition direct management of the fishery, including data gathering, removal of structures impeding fish migration, research to determine the most appropriate methods of improving

spawning habitats and sustainable management agreements with those gaining income from the fishery, will enhance these species for the benefit of Cornwall.

Aquaculture and fish faring schemes – these provide positive economic benefits to the County but carry significant environmental risks through water quality impacts and the introduction of diseases and non-native species.

Wetlands – these are a key habitat associated with the river environment. They provide a natural treatment system and support low summer river flows, as well as a key ecological habitat, and are under threat from development and farming practice. Loss of wetlands will have lasting economic impacts, increasing silt loads in rivers, and subsequent dredging requirements, reducing water quality, and possibly increasing flood risk. Further losses will lead to a reduction in regional distinctiveness.

Headwater streams – these are vital to the health of the river ecosystem, and are under threat in Cornwall from abstraction and diffuse pollution, arising from land use and historic mining activity.

River Habitat Surveys - assess the physical character of rivers habitat using criteria derived from known conservation value and from the occurrence of special features. The overall site quality is based on the assessment, which includes its common 'pristine' channel characteristics, its features of local importance, and its importance as a river type (upland/lowland stream etc.). These surveys can help target limited resources towards restoration of the most degraded reaches, supported through the planning process.

RELEVANT STRATEGIES

Local Environment Agency Plans (LEAPs) Promoting the vision of sustainable catchment management, where a healthy economy leads to:

- Enhanced biodiversity and physical habitats for wildlife
- Growing enjoyment and appreciation for people
- Needs are met sustainably

KEY OPPORTUNITIES FOR THE PROGRAMME

- Water resource management -- including advice to businesses and appropriate action
- Encouraging a reduction in water demand through public education and involvement.
- Water quality management – including advice to businesses and appropriate action to reduce the impact of discharges
- Tackling diffuse pollution on a catchment basis
- Support for sustainable flood defence programmes.
- Acceptance of the restriction placed on development by the need to protect floodplains
- Support for projects to restore effectiveness of floodplain areas on a catchment basis.
- Support for effective measures to improve poor water quality and degraded river habitat
- Effective management of freshwater fisheries.
- Support for research into sustainable treatment methods for landfill leachate
- Support for protection and enhancement and provision of increased area of wetlands and headwater catchments.

TRACKING THE REGION

Indicators

- River Water Quality
- Bathing Waters Compliance (also see coastal section)
- Average consumption and resource availability

Programme Indicators

Measure indicators and targets are presented in the Programme Complement.

ENERGY

INTRODUCTION

The most significant impacts of energy production from the burning of fossil fuels stem from the release of CO2, SO2, NOx and particulates. A consequence of encouraging economic development could be an increased demand for energy and hence an increase in emissions. This requires a profile of both sources of supply and the efficiency of use.

ENERGY USE

From 1990 to 1997, estimates point to a slight overall increase in energy use. The results imply falling emissions of carbon dioxide, methane, nitrogen oxides, carbon monoxide and non methane volatile organic compounds, despite the slight increase in consumption, due to the shifts to a cleaner, lower carbon fuel mix and technological advances. Three fuels – petroleum, electricity and natural gas – dominate the consumption split and the three largest categories of consumer are road transport, domestic and industry.

EMISSIONS

There is a clear trend of falling CO2 emissions per unit energy use, as a result of the move from coal to gas in both direct consumption and in electricity generation. (Emissions of CO2 per GWh end use energy are almost double for coal compared to natural gas.)

There is a general decline in emissions due to technological improvements and fuel switching having more than compensated for the growth in energy use. The only pollutant whose emissions are increasing is N2O – due to the use of catalytic converters.

There is some electricity generation within Cornwall at Indian Queens, a few small embedded generation units, 6 wind farms and a 3MW electrical landfill gas plant at United mines.

NATIONAL PICTURE

Nationally primary energy use rose by 6% (in the business sector by 3%) between 1990 and 1997 and is expected to be 10% higher than 199 levels in 2000.

Over the same period CO2 emissions from the energy supply industry have fallen by 14%. In the business sector the fall was 10% -- 70% of the fall was due to change in fuel mix / 10% due the change in industrial structure / 20% due to energy efficiency gains.

Clearly efficiency gains are a competitiveness issue for business. However, in the SME sector there is unlikely to be dedicated or technical expertise in energy or environmental management. Nevertheless there are likely to be significant cost savings which necessitate a specific approach. (National figures point to a savings range of 0.5 to 1 MtC pa.)

The Government is currently reviewing the target of achieving 10% of the UK's electricity needs from renewables.

RELEVANT STRATEGIES

Overall, the policy context is:

- to ensure reliable and flexible energy supplies to support business, and to generate jobs from the development of low impact technologies. Government policy is that renewable energy sources will to supply 10% of UK's electricity by 2010;
- to reduce UK's CO_2 emissions by 20% by year 2010 through the promotion of energy efficiency and development of renewables.

KEY OPPORTUNITIES FOR THE PROGRAMME

- Support for renewable energy sources, where they do not have significant adverse impact
- Potential for R&D (including through the CUC) and SME development eg manufacturing of new forms of energy generation (including opportunities for small scale applications): wind, hydro, biomass, pv, fuel cells, passive and active solar; as well as energy conservation and management technologies for domestic, SME and public buildings etc.
- Advice re energy management for SMEs.
- Encouraging the incorporation of renewable energy and energy management into Objective 1 projects.
- Municipal and commercial waste should be seen as a fuel in EfW plants, giving a double benefit of reduced demand for fossil fuels and a reduction of waste disposal to landfill.

TRACKING THE REGION

Indicators
Energy use by fuel and sector
Proportion of renewables

Programme Indicators
Measure indicators and targets are presented in the Programme Complement.

TRANSPORT

INTRODUCTION

The development of a sustainable transport strategy involves:

- reducing the need to travel; and
- promoting more environmentally sustainable modes of travel, namely walking and cycling and the provision of public transport

with the consequent

- more efficient use of energy resources; and
- reduction in the emissions that damage both human health and the local and global environment.

A more energy efficient and environmentally sustainable transport system for Cornwall requires demand management and an enhanced role for public transport, walking and cycling.

MANAGEMENT OF TRANSPORT DEMAND

It is both environmentally and economically unacceptable to meet all of the likely demand for individual mobility and access through the provision of additional road space, particularly in urban areas. There is a need to move to a regime of demand management, designed to make effective and environmentally acceptable use of existing and new transport infrastructure.

To achieve this the approach to transport is based on the following key elements:

- the reduction in the need to travel by influencing the location of development relative to transport provision;
- the development of alternatives to the private car to ensure a more energy efficient and environmentally sustainable transport strategy, including the promotion of greater public awareness of the implications of travel;
- the maintenance and improvement of highway infrastructure to:
  - improve environmental conditions through measures to address the adverse problems of road traffic;
  - improve road safety and reduce accidents in line with national policy;

- maintain structural integrity in order to sustain highways in a safe and sound condition; and
- sustaining the economy of Cornwall through maintaining an appropriate level of accessibility by road, rail, sea and air.

However, it is necessary to recognise the degree to which this approach for reducing travel demand and promoting alternative modes of transport can be achieved in a rural County such as Cornwall. The geography of Cornwall with its dispersed distribution of existing settlements, travel patterns and journey purpose will affect the extent to which a modal switch from private car to public transport can be achieved. The car is the dominant transport mode outside the main urban areas, and is likely to remain so for the foreseeable future.

Travel awareness - This is about changing peoples attitudes towards how they use the car in order to achieve a voluntary reduction in car use. In Cornwall, year round traffic levels are rising, a problem compounded by the high seasonal variation. The result is increasing traffic levels which cause pollution and congestion problems which threaten health, the environment and the economy of Cornwall. Travel awareness involves the effective promotion of sustainable transport initiatives and the generation of public understanding and support, to show that everyone can help in solving the problems of traffic growth, and promoting the practical alternatives to individual private car use.

Public Transport - This needs not only to be available, but economic to use in comparison with the cost of using the private car if there is to be a significant modal switch. If fiscal measures are to be used in the future to correct this imbalance between the marginal costs of private and public transport use, new development must be located so as to leave open the option of an enhanced role for public transport.

Public Transport Services - In a rural county such as Cornwall there is dependency on the car. Nevertheless, studies have shown that in communities of under 3,000 population:

- for 75% of them the standard of service availability is at least 5 journeys per day, 5 days a week.
- some 40% of those in rural communities have services of at least hourly frequency plus some evening and Sunday services.

However, this strategy will be undermined if there continues to be a shift of services and employment uses from town centres to peripheral and out-of-town sites and highly accessible sites in town centres are taken up by uses which are not significant attractors of trips.

Strategic Public Transport Route Network – in developing the role of public transport within Cornwall the County Council is committed to the progressive improvement of a strategic public transport network making use of all three of the current principal means of public passenger transport available in Cornwall - rail, bus and ferry. This network aims to link the larger rural communities which contain a minimum range of facilities (primary school, Post Office, local shop, etc.) to a nearby town in which a wider range of shops, a secondary school, employment opportunities and leisure facilities are available. The communities served should comprise 90% of Cornwall's population. In establishing this network the County Council intends to realise a quality and level of service which will allow public transport to be a reasonable alternative to the private car.

- The minimum frequency standard for the bus and ferry network should be five return journeys daily coinciding with peak start and finish times for work, school and shopping journeys.
- The developed service frequency will seek to achieve the following standards:
  - peak commuter period - effective service tailored to local patterns of peak demand whilst giving maximum flexibility for work start and finish times;
  - working day - 'clock face service' with departures at the same time past each hour to enable shopping, school and visiting journeys to be undertaken without the need to consult a timetable;
  - evenings - minimum service cover to enable meetings, cinema and evening classes, etc. to be attended.

Long distance freight – this particularly concerns the promotion of non-road modes. The capacity of the rail network in Cornwall to cater for freight traffic is currently constrained by loading gauge restrictions which prevent container traffic being carried. The implementation of works to remove those

restrictions to enable container traffic movements between Cornwall and long distance destinations within Great Britain and overseas to be carried by rail are important. A freight forum for Cornwall has been established and although it is in its early days it is seeking to develop a long-term strategy for freight in Cornwall.

Rail – there should be an option available to serve Falmouth Docks. The upgrading of the main railway line through Cornwall and the Falmouth branch line to carry containerised goods traffic and its inclusion as a Combined Transport route within the Trans-European Transport Network (TENs) and other initiatives to make rail and water services more attractive for freight movement will be supported where suitable access can be provided to proposed facilities. This includes encouragement for new road/rail interchanges. The South West Regional Planning Conference has expressed its support for a network of such facilities in the South West region including provision in Cornwall.

KEY INFORMATION

Analysis of the 1991 Census shows that people who live in rural areas of Cornwall both own more cars and make more use of them to travel to work. The town offer better opportunities to save energy by allowing people to cycle or walk to work. However the Census also indicates that 48% of town residents and 22% of rural residents have journeys of less than 2 km to travel to work.

ENVIRONMENTAL ISSUES

Exhaust emissions - Through the Rio Earth Summit and the adoption of Agenda 21 the UK Government has committed itself to working for a reduction in such damaging emissions in order to combat global climate change.
The transport sector contributes c23% of CO2 emissions, 85% of which comes from the road transport sector, with a probable increase of 5% between 1990 and 2000. As the UK Government's climate change programme (consultation paper) states – the road transport emissions are forecast to increase reflecting the historic link between income growth levels of car ownership, the propensity to travel and the increased demand for goods and services.

RELEVANT STRATEGIES

The 1998 Transport White Paper – to improve choice, to reduce the need to travel while improving access, to reducing environmental impact and to improving safety
1997 Cornwall Structure Plan , to reduce the need to travel, to develop alternatives to the car, including public transport, to maintain and improve the highway infrastructure and to sustain the economy of Cornwall through accessibility by road, rail, sea and air.
Cornwall Local transport Plan (1999) - reduce the adverse impact of transport in order to protect and enhance the built and natural environment (including reducing travel growth and emissions), to improve safety for all travellers, to contribute to an efficient local economy and support sustainable economic growth, to promote accessibility to everyday facilities for all, especially those without a car and to improve integration of transport and land use planning, leading to a more efficient transport system (including reducing the need to travel and ensuring that new development encourages sustainable travel choices)

KEY OPPORTUNITIES FOR THE PROGRAMME

- reduce the need to travel and enable the choice of public transport
- improve attractiveness, frequency and accessibility of public transport
- enable the movement of freight by non-road modes
- development proposals should, where appropriate and practical, have regard to the need to encourage the carriage of freight by rail or water rather than by road transport.
- encourage the adoption of cleaner fuels and improved fuel efficiency
- encourage the local sourcing of goods to reduce supply chain distances
- Municipal and commercial waste should be seen as a fuel in EfW plants, giving a double benefit of reduced demand for fossil fuels and a reduction of waste disposal to landfill

TRACKING THE REGION

Indicators

- modal split including travel to work by mode
- freight by mode
- availability of public transport
- energy use in the transport sector

Programme Indicators

Measure indicators and targets are presented in the Programme Complement.

WASTE MANAGEMENT

INTRODUCTION

The production of waste and the continuing trend for increases in annual individual waste stream arisings is of cross sectoral interest and has an impact on all aspects of activity, whether commercial, personal or on the environment. It is essential direct and indirect waste is managed and disposed of in a way which is both economical for the local and business communities and sensitive to the environment.

WASTE ARISINGS

Given the scale and significance of both mineral and agricultural wastes in Cornwall it is not surprising that much work has been carried out on these wastes albeit not in such an intense spotlight as the controlled wastes. In the mineral waste sector a number of studies have been commissioned into the re-use of mineral wastes for alternative uses, particularly as low grade bulk-fill material. It is worth noting that there have been significant increases in the use of these materials. With regard to agricultural waste much of this is composed of liquid and slurry waste which is traditionally spread on the land - a process which if not carried out in accordance with Codes of Practice can and does cause pollution. In addition there is an increasing element of veterinary wastes, plastics etc.which require effective removal and management.

Other significant waste streams in Cornwall include sewage sludge, construction and demolition wastes, special wastes, harbour dredgings, animal, veterinary and clinical wastes and metalliferous and mine water wastes all of which require specialist handling regimes and management techniques.

There is also a small but significant issue with the disposal of contaminated material in the County. Such materials can arise from the re-development of former mining sites and other contaminating uses and also from harbour dredgings which can contain materials such as TBT. There is a need to identify appropriate management and disposal routes for these materials. Further research into practical methods of re-using this material.

The Environment Agency regulates waste management facilities through the Waste Management Licensing Regulations (1994).

Household, commercial and industrial wastes can be potentially polluting if not correctly managed. Certain particularly harmful materials are designated as ‘special wastes’ and 90 per cent of these are exported from Cornwall for specialised treatment or disposal elsewhere at purpose-built facilities.

With the exception of household wastes, for which closely monitored collection and disposal contracts are in place, there is only sparse information on the types and quantities of wastes generated in Cornwall. Cornwall is currently being assessed under a waste arisings survey (*The results of this survey are due to be published in 1999.)* The Agency is to produce a Strategic Waste Management Assessment for the Region, based on an analysis of the waste arisings survey and taking account of the proposed Statutory National Waste Strategy. This will be produced later this year.

AGRICULTURAL WASTE

The approximately 91,400 dairy cows in Cornwall *(based on MAFF's 1997 Census)* produce more than 4,800,000 litres of slurry per day. Other wastes such as washing-down water and rain falling on open cattle yards (a major problem in Cornwall with its high rainfall), increase this figure substantially.

Many agricultural wastes represent a pollution threat if mis-handled, but an opportunity if correctly managed. Efficient farmers assess the fertiliser value of slurry in order to reduce the use of inorganic fertiliser. The Holsworthy Biogas plant (partly funded through Objective 5(b)) is pioneering the use of effluent from farms in anaerobic digestion (AD). Interest has been expressed in using Objective 1 funding to put AD (fuelled by waste from farms and from food processing) on a commercial footing by achieving economies of scale.

Silage effluent can be 500 times more polluting than untreated sewage. Silage clamps, effluent tanks and slurry stores on many livestock farms are reaching the end of there effective life. Farms are facing significant costs just when they can least afford them. Recent changes in legislation and in livestock trading conditions are raising new problems such as the cost of disposal of sheep dip, and of 'fallen' livestock and unsaleable calves.

Although agricultural pollution incidents in the SW have been reduced from over 1,000 in 1994 to less than 500 in 1998, there were still a greater number than anywhere else in the country. *("The SW's Environment", a draft report by Env't Agency, July 1999).*

Objective 5(b) has funded several projects involving waste including composting of sewage sludge with biomass; and collection of green waste to supply compost to organic growers.
Objective 1 offers an opportunity for innovative and communal solutions to some of the agricultural waste problems; and for implementing the results of feasibility studies and trials funded by Objective 5(b), (eg. new approaches to plastics collection and re-cycling; communal sheep dip disposal; development of farm-based composting of sewage sludge with biomass such as flax waste and oil seed rape straw; further development of farm waste planning to encourage best use of wastes with fertiliser value).

MINERAL WASTES

The County has a vast resource of waste material (of national significance), predominantly china clay waste for use as secondary aggregates. The greater utilisation of these materials is being hindered because of the cost of processing and transporting the product to the market places in the South East of England (the mode of transport is presently largely limited to road and does not enjoying the benefit of the economies of scale of bulk rail or sea transfer) and because of over-specification in the construction industry.

THE CORNWALL CONTEXT

There are a number of issues which currently set the Cornish context:-

- household waste production in Cornwall is increasing, the current trend is for an increase of around 5% per annum;
- landfill void-space at United Mines and Connon Bridge will be exhausted in 2002/2003, Holwood Quarry will close June/July 1999;
- there would appear to be a comparatively high level of support for EfW, currently;
- difficulties in the market place for recyclates particularly at the moment for glass and metals and this following the collapse of the paper price in 1998. It should be emphasised that we do not recycle in Cornwall we merely collect recyclates for onward transfer to Sheffield and South Wales (steel), Kent (paper) the Wirral (aluminium) and Yorkshire (glass);
- the Districts are keen to increase recycling but are now beginning to realise the high cost per tonne;
- the dichotomy of the general public desire to increase recycling but little public support for purchasing products using recyclates ; but maybe this a problem for marketing. However recent

attempts for example by the supermarkets to sell products utilising recyclate have not been successful;
- home composting has become more popular and the District Councils have been very active in making suitable units available;
- considerable potential for centralised composting of green waste;
- we have limited knowledge of some waste streams, most noticeably inert wastes, sewage sludge and special wastes. We have a fair idea but this is backed up by little hard fact; although the National waste Survey will improve this situation, there will remain the need for further investigation.

THE WAY FORWARD

There is a strong desire within Cornwall to move up the hierarchy recognising and reflecting the inevitability of the requirements of the Landfill Directive, when incorporated into UK legislation, to move away from landfill and fiscal policy, public opinion etc.

This factor was recognised in the CWLP. The Consultation Draft Plan indicated two scenarios both based on a significant reduction in landfilling to be achieved through a substantial increase in recycling and composting and in the second scenario through the adoption of EfW, though not specifying a preference for any one technique. However it cannot be said frequently enough that we will always need landfills: some wastes cannot be recovered or used as feed-stock for an EfW plant and such facilities produce significant quantities of ash. The question is therefore about what percentage of residual material will require landfilling.

CCC is therefore undertaking a major study into waste management in Cornwall. Part 1 of this study (June 1999) indicates that an integrated waste management system should be adopted based on improved recycling, increased composting and the adoption of EfW technology in the short to medium term. Replacement landfill capacity will also have to be identified.

The Districts are carefully considering recycling through the production of “An Integrated Recycling Plan” and all authorities are considering increasing the levels of composting. The Government is currently developing a Statutory National Waste Strategy. The aims are outlined in the consultation document “A Way With Waste” which invited views on the reduction of waste and the management of waste in ways that protect the environment.

CONCLUSIONS

The management of waste in Cornwall is of cross-sector interest. A number of key decisions will have to be made regarding new waste management facilities in the next coming months and years. While these difficult decisions must be taken there are a number of opportunities which also need to be examined.

The difficulty of peripherality and being remote from the recycling facilities may encourage “lateral thinking” and present business opportunities whilst re-using the elements of individual waste streams arising within Cornwall. Some work has been carried out in this sector such as the Glass Project undertaken by the County Council in 1996. There are other initiatives of relevance such as the Camborne School of Mines proposal for a “Waste Centre of Excellence.”

The answer will not however lie in identifying any one preferred technique. The way forward must lie in a more sustainable and integrated management system

Waste minimisation has the potential to save businesses money as well as producing environmental benefits. The immediate potential for the minimisation of business waste is greater than for post consumer waste, as implementing general housekeeping and waste procedures will be less complex than altering production processes, product design or consumer behaviour.

KEY INFORMATION

- China clay extraction - approximately 22 million tonnes of mineral waste material being produced annually with in the order of 490 million tonnes tipped in the St Austell China Clay area already.
- Nationally it has been estimated that 10% of aggregates used in construction projects come from secondary and recycled materials, where as in Cornwall it is c30%. A study sponsored by the County Council and ECCI "The Occurrence and Utilisation of Mineral and Construction Wastes," concluded that these materials could contribute to a considerably higher proportion of overall national aggregates consumption. However, these are non controlled wastes (under waste management regulations) and most headlines concentrates on the “controlled” wastes, namely:
- waste costs are rising, both because of rising environmental standards and because of taxation; landfill tax is now on an escalator similar to that for fuel duty

RELEVANT STRATEGIES

The fundamental policy approach underpinning the management of controlled wastes and particularly the household waste stream is to move away from the current reliance on disposal to landfill, moving up the well rehearsed waste management hierarchy having identified the Best Practicable Environmental Option and given regard to the Proximity Principle.

The planning policy context is fast changing with the publication of PPG10 imminent, a draft of the National Waste Strategy expected in July 1999 and the final text of the Landfill Directive now agreed. The existing policy context is set in Making Waste Work and Less Waste More Value (current national waste strategy) and PPG23.

These are reflected in both the **Structure Plan 1997 and Cornwall Waste Local Plan (Cons. Draft) 1998.** The CWLP seeks to encourage the development of a network of waste management facilities which will enable self-sufficiency for wastes produced within Cornwall, apart from hazardous wastes and states that all applications will be assessed against the need to protect local amenity and the environment.

Strategic goal – to move waste management up the waste hierarchy through:

- Reduction
- Re-use
- Recovery (recycling, composting and energy recovery)
- Disposal

Key Policy Aims

- To reduce the amount of waste disposed of to landfill as a percentage of 1995 levels, through application of the hierarchy above.
- To increase recovery and recycling rates of packaging waste;
- To address the supply and demand problems in recycling markets;
- To create a waste management system that will reduce the quantity of waste produced and its environmental impact.
- To encourage more businesses to adopt waste minimisation practices -- thereby reducing business running costs and reducing environmental impact.

Fiscal policy, the Government has continued to increase the Landfill Tax, there are also rumours of an Incineration Tax and more strongly of an Aggregates Tax both of which could have a significant impact on waste arisings.

Waste treatment technology, particularly Energy from Waste (EfW) systems, are changing on an almost daily basis making some of the alternative waste management techniques increasingly attractive.

The regulation of the waste management industry - this is having a marked effect. There has been a noticeable increase in the recycling of wastes through exemptions granted from these Regulations. A process which can be further encouraged and supported. In passing, it is also worth

acknowledging that at present in the late-1990s, the field of considering planning applications for waste management facilities is in a very sharp focus in terms of public and local political interest.

KEY OPPORTUNITIES FOR THE PROGRAMME

- Promotion of waste minimisation, which has proven benefits in reducing business costs.
- Encourage partnerships between local authorities, industry and local enterprise companies and establish specific waste stream programmes.
- Seek to foster and encourage innovation in locally based composting / recycling / re-use initiatives
- Build on and develop local enthusiasm for better waste management
- Development of mineral wastes as a source of secondary aggregates

TRACKING THE REGION

Indicators

- Waste arisings by waste stream, including commercial waste
- % of municipal waste land-filled
- % recycled and/or recovered

Programme Indicators

Measure indicators and targets are presented in the Programme Complement.

AIR QUALITY

INTRODUCTION

Local Air quality is generally good. However, there are obvious dangers for a region in which large numbers of slow moving motor vehicles are present in narrow thoroughfares in many villages and towns during the summer. Also the implications of high ozone levels for agriculture and wildlife habitats are a cause for concern. Air pollution deposition into the marine environment is may also be important.

Using all the available information, air quality in Cornwall has been assessed with reference to benzene, 1, 3-butadiene, carbon monoxide, lead, sulphur dioxide, particulate matter, nitrogen dioxide and ozone. Apart from ozone, particulate matter and nitrogen dioxide few measurements of these pollutants have been made in Cornwall and values were taken from estimates by the National Environment Technology centre (NETCEN) where appropriate. However, Cornwall Air Quality Forum monitoring suggests that in the case of ozone (and maybe other pollutants) the NETCEN estimates for Cornwall are low. Ozone levels in Cornwall are the highest in the UK. Specific research undertaken found that at sites in the far west of the County in the china clay area in mid Cornwall (PM10) observed levels were of similar magnitude to those in UK urban centres.

The pollutants found are likely to be from distant sources. It is clear that in order to protect existing air quality standards- and the associated quality of health of the population- the integration of air quality considerations into planning decisions, transport strategies and environmental controls is essential. In order to achieve this a sound understanding of the air pollution in Cornwall (based on monitoring and modelling) is required.

GLOBAL ATMOSPHERE

Climate Change - The anticipated effects of global climate change include*:*

- a northward shift of natural habitats by 50-80 km per decade and the drying out of wetlands
- reduced availability of water stocks, particularly in the summer -- likely to be significant in the South West Region where the population increases significantly at this time of year
- an increased demand for fresh water
- sea level change

- increased flooding and erosion, especially in winter -- the predicted sea level rise of 19cm by the 2020s may compromise sea defences and reduce the return period of flood events
- reduced dilution of pollutants in water bodies
- longer growing seasons -- with consequent changes in rates of evapo-transpiration, frequency of algal blooms and changes in land use patterns
- an increase in wind speeds of 3% in winter and 1% in summer by 2020
- an enhanced potential for tourism, as a result of temperature increases
- a potential increase in exotic pests and diseases

Cornwall with its high ratio of land area to coastline and Scilly as an archipelago, both are exposed to prevailing weather fronts and are therefore at the forefront of these impacts. The close interrelationship between many of the Area's business sectors and the environment means that the potential impact of climate change could have consequences for the economy.

NATIONAL EMISSIONS TARGETS

Following Kyoto these are:
- EU 8% reduction by 2010
- UK proportion 12.5%
- Government's goal of 20% reduction in UK CO2 emissions by 2010
- 1990 baseline of 216 MtC equivalent

LOCAL AIMS & STRATEGIC APPROACH

- a better understanding of and improved local aim quality
- reduced emissions linked with global climate change

KEY OPPORTUNITIES FOR THE PROGRAMME
♦ Promote the take-up of cleaner fuels and clean air technology ♦ Promote environmental best practice in business and industry ♦ Promote public transport initiatives

TRACKING THE REGION
Indicators ♦ Trends in emissions – see energy section **Programme Indicators** Measure indicators and targets are presented in the Programme Complement.

CONCLUSIONS

The region not only has a distinct geography but also a distinct people, cultural tradition, historic and natural environment. There are many detailed definitions of what makes the Programme Area such a distinctive place. A number of key features help define this distinctiveness, including:
- The Region's special and unique identity has been shaped by natural forces - rock, sea and the climate - and layers of history, creating a landscape of incident, richness, splendour and beauty. In places, it is wild, remote and battered by extremes of Atlantic weather, or empty and misty, with harsh landscapes, wide skies and far horizons. Cornwall has its softer side, finding expression in exotic sub-tropical gardens, sheltered, hidden creeks fringed by ancient oak-woods, villages of soft killas stone, with sheltered cottage gardens.
- There is dereliction in Cornwall not only from metalliferous mining and other mineral extraction but also urban, military and other past development. Cornwall's landscape has been strongly influenced by its long history of mining, extensive areas of which are of international value for their

archaeological interest as recognised by the Cornish Mining proposed World Heritage Site. Many abandoned mined sites have developed a rich wildlife and are also of interest to geologists. However, derelict land can be dangerous, unproductive and spoil the visual amenity and which consequently detract from the image of Cornwall as an attractive place to live, visit, work and invest.

- Cornwall, bordered on virtually all sides by coasts and estuaries, and the Isles of Scilly have a distinctive maritime identity and cultural heritage. The sea has provided a means of transport and communication, a diverse and year round harvest, a playground and a source of inspiration, a waste disposal facility and a grave.
- The Isles of Scilly are England's only marine archipelago where the rhythm of life is completely dominated by the sea. Washed by the mixture of the warm Gulf Stream rising from the south and cooler northern waters, this region's shores, estuaries and open seas support one of the richest assemblages of marine wildlife anywhere in Europe. It is essential that these unique natural resources are managed together with the activities dependant upon them, in an integrated and proactive manner.
- Being on the outer edge of Britain, but at the heart of Atlantic Europe has resulted in an historic cultural heritage different from the rest of the UK. Mild climate, Celtic affinities, coastal connections, mineral wealth, and isolation are all intermingled in aspects of the Programme Area's distinctive identify and historic heritage. For much of prehistory, the Area's affinities were with the western seaboard of Europe. The history is paradoxically of far-flung trade contacts and folk movements set against domination by others and defiance to outsiders, and an often uneasy relationship with England. After the Romans left Cornwall was a kingdom for over four hundred years. This relationship with the Crown, first through the Earldom and later the Duchy has continued to the present day. This, the Cornish language and its own flag, give Cornwall a unique character. The cultural roots of Cornish people have threaded their way through the spiritual and economic fabric of society to produce a distinctiveness, including ecclesiastical heritage, and an extraordinary contribution to the Industrial Revolution of world significance.

The environmental profile has identified **Key Environmental Opportunities for the Programme** which include:

- landscape -- protection and active enhancement of character and quality, particularly the coast
- new development -- better designed and more environmentally friendly buildings / respect for local vernacular architecture and the use of local materials / enable regeneration
- land reclamation -- preserve, enhance and make accessible the environment
- natural environment -- increase the area and appropriate management of wildlife habitats
- coasts, maritime and marine -- greater integration of management eg water quality, port development, recreation and tourism, fisheries and coastal protection
- historic environment -- enable the stewardship of and greater levels of access to
- water environment -- maintain and improve quality, including tackling dispersed sources of pollution
- energy -- greater energy conservation and the greater use of renewables
- transport -- break the historic cycle of increased GDP / increased transport: reduce the need to travel, particularly by car, enable the use of public transport and thereby reduce the use of resources and reduce CO2 and other air pollutants
- waste management -- greater levels of waste minimisation, re-use, recycling
- air quality and climate change -- manage resources to prevent deterioration in air quality and reduce emissions that result in global climate change

Sustainable Development is about ensuring a better quality of life for everyone, both now and for future generations – in environmental terms, this necessitates looking at the global issues such as climate change, biodiversity conservation and the use of natural resources as well as more local issues.

We need greater prosperity with less environmental damage – we need to improve the efficiency with which we use resources; promote thriving towns and villages based on strong economies; enable good access to services and safe surroundings.

There are a well established suite of aims and objectives for the management of environmental change, frequently tackling both protection and improvement, some set at a national level, some locally developed and many a combination of the two. Objective 1 Programme projects should make a positive contribution to these wherever appropriate.

Environmental quality is a major factor in regional development and business competitiveness. The integration of environmental protection and the prudent use of natural resources into productive investment will help ensure a rational use of economic resources, enhancement of economic performance and competitiveness while maintaining and creating employment. Moreover, environment-related products, processes and services provide an additional opportunity for the Region as they are themselves a potential new source of prosperity and employment.

Specific action in combining better environmental performance and investment in industry and services should include making funds available for:

- Advice and support for business activities (in particular in SMEs) should include the efficient and sustainable use of natural resources (eg water and energy), waste minimisation and reuse, reduction of air pollution and sustainable product policy;
- Clean technologies;
- Environmental management, especially in SMEs;
- Industrial sites : priority should be given to rehabilitation of brownfield sites and the re-use of buildings over greenfield sites;
- Training – both specific environmental skills and training in environmental management
- Quality design and landscaping and improved environmental performance for all new development, and the retrofit of existing developments
- Economic development that protects and enhances distinctiveness
- Rural business development that builds on the strengths and opportunities of the Region -- adding value, organic production etc

The environment is a major part of the business competitiveness agenda,viz:

> *"progressively reducing the pressures on the environment and resources is part of the competitiveness challenge. Business needs to create more value with less impact: seizing opportunities to innovate and to enhance competitiveness … reducing materials intensity of goods and services, enhancing recyclability and durability of goods and reducing dispersion of toxic substances."*
> *Para 6.19 et al*
>
> *"A Better Quality of Life" (HMSO, May 1999)*

> *"We know that primary resources are diminishing and more expensive to produce; we know that increasing disposal of waste and pollution is not sustainable and we know that energy production from fossil fuels cannot continue at current rates. Yet there are great opportunities in environmental technology and science in more sustainable ways of managing land, waste and energy and in improving environmental performance in business. It is more strategic and more intelligent to position the regional economy as soon as possible to respond to the changes. In this way our economy and our businesses will have the competitive edge in the future rather than constantly having to react to changes as they occur."*
>
> *"Regional Strategy – A Consultation Document for the South West, Version 1 (May, 1999)*

The Strategic Environmental approach of the Programme: The character and quality of the Region's environment, the issues facing the environment, the key environmental opportunities for the Programme together with indicators for tracking the environment of the Region in which the Programme will operate are outlined in the environmental profile. It highlighted the need for the positive management of change. This, together with the EU Guidance on the need to mainstream the environment into all aspects of Structural Fund Programmes, rather than to isolate it as a specialist issue of relevance to a minority of partners or project sponsors, has resulted in the development of an environmental vision, aim and supporting objectives for the Programme.

The **Vision** is:

***Cornwall and Scilly as a "special place", recognised throughout the UK and Europe, with its distinctive physical qualities protected and improved, thus providing the basis for a sustainable quality of life and environment for its people*.**

The Programme **Aim** is:

***To actively integrate environmental issues into activities across the strategy and implementation of the Programme, through the promotion and provision of support, the prioritisation of activities that explicitly address environmental issues and other opportunities provided by the Objective 1 Programme*.**

The **Objectives** are:

To enable the protection and improvement of the environment.

- ***To promote the prudent use of natural resources.***
- ***To take advantage of the business opportunities afforded by growing demands for environmental goods, processes and services.***
- ***To increase the awareness of residents, businesses and visitors of the value and importance of the environment.***
- ***To actively promote environmental policies in all aspects of Programme management and implementation***.

Achieving environmental sustainability objectives will be achieved by minimising negative environmental impacts and maximising positive ones. The essential ingredients of working towards sustainable development, apart from the integration of social, economic and environmental factors is that local solutions work and that local capacity building (in all communities of interest) is vital and all projects must be self-sustaining, add value and empower the community.

ENVIRONMENTAL BASELINES

Landscape

TABLE 1: LANDSCAPE DESIGNATIONS	
Areas of Outstanding Natural Beauty	**Coverage**
Cornwall	1056km^2
Scilly	All of the islands
Areas of GLV	
Cornwall and Scilly	979km^2

TABLE 2: ACCESS TO THE LANDSCAPE	
Landscape Accessed	**Number**
Country Parks	e.g. Mt. Edgcumbe, Tehidy, Kit Hill
De-facto Country Parks	Includes: National trust , e.g. Trelissick, Lanhydrock, Penrose and Cotehele
Private Estates with public access	Trelowarren
Landscapes in protective ownership	e.g. CWT – 1500 ha; NT – 9200 ha; RSPB – 203ha; EN – c300ha
Public Rights of Way	4,238km
Long Distance Trails	e.g. Coast Path - 431 km (part of the South West Coast Path national trail)
Minerals Tramways	50 km of trails with another 50 km of linked circular walks
Cornish Way Cycle Route	275 km (when completed)
Saints Way	30 miles
Countryside Stewardship Open Access Areas	75 (in 1998)
Woodland – Forestry Commission / Duchy / National Trust etc	23 sites
Beaches and foreshores	Virtually all Cornwall's beaches and foreshores are accessible to the public

Land Derelict and Contaminated

TABLE 3 : DERELICT AND CONTAMINATED LAND	
Indicators	**Baseline**
Derelict land as a % of all land in county	10% (highest in England)
Ha of derelict land	3, 871 (70% of the South West regional total) of which 2,262 ha justifies reclamation.
Of which: Metalliferous spoil heaps Excavations and pits Derelict Railway land	 2,207 ha 757 ha 298 ha
China Clay - severely degraded due to open cast mining	88 km^2
Mineral types	440 (15% of world total)
Source: 1993 D of E Survey	

The Natural Environment

TABLE 4 : NATURAL ENVIRONMENT	
Designation	**Number**
Number of Natural areas	5
Number of Maritime natural areas	3
National nature reserves	2162 ha (3 sites)
Sites of Specific Scientific Interest (SSSIs)	22197 ha (160 sites)
CSACa	45,000 ha (13)

National Trust managed land for nature conservation	c.9000 ha
CWT Nature Reserves	45
RSPB Nature Reserves	2

Coasts, Marine and Maritime

TABLE 5 : COASTS, MARINE AND MARITIME	
Feature	**Quantity**
Length of Cornwall Coast (km)	697
Length of IoS Coast (km)	67
Scilly from the Cornish mainland (km)	43
CSACs with maritime interest	5
Sand Dunes as % of England total	12.5%
Sensitive Marine Areas	18% (of England total)
Heritage Coast	26% (of England total)
Designated bathing beaches	17% (of England total)

Historic Monuments

TABLE 6 : HISTORIC SITES	
Historic Site/ Monument	**Number**
Scheduled monuments – CIS of which Scilly	1,267 (1998) 220
Listed Buildings -CIS Of which Scilly	12,213 127
No. of Conservation Areas	137
Ha of Conservation Areas	3,655
No of Registered parks and gardens	33
Ha of Registered parks and gardens	2,456
Registered battlefields	2
Historic Settlements	33 (achieving Borough status pre-1600)
Areas of Great Historic Value	23 (56 km2)
English heritage properties	24
National Trust properties	11
Total no. of visitors to heritage facilities (exc. Museums)	2,200,000 (1997-98)
Visits to heritage sites	3 million (estimate)

TABLE 7 : HERITAGE MONUMENTS/ SITES (WITH INTERPRETATIVE LITERATURE)	
Site/ Monument	**Number**
Castles	4
Prehistoric Villages	2
Historic Houses	3
Historic Houses with historic gardens	12
Historic gardens	55
Ecclesiastical	3
Mining related	10
Lighthouses & maritime related	4
Brewery	1

TABLE 8 : HERITAGE TRAILS
Trails (Re-Use Historic Railways, Mineral Tramways, Canals or Traditional Routes)
• Camel Trail. • Mineral Tramways (in progress). • Pentewan Railway. • Green Corridor - St Austell to Bugle (in progress). • Liskeard Caradon Railway (in progress). • Tamar Trail (in progress). • The Saint's Way. • St Michael's Way. • East Cornwall Mineral Railway (planned).
Historic railway lines (Steam)
• Lappa Valley. • Launceston. • Bodmin- Wenford
And others proposed such as:
Bude Canal & Liskeard-Looe Canal

TABLE 9 : MUSEUMS

Museums	Quantity
• Independent	22
• Town Council	3
• District Council	2
• Other	3
A total turnover in excess of £1m:	
• Over £100k p.a.	5
• £5k - £100k p.a.	11
• below £5k p.a.	14

Water

TABLE 10 : WATER QUALITY

Indicator	Baseline
Sites with Environment Agency consents to discharge into surface waters	c. 3,000
% of monitored river stretches with good or very good chemical quality fairly good chemical quality	Tbc
Semi natural rivers	tbc

TABLE 11: FLOOD DEFENCE SCHEMES

Flood Defence	Cost (£m)
Polperro	8
Bude	1.25
Perrancombe	2.25
Porthleven	0.83

Transport

TABLE 12: TRAVEL TO WORK (1991 CENSUS)	
Indicator	**Quantity**
By public transport use:	% of journeys by public modes (train/bus)
* Large towns	4·7
* Small towns	3.6
* Rural Areas	3.4
Walking	%
* Towns	22-23
* Rural Areas	11
% of residents travelling less than 2 km to work	
* Town	48
* Rural	22

Waste

TABLE 13: WASTE DISPOSAL	
Indicator	**Baseline**
Agriculture	6m tonnes per annum
China Clay extraction	22m (mineral waste) per annum
% of aggregates used in construction from secondary/ recycled materials	c.30% (UK 10%)
Household, commercial, industrial waste	c. 1.28m tonnes per annum
% of disposal to landfill	94%

TABLE 14: WASTE MANAGEMENT LICENCES	
Type	**Number**
Treatment	14
Landfills	21 closed, 20 operational
Transfer stations	21
Civic amenity	12
Metal recycling	25
Incinerators	2
Exemptions	2,247

TABLE 15:DISTANCE FROM MAJOR MATERIALS REPROCESSING PLANTS	
Processing Plant	Distance
Aluminium	510 km (Cheshire)
Paper	500 km (Kent)
Ferrous metals	280 (S. Wales)
Glass	530 km (Lancashire)
Plastics	570 m (Yorkshire)

Air quality

TABLE 16 : EMISSIONS TARGETS	
Emission	**Target**
All	8% reduction by 2010 (EU)
All	12.5% (UK proportion of all EU emissions)
CO2	20% reduction by 2010
1990 Baseline	216 MtC equivalent

ENVIRONMENTAL IMPACT APPRAISAL

INTRODUCTION

ENVIRONMENTAL IMPACT SUMMARY					
	Priority 1 SME/ Micro-Business Support	**Priority 2 Strategic Investments**	**Priority 3 Developing People**	**Priority 4 Community Economic Development and Rural Structural Adjustment**	**Priority 5 Regional Distinctiveness**
Global Sustainability					
Atmospheric Stability	ü	ü	ü	ü	ü
Non-renewable res.	ü	ü	ü	ü	ü
Renewables	ü	ü	ü	ü	ü
Trees	-	ü	-	ü	ü
Natural Resources					
Air quality	ü	ü	ü	ü	ü
Water	ü	ü	ü	ü	ü
Land/ soil	ü	ü	-	ü	ü
Wildlife	-	ü	-	ü	ü
Local Environmental Quality					
Landscape	-	ü	-	ü	ü
Townscape	-	ü	-	ü	ü
Cultural Heritage	-	ü	-	ü	ü
Noise/ Smell	-	-	-	-	-
Safety	-	-	-	ü	-
Open Space	-	-	-	ü	ü
Accessibility	-	ü	-	-	-

PRIORITY 1: SME/ MICRO BUSINESS SUPPORT

The Priority is focused on support for businesses that employ less than 25 people. These businesses have the potential to make a positive impact on the environment through adopting new environmental practices and technologies, through the use of eco-friendly technology and investment in eco-businesses.

The Priority rationale makes explicit the role of the environment in SME and micro business support with reference to the Guidance produced by the European Commission. This states that: *"the Structural Funds and the EAGGF Guarantee Section should support the diversification of a competitive rural economic structure based on encouraging new activities through integrated programmes. Their priorities will include: a stronger agriculture sector; improving the competitiveness of rural areas and maintenance of the environment and Europe's rural heritage"*

This Priority fits well with current UK policy. It shares the central concerns and themes of the DTI White Paper, '**Our Competitive Future: Building the Knowledge Driven Economy',** especially the view that: *'Businesses in all sectors need to exploit new sources of competitive advantage and respond rapidly and flexibly to change. All businesses in the UK, large and small, manufacturing and services, low and high-tech, urban and rural need to marshal their knowledge and skills to satisfy customers, exploit opportunities and meet society's aspirations for a better environment'.*

SME/ MICRO BUSINESS SUPPORT		
Environmental Impact Criteria	**Impact**	**Commentary**
Global Sustainability		
Atmospheric Stability	ü	SMEs will be encouraged to develop energy efficiency and environmental best practice techniques, including the use of clean, environmental management systems, and through the use of eco-friendly technology and investment in eco-businesses.
Non-renewable resources	ü	Networks and partnerships, and improvements to the ICT and physical infrastructure at the local and regional level will reduce the adverse effects of transportation of goods and materials. Energy efficiency and the use of eco-friendly technologies to be progressed in SMEs
Renewables	ü	Energy efficiency and the use of eco-friendly technologies to be progressed in SMEs
Trees	-	
Natural Resources		
Air quality	ü	Energy efficiency and the use of eco-friendly technologies to be progressed in SMEs
Water	ü	Energy efficiency and the use of eco-friendly technologies to be progressed in SMEs
Land/ soil	ü	SME expansion and new starts will be accommodated in line with associated eco-friendly policies
Wildlife	-	
Local Environmental Quality		
Landscape	-	
Townscape	-	
Cultural Heritage	-	
Noise/ Smell	-	
Safety	-	
Open Space	-	
Accessibility	-	

PRIORITY 2: STRATEGIC INVESTMENTS

Two of the policies driving the Priority will directly contribute to a positive impact on the environment: transport infrastructure - improving networks and systems, and energy – networks, efficiency and renewable resources.

The Priority specifically envisages high quality, high specification investment sites that seek to take advantage of the latest technology in site preparation and site development, with an opportunity to minimise adverse environmental impacts and promote positive environmental benefits through the use of eco-friendly technology.

Further to this, Business Opportunity Areas (BOAs), are sought in or near existing centres, reducing the need for private transportation and increasing the opportunities for a sustainable and integrated public transport system.

STRATEGIC INVESTMENTS		
Environmental Impact Criteria	**Impact**	**Commentary**
Global Sustainability		
Atmospheric Stability	ü	The emphasis of the Programme is on new investment that seeks to minimise the need for transport and which encourages the use of eco-friendly technologies in the design, preparation and end use of sites. Business Opportunity Areas (BOAs) are the preferred approach of the Programme, based on existing centres and thus reducing the need for transport and facilitating integrated public transport networks
Non-renewable res.	ü	The Programme supports the efficient use of energy through favouring existing centres for development, either for new investment sites or for employment growth areas.
Renewables	ü	The Programme is committed to encouraging the use of eco-friendly technology in the design, preparation and end use of business and industrial sites
Trees	ü	There will be a presumption in favour of brownfield development, particularly in existing centres, that reduces the adverse impact on trees.

		Environmental landscaping to be encouraged to mitigate any loss of visual amenity.
Natural Resources		
Air quality	ü	Eco-friendly technology businesses encouraged for all new investor and new site users who will be encouraged to pursue eco-friendly policies. Existing centres favoured for BOAs to minimise travel to work journeys and facilitate the integration of public transport.
Water	ü	Eco-friendly technology businesses encouraged for all new investor and new site users who will be encouraged to pursue eco-friendly policies. Existing centres favoured for BOAs to minimise travel to work journeys and facilitate the integration of public transport
Land/ soil	ü	Presumption in favour of brownfield development, with Programme support for brownfield site preparation and development. Greenfield development to be undertaken sparingly and with regard to adjoining sites and amenity.
Wildlife	ü	All greenfield development to undertaken sparingly and with regard to natural habitats and vegetation. Environmental impact assessments to be carried out in accordance with EU/UK directives.
Local Environmental Quality		
Landscape	ü	New development to be undertaken with regard to the natural landscape, including principles in design with respect to visual amenity. Brownfield site development, land reclamation and site decontamination offer prospects for positive environmental impacts
Townscape	ü	Landscaping and high quality site development to mitigate adverse effects of development that may impact on townscape.
Cultural Heritage	ü	All greenfield development to be undertaken sparingly and with regard to the cultural heritage of the region
Noise/ Smell	-	
Safety	-	
Open Space	-	
Accessibility	ü	Public transport to new and improved sites will be promoted to reduce the demand for private car use and thus contribute to a sustainable transport system. BOAs and employment growth areas will favour development in existing centres.

PRIORITY 3: DEVELOPING PEOPLE

The Priority is developed in line with the ESF Regulations, which recognises the importance of broader principles which are applicable to all labour market and HRD actions. Four horizontal themes are identified, of which sustainable development is one.

The Developing People Priority can achieve positive environmental impacts for the Programme primarily through the environmental training for SME employees and the unemployed, and through environmental awareness for SME employees.

DEVELOPING PEOPLE		
Environmental Impact Criteria	**Impact**	**Commentary**
Global Sustainability		
Atmospheric Stability	ü	Environmental training and environmental awareness raising for SME employees will assist in the development of SMEs eco-friendly technological capability and itself can lead to increased investment in eco-businesses through the increased availability of environmental skills. Actions to promote environmental training and awareness raising to be pursued in measures to increase SME competitiveness and support for entrepreneurship. Higher level environmental skills and environmental management training to be encouraged
Non-renewable resources	ü	
Renewables	ü	
Trees	-	
Natural Resources		

Air quality	ü	As above
Water	ü	As above
Land/ soil	-	
Wildlife	-	
Local Environmental Quality		
Landscape	-	
Townscape	-	
Cultural Heritage	-	
Noise/ Smell	-	
Safety	-	
Open Space	-	
Accessibility	-	

PRIORITY 4: COMMUNITY ECONOMIC DEVELOPMENT AND RURAL STRUCTURAL ADJUSTMENT

The Priority is to support rural and island communities and to support community economic development. The Priority is intended to support both revenue and capital projects.

COMMUNITY ECONOMIC DEVELOPMENT AND RURAL STRUCTURAL ADJUSTMENT		
Environmental Impact Criteria	**Impact**	**Commentary**
Global Sustainability		
Atmospheric Stability	ü	For physical development, the development of environmentally specialist research centres will be encouraged that bring forward community based environmental projects and raise awareness of environmental issues. These centres will be encouraged to operate environmental training courses. Capital projects will be encouraged on brownfield sites; re-use of premises to be encouraged where practicable; greenfield sites to be developed sparingly Innovative projects that take advantage of eco-friendly technology will be encouraged under both the LEADER and URBAN templates, by which the Priority is heavily influenced.
Non-renewable resources	ü	
Renewables	ü	
Trees	ü	Locally based environmental projects have the capacity to improve community woodland and landscape, including tree planting
Natural Resources		
Air quality	ü	As Atmosphere Stability above
Water	ü	As above
Land/ soil	ü	As above
Wildlife	ü	Locally based environmental projects have the capacity to community resources – including local benefits
Local Environmental Quality		
Landscape	ü	As above
Townscape	ü	As above
Cultural Heritage	ü	Locally based environmental projects have the capacity to improve the local rural and urban, including cultural and heritage sites/ premises
Noise/ Smell	-	
Safety	ü	Locally based environmental projects have the capacity to improve community safety
Open Space	ü	Locally based environmental projects have the capacity to improve community open spaces
Accessibility		

PRIORITY 5: REGIONAL DISTINCTIVENESS

The Priority makes achieving positive environmental impacts explicit in its strategic aim:

"To develop the economic benefits arising from the regions' distinctiveness through the development, enhancement and promotion of the natural and historic environment, and the arts/culture and creative, heritage and environmental industries linked to those assets."

The Priority seeks to achieve positive environmentally impacts through improvements to the environmental infrastructure – land reclamation, improvements to historic sites and so on, but also to support the start-up and growth of environmental businesses.

REGIONAL DISTINCTIVENESS		
Environmental Impact Criteria	**Impact**	**Commentary**
Global Sustainability		
Atmospheric Stability	**ü**	The Programme seeks to promote the energy efficiency in environmental SMEs, through advancing eco-friendly technology and investment in eco-businesses. This will be encouraged through technology transfer and intensive support to environmental businesses
Non-renewable resources	**ü**	The re-use brownfield land through land reclamation is an explicit aim of the Priority. No greenfield development is intended.
Renewables	**ü**	The Programme seeks to promote the energy efficiency in environmental SMEs, through advancing eco-friendly technology and investment in eco-businesses. This will be encouraged through technology transfer and intensive support to environmental businesses
Trees	**ü**	Support for the improvement of woodland, its retention and effective management are intended
Natural Resources		
Air quality	**ü**	The Programme seeks to promote the energy efficiency in environmental SMEs, through advancing eco-friendly technology and investment in eco-businesses. This will be encouraged through technology transfer and intensive support to environmental businesses
Water	**ü**	The improvement of the coastal water resource is an explicit aim of the Priority, although primarily to ensure economic benefits are maximised. There should be no associated fall in water quality Water resource management is made explicit through the prevention of flooding and erosion. Water quality should be maintained/ improved
Land/ soil	**ü**	The re-use of brownfield land through land reclamation will improve the visual amenity and quality of land/ soil, including decontamination
Wildlife	**ü**	The re-use of brownfield land through land reclamation/ decontamination may enable sites to be returned to natural wildlife habitats. No greenfield development is envisaged.
Local Environmental Quality		
Landscape	**ü**	Improvements to the physical fabric of the natural and built environment will be supported
Townscape	**ü**	Improvements to the physical fabric of the natural and built environment will be supported
Cultural Heritage	**ü**	Improvements to the physical fabric of the natural and built environment will be supported
Noise/ Smell	-	
Safety	-	
Open Space	**ü**	Improvements to the physical fabric of the natural and built environment will be supported
Accessibility	-	

OBJECTIVE: TO ENABLE THE PROTECTION AND IMPROVEMENT OF THE ENVIRONMENT				
Indicative Theme	**Activity**	**Environment Result**	**Environment Performance in Context**	**Priority**
• Safety of derelict / contaminated land • Enhancing of local amenity • Improved quality of the built environment • Enhanced visual impact of new and existing built development • Protection and improvement of the natural environment • Protection and improvement of the historic environment • Reduced consumption of undeveloped land	No. of built development schemes / infrastructure	Area of g/f developed	% of total / brownfield/ greenfield split	1/2 3/4/5
	No. of derelict land schemes	Tot. area reclaimed	% of derelict land to amenity/ heritage	1/5
	No. of historic derelict land schemes	Area under +ve conserv. Mgmnt / No. of historic structures refurbished	% of cWHS under +ve conservation management	5
	No. of improvement schemes to business sites	Area / sites improved	% of total effort	1/ 2
	No. of town / village improvement schemes	Area / sites improved	% of total effort / stock	1/ 2
	No. of Conservn. Mgmnt. Schemes (incl. Agri-env.)	Area under +ve Conserv. Mgmnt.	% of total of effort / l'scape character/ BAP & NA targets	2/4
	No of appropriate building conversion / re-use schemes	No of buildings converted / floor area	% of effort / Energy and materials saving	1/4/5

OBJECTIVE -- TO PROMOTE THE PRUDENT USE OF NATURAL RESOURCES				
Indicative Theme	**Activity**	**Environment Result**	**Environment Performance in Context**	**Priority**
Promotion of prudent use of natural resources e.g. water	No. of business (incl. farms) advisory visits / schemes	Energy / water / etc savings	Savings as % of use	1/4
Promotion of movement through the waste hierarchy e.g. re-use and recycling	No. of advisory visits / schemes	Waste minimised / waste diverted	% of arisings by stream	1/4
Pollution control	No. of visits / schemes	Introduction of control technology/ Pollution reduced by type	River / air quality	1/ 4
Reuse of land and buildings	No. of schemes	Floor area of buildings brought back into re-use	% of new build vs. re-use	1/2/3/4/5
More environment friendly building construction and management	No. of schemes	Svgs on resource / energy	compare with conventional buildings	1/2/3/4/5
Green transport measures – reducing car dependence / location of new buildings – non-road freight schemes	No of schemes	Passenger miles / savings Transfer of freight	% of predicted traffic & freight growth / emissions savings Savings as % of energy use / emissions svgs	1/2/3/4/5
Energy efficiency and the use of renewable sources	No of schemes No of ICT schemes for training delivery	Energy savings / energy production	% of predicted traffic growth % generation / emissions svgs resource use reduction / emission svgs	4 3

OBJECTIVE -- TO TAKE ADVANTAGE OF THE BUSINESS OPPORTUNITIES AFFORDED BY THE GROWING DEMANDS FOR ENVIRONMENT-AL GOODS, PROCESSES AND SERVICES				
Indicative Theme	**Activity**	**Environment Result**	**Environment Performance in Context**	**Priority**
• Environment related products, processes and services ♦ Use of ICT ♦ Resource management technology ♦ Pollution control technology	No. of business advisory visits / schemes	No. of SMEs involved by sub-sector: products / processes/ services	Change In balance of sectors	1/4/5
♦ Environment as a key part of business management systems	No. of courses / student places	No. of students / qualifying No. of EMAS /ISO schemes		1/3
♦ Whole life-cycle analysis	No. of advisory visits / schemes	No. of companies involved		1

OBJECTIVE -- TO INCREASE THE AWARENESS OF THE RESIDENTS, BUSINESSES AND VISITORS OF THE VALUE AND IMPORTANCE OF THE ENVIRONMENT				
Indicative Theme	**Activity**	**Environment Result**	**Environment Performance in Context**	**Priority**
Residents / Businesses / Visitors	Examples of good practice across the Programme			1/2/3/ 4/5
Business	No. of sector strategies / No. of businesses involved	Range of sector strategies	% company involvement	
	No. of award schemes / No. of businesses involved	Range of award schemes	% company involvement	
	No of schemes providing environment data for businesses	Range of data available	% company involvement	
	No. env. skills courses / Nos. involved	Range of env. skills courses	% company involvement	
Visitors	No of interpretation schemes	Range & Distribution of facilities / satisfaction		

OBJECTIVE -- TO ACTIVELY PROMOTE ENVIRONMENTAL POLICIES IN ALL ASPECTS OF PROGRAMME MANAGEMENT AND DELIVERY				
Indicative Theme	**Activity**	**Environment Result**	**Environment Performance in Context**	**Priority**
Each priority will use these objectives within the context of the activities likely to be funded. This will involve a range of actions, primarily related to how project sponsors plan, implement and monitor their activities.	Appraisal of environmental issues and opportunities at the project development stage	Report on active steps taken to achieve the environmental objectives at the application stage	Monitoring and reporting of progress towards realisation of targets.	1/2/3/ 4/5

References:

ECDG 16 “The New Programming Period 2000-2006: methodological working papers. No 3 Indicators for Monitoring & Evaluation: An indicative Methodology” (1999)

ECDG 16 “Environment and Sustainable Development A Guide for the Ex-ante Evaluation of the Environmental Impact of regional Development Programmes” (May 1999)