OUR ENVIRONMENT, OUR FUTURE

THE REGIONAL ENVIRONMENT STRATEGY FOR THE EAST OF ENGLAND

Produced by a joint working group representing

The East of England Regional Assembly

and

The East of England Environment Forum

JULY 2003

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Further Information

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FOREWORD

This first Environment Strategy for the East of England region catalogues and celebrates the many diverse environmental assets which will have a crucial bearing on the continued economic and social development of the Region.

This Strategy will complement the other regional strategies within the Regional Assembly's family of 'Integrated Regional Strategies'. It deliberately makes key linkages between the environmental assets of the region, and economic development and social inclusion.

The delivery of the Strategy will be the responsibility of Government, local authorities and other public and private sector bodies, and the voluntary sector. Crucially, everyone who lives and works in the East of England and values the region as a diverse natural and built landscape, is an important stakeholder.

The very act of producing the Strategy has raised many issues, challenges and missing linkages. We hope above all that the Strategy will assist our regional partners in focussing environmental consciousness at the forefront of other strands of public policy making. It is intended that future annual monitoring of the Strategy will measure progress in delivery against the many action points it sets out, and will provide an all important contextual background against which individual local and regional decisions will be made.

Above all, the many organisations which have contributed to the production of this Strategy, (whose assistance we gratefully acknowledge), hope that its publication will encourage widespread public debate. 'Our Environment' and the quality of life we value so much in our region is truly 'Our Future.'

John Kent
Chair
East of England Regional Assembly

Simon Garnier
Chair
East of England Environment Forum

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1 INTRODUCTION

This Regional Environment Strategy has at its heart a vision of a prosperous and socially inclusive East of England that recognises the value of our environment as an integral part of the region's current and future sustainable development. The Strategy sets out an ambitious agenda for celebrating, protecting and enhancing our natural, historic and built environment. It highlights the importance of the environment to the broader improvement of quality of life for everyone in the region. In short, we want the East of England to be known for the quality of its environment, and the quality of our environmental management and stewardship, as part of the region's progress towards improvements in prosperity and quality of life for all.

This document sets out the first ever Environment Strategy that covers the whole of the East of England. It is one of a series of strategies that form part of an overall Integrated Strategy for the region. As such it will have an influential role in deciding how the East of England will move towards a more sustainable future.

1.1 WHY IS THE ENVIRONMENT IMPORTANT?

All life is ultimately dependent upon the quality of the environment. Without clean air, water and soils we would not survive. But the environment is valuable for much more than just supporting life. It comprises all our surroundings – our landscapes, towns and villages, individual buildings, and historic features, as well as wildlife, and natural resources. How they relate to one another determines the very character of the places where we live.

The environment is a fundamental influence on our quality of life. It provides inspiration and, used wisely, it is a source of wealth. The environment is worth protecting for its own sake, as well as for the benefits it brings to individuals, communities, institutions and business. It:

- Helps to define regional identity and distinctiveness.
- Offers access to green space, and contact with nature and history, providing people with a variety of recreational and health benefits.
- Provides environmental resources including minerals, water, energy, and soils, directly contributing to the region's economy.
- Creates the conditions needed to attract inward investment, and retain those businesses that already exist in the region.
- Acts as a focus for regeneration through the repair and conservation of the built environment.

For these reasons, a high quality environment is crucial for our well-being. This also means that we have a shared responsibility for maintaining and enhancing the environment of the East of England, both now and for future generations.

But the importance of protecting and enhancing the environment is only beginning to be understood. The Government recognised this when it published its strategy for sustainable development, *'A better quality of life'*:

> *"in the past success has been measured by economic growth alone….we have failed to see how our economy, our environment and our society are all one."*

This Environment Strategy for the East of England sets an agenda for ensuring that the environmental part of this equation is given due weight in decision making, in line with the fundamental principle of sustainability, which is to:

> *"meet the needs of the present without compromising the ability of future generations to meet their own needs" (Our Common Future' – The Brundtland Report).*

1.2 PURPOSE OF THE ENVIRONMENT STRATEGY

The East of England Regional Assembly believes that the key to sustainable development of the region is to integrate the delivery of economic development, social progress and environmental quality. It seeks to achieve this through a series of regional strategies, which together form an Integrated Regional Strategy, whose common reference point is provided by the East of England's Regional Sustainable Development Framework (more information on the other regional strategies is given in **Appendix 3**).

Within this context, the Environment Strategy clearly articulates the importance of conserving and enhancing the environment of the East of England, in order to improve quality of life for all.

The main purpose of the Environment Strategy is:

To raise awareness of the environment among key regional stakeholders, and to inform and advise other regional strategies to ensure that environmental objectives are integrated with social and economic issues.

It comprises:

- A summary of the **current state** of the environment of the East of England - its landscapes and its nature, its historic and built assets, and its natural resources (Chapters 2, 3 and 4).
- A description of the main **environmental challenges** facing the region, and a series of **aims** for responding to these challenges (Chapter 5).
- A number of key **actions** that will need to be undertaken in order to meet the aims of the Strategy, and indicators for measuring success (Chapter 6).

The timescale covered by the Strategy is until 2021, in accordance with the timescale of other regional strategies, such as regional planning guidance.

2 THE LANDSCAPE AND NATURAL ENVIRONMENT

The East of England has a rich and diverse natural environment containing some of the UK's rarest habitats and species. A wide variety of landscapes characterise the region, ranging from low-lying coastlines to large-scale arable farmland, and from extensive lowland heath to intimate rolling landscapes of mixed woodland and hedgerows.

Landscapes such as the Broads, Breckland, the Chilterns and the coast are outstanding in terms of their natural beauty and biodiversity. The coastal and wetland habitats are of particular importance, with many covered by European and international designations. The Broads are one of Europe's most important wetlands and as such have earned the status of National Park.

2.1 NATURAL AND MAN-MADE LANDSCAPES

Introduction

The landscape of the East of England reflects its underlying geology and soils, and the way they have been influenced by ice, water, vegetation and human activity. It is in a constant state of flux and is highly dynamic. The landscape has been shaped by man over centuries, meaning that very little of what is seen today is truly natural.

Key Assets

The geology of the East of England is characterised by a predominance of superficial deposits rather than exposures of hard rock. The geology and earth heritage of the region continues to be altered by both natural processes and human activity. Sand, gravel, chalk and clay extraction is an important industry.

The Fens and Wash – Scouring during glaciation produced a basin comprised of Jurassic clays, thick deposits of Quaternary sands, gravels and clays, and accumulations of peat.

North Norfolk – Formed of mudstones, sandstones and chalk, the geology of this area is one of the most complete sequences of late Jurassic to late Cretaceous rocks, overlain in parts by fossil rich Pleistocene deposits.

Coastal Crag – The Suffolk Coast and the coastline between Sheringham and Lowestoft are formed of Crag, being muddy and sandy sediments derived from the North Sea and deposited during the last glaciation.

West of the Region – Dominated by a combination of Jurassic clays and limestone, Cretaceous chalk, and vast quantities of sand, gravels and clays, bisected by the Bedfordshire Greensand Ridge and the Yardely-Whittlewood Ridge.

London Basin - The south east of England is dominated by the London Basin, which extends into much of the southern part of the East of England. It contains extensive sediments of clay and river deposits.

Chalklands – The London Basin is fringed with resistant chalk in the form of ridges such as the Chilterns.

The East of England comprises the following broad landscape types:

Lowland Wetlands – Generally large, flat, open landscapes predominantly drained for agriculture, interspersed by drains and ditches with sparse settlements and intensive agricultural land uses, also embracing important tidal salt marshes, mudflats, reedbeds, wet woodland, and grazing marshes of the coast.

The Nene Washes are some of the most dramatic of the lowland wetlands that characterise much of the coastal region of the East of England. Low population densities, and the flat, large scale, open landscapes provide sweeping views and skies.

© English Nature

- **Claylands –** A clay plateau of generally open, undulating, landscape that is mainly arable, interrupted by numerous dispersed settlements and river valleys. Hedgerows and hedgerow trees are significant giving a wooded appearance, although woodland itself has become fragmented by historic agricultural practices. It has a high density of historic buildings, churches and greens.

The North Essex Claylands include some of the region's most ancient countryside. Many historic settlements can be found in the rolling patchwork of fields, which are bounded by often significantly wooded hedgerows.

© Countryside Agency/John Tyler

- **Rolling/Free-Draining –** Predominantly arable farming based on mainly sand and gravel soils, with a patchwork of fields, lanes and villages, characterised by the frequency and prominence of churches and strong local building styles.

- **Rolling Heath/Moor –** A largely rolling arable and grassland landscape with widely spaced but compact settlements, with remnants of heath and belts of mixed woodland and extensive conifer plantations.

- **Chalklands –** An open landscape of variable topography, which although mostly arable, also contains remnant chalk grassland. Distinctive belts and large areas of beech woodland, variable field sizes, ancient lanes, tracks and linear earthworks, and scattered nucleated settlements, are characteristic.

These landscape types give rise to the variety and distinctiveness of the region's landscape character and to defining its sense of place. The region comprises 22 broad character areas.

© Countryside Agency

Some landscapes in the region are designated as being nationally important. These include the Norfolk and Suffolk Broads (National Park), and the Norfolk Coast, Suffolk Coasts & Heaths, Dedham Vale, and the Chilterns (Areas of Outstanding Natural Beauty). Many other landscapes are designated as being locally important.

Important archaeological, fossil, and biological remains are found in the East of England's rocks and soils that give indications of past climates and human activity. The most recent geological deposits, spanning the last 2 million years, include a record of alternate glaciations and warm phases. The UK names for these are all taken from the East of England where the phases were first identified. Evidence of the earliest inhabitants goes back some 500,000 years. The most significant recent find combined remains of woolly mammoths together with hand axes of a type produced by Neanderthal man.

Assessment of the Current State

Whilst the landscape character of the region is still apparent there has been a steady decline in distinctiveness both within and between character areas. This has resulted from changes to agricultural practices, impact of built development, roads and service infrastructure, and other human activity, such as recreation. Overall this has led to:

- An erosion of local distinctiveness between areas of different landscape character.

- Reduction in the quality of many landscapes, particularly through decline and loss of features.

- Diminishing of 'scenic beauty' of highly valued landscapes, particularly through the introduction of incongruous 20th century elements.

- Loss of tranquillity and landscapes that are genuinely 'wild and remote'.

- Breakdown in historical continuity of landscape evolution.

2.2 BIODIVERSITY

Introduction

Biodiversity encompasses all living organisms and the collections of species that form different natural habitats. The UK Biodiversity Action Plan proposes ambitious targets to create new wildlife habitats and restore species populations, and there is huge potential for the East of England to achieve this.

Key Assets

The East of England contains 567 Sites of Special Scientific Interest (SSSI), covering 6.6% of the land area. Many of these are also covered by European and international designations in recognition of their global importance. Biodiversity is not confined to special places and protected sites, but can be found in the gardens and parks of the region's urban areas, in the woodlands and fields of the countryside, and marshes and dunes of the coast. The more significant elements of the biodiversity of the East of England can be grouped into the following broad categories:

- **Arable Farmland, Grassland and Heathland** – Approximately 72% of agricultural land in the region is under cultivation, compared to 29% nationally. Intensification of agriculture in recent years has resulted in farmland habitats having a lower capacity to sustain wildlife. Many species still occur but at greatly reduced levels e.g. cornflower, shepherds needle and birds including the corn bunting. The region supports 23% of England's resource of lowland dry acidic grassland. The Chilterns support important chalk grasslands. Wet grassland is a very prominent feature, with extensive coastal grazing marshes. The washlands of the Nene,

Ouse and Cam rivers in the Fens represent some of the largest surviving remnants of fenland habitats. Breckland has an outstanding mix of grassland and dry heathland vegetation and is the only significant area in England of inland dunes, which support rare lichen-rich grassland and 65% of the UK's stone curlew population. The East of England supports 15% of England's lowland heathland.

The field edges of Cherry Hill and The Gallops SSSI in Sufflok are cultivated every September to allow the seed of rare arable wild flowers to germinate, grow throughout autumn and winter, and flower in March and April. Some of Britain's rarest plants grow here, including Breckland Speedwell and Spring Speedwell.

© English Nature/Peter Wakely

- **Freshwater -** Despite the East of England being the driest part of the country, it is the richest region in the UK for wetland wildlife. The Broads is one of Britain's most extensive wetlands and provides a habitat for rare plants and dragonflies. Freshwater habitats within the region are very important for wintering wildfowl, and the reservoirs and watercourses support some important fisheries.

- **Bog, Fen and Swamp -** Many invertebrate populations and populations of rare birds, such as bittern, depend upon the region's wetlands. 80% of England's resource of lowland fen occurs in the East of England. Here a mosaic of vegetation types includes the largest expanse of lime-rich fens. Other internationally important fens occur in the heads of valleys, fed by groundwater springs. A rich mix of other habitats are found in the region, including swamp, reedbeds, and carr woodland. The region supports more than half of England's reedbed resource, with the largest occurring within the Broads and along the Suffolk coast.

The Fens provide an important habitat for a wide range of species. Although dominated by sedges and rushes, most fens have a rich flora that includes numerous rare and scarce plants, such as the Fen Violet.

© English Nature/Peter Wakely

- **Woodlands –** Woodlands comprise the second largest land-use in the East of England, covering 7.3% of the land area. The region contains around 13% of the broad-leaved woodland in England, with the south being one of the most ancient wooded areas in the country, dominated by beech, oak and hornbeam. There are many areas where trees are managed by pollarding, such as Epping Forest and Hatfield Forest, which can support rare lichens and moss as well as dead wood beetles and roosts for bats and birds. Ancient woodlands in the region are rich in uncommon plants such as oxlip and rare orchids. There are 13.6 million trees in the countryside not in woodland. The large pine plantations around Thetford and on the Suffolk Coast are internationally important for woodlark and nightjar populations.

- **Maritime –** Much of the extensive and varied coast of the region is internationally designated. This includes important dune systems, most notably in Norfolk, shingle occurring at numerous locations along the Norfolk and Suffolk coast (representing 20% of England's resource), and many saline lagoons. The region supports extensive areas of saltmarsh, which reflects the presence of large estuaries and wide intertidal areas across the coast. These habitats are particularly important for birds, acting as crucial staging posts for migrating birds during spring and autumn, and feeding sites for large numbers of internationally important waders and wildfowl throughout the winter. The intertidal flats of the Wash and North Norfolk coast support the largest population of common seals in England. The region has nationally important shell-fisheries, such as the Native Oyster layings in South Essex. Offshore, the seabed is largely composed of mixed sand and gravel sediments. In some areas this is of national and international importance, and supports key groups of species including marine fish, dolphins and whales.

- **Urban Environments –** Society often under-estimates the value of biodiversity in urban areas. Diverse habitats can be found throughout the cities, towns and villages of the region, and they are crucial in giving large numbers of people an everyday experience of nature. Natural green spaces and features, such as commons, parks and gardens, and street trees, create citywide mosaics that are important to people's quality of life. They also act as vital refuges to the plants and animals that live in towns and cities such as hedgehogs and amphibians. The built environment can provide crucial habitats for species such as house martins, swifts and bats. Brownfield sites in urban areas, such as disused quarries, railway lines, and old industrial sites, can often develop high biodiversity value. These can be of particular importance for scarce invertebrates and support significant resources of scrub and rough grassland, otherwise now quite rare.

Private gardens are important habitats for wildlife. A small pond, left relatively undisturbed, can quickly attract a wide range of wildlife, including amphibians such as the common frog.

© English Nature/Chris Gibson

Assessment of the Current State

The East of England has seen a dramatic reduction in habitats in recent years, which has led to a decline in the number and variety of species in the region. Many wildlife rich sites, such as heathlands, are now fragmented and isolated, leaving them vulnerable to damage e.g. by fire or pollution. All of the region's rare habitats are rarer than they were 50 years ago, some dramatically so. Nonetheless, several habitats in the East of England are internationally important, particularly fens, saltmarsh, coastal lagoons and heathland.

Depletion of habitats and species has been well documented, for example:

- Suffolk sandlings heaths have declined by 90% since 1783.

- Essex coastal grazing marshes have declined by 64% since the 1930s.
- 97% of wetlands in the Fens have disappeared since the 1650s, with 40% lost since 1930.
- 46% of saltmarshes on the Stour and Orwell estuaries has been lost since 1975.
- Over a hundred species, such as the Norfolk damselfly, have disappeared from the region in the last century.
- Whilst woodland cover has increased by 25% since 1980, this varies across the region, with Cambridgeshire still being the least wooded county in Britain.
- The quality of habitats is declining due to pollution, disturbance and neglect.
- Farmland wildlife has suffered as agricultural production has increased dramatically.
- In urban areas remnants of countryside still exist, but they too are fragmented and altered.
- Brownfield sites in urban areas that have developed nature conservation interest continue to be developed for other uses.

3 THE HISTORIC AND BUILT ENVIRONMENT

3.1 THE HISTORIC ENVIRONMENT

Introduction

The historic environment embraces all those aspects of the environment that reflect the shaping hand of past human activity. History can be traced throughout our modern, everyday surroundings through the location and form of our settlements, historic buildings, industrial sites, field patterns, woodlands, historic parks and gardens, and archaeological sites. Together they play a critical role in defining local identity and sense of place.

Key Assets

The finest historic assets are recognised as needing special protection. These include 57,643 listed buildings, 211 registered parks and gardens, a registered battlefield at Maldon, approximately 1,600 scheduled monuments and 1,100 areas of special architectural or historic interest, designated as Conservation Areas. It is difficult to quantify the archaeological resource, but there are approximately 150,000 archaeological sites currently recorded on County Sites and Monuments Records.

Archaeological and Below Ground Assets

- **Prehistoric Sites -** The diversity of regional landscapes and natural resources underlie the development of human communities. Evidence exists from the earliest hunter-gatherers, whose tools were found at Clacton and Hoxne, to the later prehistoric farming communities, who may be glimpsed through their flint mines at Grimes Graves, and ritual sites at Holme and Flag Fen. Traces of their settlements, cemeteries and defences survive below the ground, revealed as cropmarks by aerial photography.

The Bronze Age timber circle at Holme next the Sea, Norfolk, comprised a sub-circular ring of 55 oak timbers surrounding a large inverted oak tree. Originally located on salt marsh, it was vulnerable to a dynamic and changing coastline, which prompted its excavation. The site has provided important evidence of the earliest use of metal tools.

- **The Earliest Towns -** More tangible sites and monuments survive from the Roman, early and later medieval and modern periods, encompassing a wide range of buildings and structures in addition to their buried artefacts. This is still evident in the great Roman towns at Colchester and St Albans, with their network of small towns and local markets, as well as the internationally significant Saxon and medieval ports and towns of the eastern seaboard, such as Ipswich, Norwich and King's Lynn.
- **Defence and Fortifications -** The length of coastline and the importance of its estuaries, together with the agricultural wealth of estates and towns inland, give the region a legacy of impressive historic fortifications ranging from private castles, such as Hedingham, forts such as Tilbury, Landguard and the Martello chain, up to Second World War and Cold War defence sites encircling London and protecting the east coast.

Originally a Norman keep-and-bailey castle, the surviving keep at Orford was built by Henry II in the 12th century as a coastal defence. The comprehensive building records are the earliest in the country. The top of the keep affords splendid views of Orford Ness and the surrounding countryside.

© English Heritage

- **Historic Landscapes** – The grain of history is still evident in many of the building blocks of the landscape. Late prehistoric territorial boundaries are represented by earthworks at Wheathampstead and Colchester, and later in the Devil's Dyke, in Cambridgeshire. The formation of the royal forests and great medieval parks, are traceable by their park banks and ancient woodland, such as at Hatfield Forest and Ongar Great Park. Also important are the 18th century landscaped parks, exemplified by Luton Hoo. In contrast, at a local level, deep green lanes, which follow ancient routes through the agricultural landscape, and the patterns of the fields, represent the ever-changing agricultural regime upon which regional prosperity was based.

Buildings and Settlements

- **Historic Cities** - Cambridge and Norwich are historic cities of international significance. Cambridge is famous for its university, with some of its buildings, such as King's College chapel, being of world renown. Norwich has the largest surviving medieval core of any city in Britain.

- **Religious Buildings** - In the East of England parish churches are a major architectural feature, with 25% of the nation's Grade I churches lying within the region. They include small Saxon churches, such as Bradwell-on-Sea, as well as the great medieval churches of Suffolk. The region's eight cathedrals are key to regional identity and sense of place, as are the haunting remains of the great monastic foundations such as Walsingham and Bury St Edmunds. .

The views of Ely Cathedral from across the Fens evoke one of the strongest images of the East of England.

©Countryside Agency/ David Burton

- **Market Towns, Villages and Coastal Settlements** – Historically, the region was dominated by an agricultural economy centred on market towns, the visual legacy being the wealth of timber-framed houses, shire halls, and corn exchanges. The booming trade with the continent, via the east coast ports, is reflected in the magnificent Customs House at King's Lynn, and in the architectural legacy of Flemish gables. Victorian seaside architecture characterises such resorts as Cromer and Southend-on-Sea.

- **Rural Estates and Buildings** – Many fine country houses and parklands can be found in the region. They range from those created on former monastic remains, as at Audley End, to the Georgian masterpiece of Holkham and Heveningham, and the Victorian gothic of Knebworth in Hertfordshire. The importance of agriculture is further exemplified in historic barns, such as the medieval granary barns of Cressing Temple, and the 18th century model farms of Norfolk, whilst Willington Dovecote and Stables in Bedfordshire demonstrate the sophistication of some manorial complexes.

Wrest Park in Bedfordshire includes one of the most important formal gardens in the region. Laid out originally by Henry, Duke of Kent, in the early 18th century, the gardens were modified by Capability Brown later in the same century, and again by Earl de Grey in the mid 19th century. They epitomise two centuries of garden history.

© English Heritage

- **Industry** – There are many industrial buildings that are characteristic of the region. Historic industries are represented by the wind and watermills, maltings and breweries, weaving lofts and textile mills. The hat factories of Luton and fish curing works in Great Yarmouth and Lowestoft are part of the towns' identities. Pre-dating the supremacy of the railways are the regional canals and their associated buildings.

Assessment of the Current State

While much has been achieved through grant aid and other initiatives there are, nevertheless, significant problems. The historic environment has undergone constant change over many centuries, but the rate of change in the 20th century was unprecedented:

- The Council for British Archaeology identified more towns in the East of England than any other region whose historic importance requires special care in their planning. The character of these towns is under assault from roads, town centre redevelopment, out-of-town stores and warehousing, and peripheral housing expansion.

- Ancient monuments in the region have been degraded by a combination of modern farming practices, mineral extraction, and development. In the East of England, 15% of known monuments were destroyed between 1945 and 1995.

- An estimated 1,000, or 2%, of the region's listed buildings have been identified by English Heritage as being 'at risk of decay'. One third of entries on county and English Heritage Buildings at Risk registers are the result of changing agricultural practices. 17% are country houses, typically left empty and degrading for many generations. The general decline in religious observance has resulted in redundant churches, which make up 12% of entries. Historic buildings in market towns also contribute 12% of entries e.g. town houses, commercial buildings, schools and pubs.

The Historic and Built Environment

- Changes in technology have made a range of buildings redundant, such as mills, pumping stations, maltings and other industrial buildings. Rapid transport developments have also led to redundant structures including railway stations, bridges and a lighthouse.

St Neots is a market town whose economic base declined over the years and has been replaced by new employers based on the town's periphery. English Heritage and Huntingdonshire District Council have been working since 1996 on schemes to regenerate the town centre and lever in private funding. The grade II listed Paines Brewery was in poor repair and on the Buildings at Risk register. It has now been sensitively restored and converted for residential and retail use, creating 25 dwelling units and 13 new jobs.

© English Heritage

3.2 LOCAL DISTINCTIVENESS AND QUALITY IN THE BUILT ENVIRONMENT

Introduction

Historically, locally available building materials defined the scale, size and form of most of the traditional buildings that characterise the towns and villages of the East of England. Traditional building skills were passed down through generations. Craftsmen educated in the local building tradition had an innate understanding of the possibilities of local materials, and an awareness of local details that distinguish buildings in one part of the region from another.

These skills have largely been lost with the advent of mass produced building materials and the loss of the craft skills base. This has resulted in contemporary construction bearing little or no relationship to the environment in which it is located, and an overall watering down and potentially complete loss of regional distinctiveness.

Key Assets

Materials and Craftsmanship

Before railways, buildings used to be made from locally available stone and other materials, which in turn helped to define the building method used. Distinctive regional architectural characteristics developed based on differing local geology and natural materials. This is particularly visible in the East of England, where a wide variety of different bedrock exists.

- **Chalk** – Found in the Chilterns and the west of the region, and used as building stone and for lime in plasters and mortars.

- **Ironbound Sandstone** - Carstone in Norfolk gives a distinct and rich colour to buildings in a defined area. Pebbles of carstone were sometimes pressed into mortar joints, producing distinctive 'galleting'. A **limestone** belt adjoining the region produces Barnack stone, characteristic of parts of Cambridgeshire and churches throughout the region.

- **Flint** - Very characteristic of Norfolk and Suffolk and used in many decorative ways, as well as for general walling.

- **Clays** - Produced unique brick types, due to the variety of clays and firing methods. In Bedfordshire, bricks have been produced since Roman times until the present day. Clay pantiles are especially characteristic of Norfolk and Suffolk and were given a blue/black glaze for prestige buildings. Plain tiles are characteristic elsewhere.

- **Oak** - Abundant in Hertfordshire, Essex and Suffolk where high standards of carpentry are evident. In Essex the majority of pre-industrial buildings in rural areas are timber framed.

- **Thatch** – Long straw thatch, from old varieties of wheat, is the tradition in the south of the region. In the north, water reed taken from the Fens, Broads and marshes is used for thatching, using different techniques to give very distinct appearances.

Reedbeds, such as these at Woodwalton Fen, continue to be a source of reed for thatching historic buildings. They also provide an important habitat for wildlife.

© English Nature

The building industry underwent a fundamental change when easy transportation, using railways, was made possible in the 19th century. From this time, building styles and methods of construction were no longer as closely related to the local area. The brick industry in Bedfordshire expanded greatly and sent bricks to the whole country.

Townscape and High Quality Design

The built environment is part of our everyday surroundings and well-designed urban environments can make a real difference to the quality of our lives.

The Spirella building in Letchworth is an excellent example of how a key historic building, which became redundant from its original use, can be turned into an economic asset. From semi-derelict corset factory to fully let, leading edge office space, the grade II* listed building was transformed through an £11m regeneration project by Letchworth Garden City Heritage Foundation. Voted 'property innovation of the year' by Property Week magazine, Spirella is today home to some 25 thriving businesses, which, between them, employ some 400 staff within two minutes walk of town centre shops and services.

© BJP Photograghy Ltd

Fundamental elements of the townscapes and the built environment in the East of England are:

- **Urban Design** - The region boasts some very attractive urban environments, achieved through successful urban structure together with individual building design. The East of England has been at the forefront of new town development including the early 20th century garden city at Letchworth and the post war modernist development of Harlow New Town.

- **Open Spaces** – Attractive urban areas need green landscapes and open spaces where people can gather. These range from market places, churchyards and village greens, to larger urban parks. In many instances, such as The Backs in Cambridge, these spaces are crucial in defining the identity of a settlement.

- **New Landmark Buildings** - Examples such as Foster's Stansted Airport Terminal, the Willis Faber & Dumas Building in Ipswich, and the Millennium Library in Norwich have the power to put the region on the map.

- **Everyday Building Design** – Housing is particularly influential in affecting the character of settlements. Much post-war development has been unexceptional but examples of good design can be found across the region, for example at Loddon in Norfolk, and Rushmere in Suffolk.

- **Public Buildings** - The library in Halesworth and the new council offices in King's Lynn have been recognised for their quality. The Lowestoft Waste Water Treatment Centre and the Learning Resource Centre at the University of Hertfordshire, Hatfield, provide examples of recent good modern architecture.

- **Enhancement Schemes** - Quality in the public realm is critical to the attractiveness of towns and cities. Enhancement schemes, such as the removal of excessive street furniture and re-paving at South Quay in Great Yarmouth, have begun to offer real improvement. Traffic management has helped make the historic centre of Cambridge more tranquil and friendly to the pedestrian.

Whilst much new built development in recent times has been of undistinguished quality, contributing little to local character and distinctiveness, there are some good examples in the region of thoughtful and high quality design, such as the new library at Halesworth. Designed by Suffolk County Council Architects Dept, it won a Civic Trust Award Commendation in 1999.

© English Heritage

Assessment of the Current State

The building industry was transformed in the 20th century, introducing new technologies and becoming more mechanised. The result has been:

- Loss of traditional craft skills.
- Limited sources of locally distinctive materials.
- Inappropriate and sometimes damaging repair methods.

There are many examples of good modern design in the region to celebrate, but these tend to be isolated. New buildings are often unsympathetic to the local urban environment. Creating a 'sense of place' in the new settlements of the region has proved difficult.

The Historic and Built Environment

Widespread dissatisfaction with the quality of urban developments in recent years led to the establishment of the Urban Task Force and subsequent Urban White Paper. The East of England suffers from urban problems despite there being no large cities:

- Development that takes little account of its context.
- Standardised, characterless new housing, built to low densities.
- Poor quality design in many commercial and public buildings.
- Bland large-scale developments, lacking urban design quality.
- Degraded, unmanaged urban parks.
- Questionable pedestrianisation and highway works.

4 NATURAL RESOURCES

The natural resources of the East of England comprise its water, air, and land. These are essential not only for the functioning of society, but also for maintaining the health of the wider environment, such as its biodiversity.

4.1 WATER

Introduction

Water is essential for the natural environment and fundamental to the social and economic viability of the region. It is therefore vital to ensure the sustainable use of this finite and precious resource. Water in the sea, rivers, and wetlands supports plant and animal life and plays a major role in defining the character of the region's landscape. Wetlands hold significant importance as they contain unique archaeological deposits. The water environment provides for many forms of recreation that contribute to quality of life, such as angling, watersports, boating and sailing, and tourism on the coast.

It is important to identify how much water is required to protect environmental assets whilst ensuring that the region meets public supply needs and continues to thrive as a competitive economy. As the driest region in the country, supporting one of the fastest growing populations, with large areas of flat, low-lying land at risk of flooding, the region is presented with a number of key sustainability issues relating to water.

Key Resources

- **Groundwater –** An important resource for direct abstraction for local use by farmers and industry, as well as for public supply, and for supporting springs, wetlands and providing baseflow to rivers.

The Environment Agency works to establish the correct balance between abstraction and the water environment. The 1990s droughts were the worst experienced and put this 'balance' to the test that resulted in pressure on Fowlmere Watercress Beds SSSI in Cambridgeshire. The Environment Agency pumped water to maintain levels and this was successful in safeguarding the habitat. Cambridge Water Company is investigating the impact of their borehole abstractions and the options to protect the site.
The Environment Agency is also planning to review the water balance calculations.

- **Reservoirs –** The region contains several large public supply reservoirs and there are also many smaller farm storage reservoirs throughout the region that can be refilled during the winter months to provide secure summer irrigation water supplies.

- **Surface Water –** The principal rivers in the region are the Rivers Ouse, Wensum, Gipping, Stour, Blackwater, Roding and sub-catchments of the Upper Lee and Colne.

The River Wensum in Norfolk is characteristic of the low-lying rivers to be found in the East of England. The whole river has now been designated as an SSSI for its biodiversity interest.

- **Waste Disposal –** The water environment is a resource for waste disposal within strict regulatory limits. This disposal comes from both point source and diffuse source discharges.

- **Renewable Energy –** The sea along our coastline is a potential renewable energy source in the form of wave and tidal power.

Assessment of the Current State

- **Abstraction –** Over 2,000 million litres of water per day are abstracted, either for public supplies or directly for industry. Water demand is increasing for the region as a whole, and average household consumption is also increasing.

- **Groundwater –** Around two-thirds of the region is underlain by useable aquifers, notably chalk. The majority of the region's groundwater resources are broadly in balance. No further resources are available but existing abstractions are not known to cause widespread environmental problems. There are some limited areas where further resources are available and areas where the combination of surface and groundwater abstraction exceeds sustainable limits.

- **Surface Water –** Summer surface water is fully committed to meeting existing demand with no significant further resources reliably available. In most rivers existing abstraction does not cause widespread environmental problems. There are, however, areas where the combination of licensed surface and groundwater abstractions does exceed the assessed limit. For most of the region there is winter water available, at least in principle, subject to local appraisal.

- **Large Reservoirs –** The main strategic reservoirs serving the region are at Grafham Water, Ardleigh, Abberton, Hanningfield and Alton.

- **Transfer Scheme –** There is an extensive network of transfers of varying size and type in the region, which are used to transport water resources to where they are most needed. These include Essex & Suffolk Water's pumped storage scheme based on Hanningfield and Abberton reservoirs, groundwater to river support schemes, which are operated to maintain river flows during dry periods (e.g. for the Great Ouse and the Stour), and bulk transfers between companies (e.g. Anglian Water's Ruthamford system, based on Rutland, Grafham, and Pitsford reservoirs, which provides bulk supplies to Three Valleys Water and Severn Trent).

- **Water Quality –** A major clean-up of industrial and sewage discharges combined with tighter regulation and enforcement has led to an improvement in the quality of rivers over recent years. The latest data for 'classified' rivers in the region show that 93.9% are of good to fair chemical quality and 99.0% are of good to fair biological quality. The discharge of effluent into the region's coastal waters has also been reduced to an all time low, resulting in 100% compliance with the mandatory water quality standards of the Bathing Water Directive. There are a number of Eutrophic Sensitive Areas designated in the region.

- **Nitrate Vulnerable Zones (NVZ) –** Nitrates and phosphates from agricultural land can cause pollution and affect important wildlife sites. Where surface waters or groundwaters exceed, or are at risk of exceeding, the 50mg/l limit then an NVZ is designated. In an NVZ, farmers are required to follow measures designed to provide a general level of protection against nitrate pollution of surface waters and groundwater, including drinking water sources. 70% of the region is now designated an NVZ.

- **Renewable Energy –** There are no wave power centres in the East of England but due to the region's long coastline it provides a potential renewable energy source which could lead to new technology and industry being developed.

4.2 AIR AND CLIMATE

Introduction

The air around us is a common resource that can be affected profoundly by human activity. Protecting this resource from pollution is essential to maintaining human health, biodiversity and our quality of life. The major societal driving forces determining human emissions to the atmosphere are energy production and use, industrial activity, transport and urban development.

Air forms part of the atmosphere of the planet, which is essential in regulating the Earth's climate, and in protecting life from the harmful effects of radiation from the Sun's rays.

Key Resources

- **Life on Earth –** Clean air is fundamental to the existence of all plant and animal life on Earth. Air helps in the recycling of essential elements including water, carbon and nitrogen.

- **Waste Disposal –** We use the air for the disposal of our waste from two main sources, transport and industry, but we also use the air for dispersal of a range of other pollutants across the region and further afield. The main forms of regional air pollution are ground-level ozone, fine particles, acidification by sulphur and nitrogen and eutrophication by nitrogen.

One of the major sources of air pollution in the region is emissions from traffic. The number of vehicles on roads such as the M1 continue to grow year-on-year. Although improvements to technology have led to cleaner fuels and more efficient engines, pollution remains a problem.

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- **Waste Disposal to the Wider Atmosphere –** The major human effects on the global atmosphere are depletion of the stratospheric ozone layer, and the build-up of greenhouse gases which include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. Together these are believed to be contributing to climate change.

- **Renewable Energy –** The air offers renewable sources of energy in the form of wind power.

Assessment of the Current State

Air quality is generally good across the whole region. Levels of most pollutants are low:

- **Air Quality –** Four local authorities have declared Air Quality Management Areas across the region: St Edmundsbury for nitrogen dioxide from traffic; King's Lynn and West Norfolk for particles from around the quayside; Colchester for nitrogen dioxide from traffic; and Fenland for sulphur dioxide and particles.

- **Ground Level Ozone –** This can be an occasional problem in the summer, which will continue for some years. Ozone pollution is created when nitrogen oxides and hydrocarbons (commonly associated with the burning of fossil fuels) react with sunlight. This may lead to lung and respiratory disorders for people susceptible to such conditions.

- **Particles** - Levels of particulates can be a problem when polluted air is blown across the region, which can affect health through respiratory diseases such as asthma, and the fabric of historic buildings through soiling and acid deposition.

- **Nitrogen Dioxide –** This is the biggest contributor to air pollution and is produced from the burning of fossil fuel such as car emissions. The highest levels are recorded in built-up areas along roads.

- **Sulphur Dioxide** - Emissions are dominated by a few large sites and although none of these are located within the region, a number of smaller sources are present.

- **Ammonia –** The primary sources of ammonia are agricultural. The large number of pig and poultry farms and arable farming in the region are the main contributors resulting in high concentrations in some parts of the region.

- **Greenhouse Gas –** No consistent set of greenhouse gas emission estimates currently exists for the English regions due to the considerable problems with allocating some sources of emissions (particularly from energy generation), and the lack of availability of actual energy consumption data on a regional basis. Nonetheless, the East of England is likely to be a significant contributor of greenhouse gas emissions in common with most developed countries and regions.

- **Renewable Energy –** There is great potential for the production of energy from wind power along the region's coastal areas. Five of the eighteen offshore wind development consortia that have been given permission to proceed to the next stages of development are on the coastal area between the Humber and the Thames Estuary. The wind turbine at Swaffham can produce up to 1.5 megawatts of electricity, which on average is enough to provide electricity for around 3,000 people - one third of Swaffham's population - and will save the emission of over 3,000 tonnes of carbon dioxide, 37 tonnes of sulphur dioxide and 11 tonnes of nitrogen oxides.

Although free range pig farms have many advantages over intensively reared pigs, particularly for animal welfare, they are a significant source of ammonia pollution, and landscape impacts.

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4.3 LAND

Introduction

The land in the East of England has a diverse mix of geology and soils. Our economy, our homes, our food, and our essential services are all dependent on the use of land and the resources it contains. Most of our recreation is land based. The use of the land is essential in supporting biodiversity and shaping our landscapes. The conservation of the richness and variety of the geology and soils of the region is affected by how we use the land. Particular pressures arise from intensive agriculture and industrial processes, and from development as the region's towns and cities grow.

Key Resources

- **Development –** Land provides the basic resource upon which housing, infrastructure and industry is built.

- **Soils –** The combination of inorganic particles derived by weathering of rocks, and organic (largely vegetable) matter provides the essential ingredients of soil that together help to retain water, resist erosion and recycle important nutrients for growing crops and trees.

- **Minerals –** The land provides resources such as sand and gravel for use as aggregates in construction, and other materials such as chalk, and brick.

Mineral extraction can have a significant impact upon the landscape and on habitats. However, former quarries such as Warren Pit in Essex can develop considerable wildlife and amenity interest, particularly if sensitively restored.

© English Nature/Chris Gibson

- **Floodplains –** These are a natural defence against flooding.

- **Waste Disposal** – Mineral removal leaves the opportunity for waste to be disposed as landfill into the holes that remain after their removal, although this is no longer considered sustainable.

- **Renewable Energy –** The land surface has the potential for supplying renewable energy through the growth of energy crops and capturing solar energy, although the majority of energy produced by the region comes from offshore oil and gas.

Assessment of the Current State

- **Development -** There are no major urban conurbations in the region, which, historically, was not a centre for large-scale industrial development. Many of the towns and cities have attractive historic centres and are desirable places in which to live. There is great pressure for new development where towns are connected to national and regional transport networks. Whilst some of the major settlements have previously developed land and buildings (brownfield land) available for re-use, there is limited space to expand many of the other towns within their existing boundaries. This has led to pressure to build on greenfield sites and Green Belt. The average density of new housing in the region between 1997-2001 was 22 dwellings per hectare, the lowest nationally together with the Yorkshire and Humber region. In 2002, the region did not quite achieve the national target of 60% development on brownfield land.

- **Soil Quality –**The East of England has 58% of the country's Grade 1 and 2 land. However, some soils in the region have either too little or too much organic matter, which has resulted in a drop in soil quality.

- **Soil Erosion –** Parts of the region have light soils, for example the sands of the Brecks and the peats of the Fens, which make them susceptible to wind erosion. Some land use activities such as the region's large pig farming industry and cropping can also be a significant contributor to soil erosion. In addition, archaeological deposits below exposed soils in the Fens are at risk of damage from ploughing.

- **Contaminated Land** – There is no reliable figure of the extent of land affected by contamination, although estimates suggest there is more than 300,000 hectares. A new contaminated land regime has created an improved legislative mechanism to restore such land. All local authorities must now produce a strategy to identify and assess the contaminated land sites in their area, with a view to securing their remediation.

- **Minerals –** The most important mineral that occurs within the region, in terms of volume, is sand and gravel, much of which is used locally. Other minerals include limestone, clay for brick making, chalk for cement and agricultural uses, as well as other specialised minerals such as fullers earth and silica sand. Offshore dredging is a major source of aggregates, although these are often transported abroad.

- **Flooding** - Over 125,000 properties in the region are currently estimated to be at risk from sea and river flooding, affecting around 5% of the population. A projected growth of over 20,000 households per annum until 2016, coupled with the effects of climate change, could exert even greater pressure on flood risk areas.

- **Waste Disposal -** Data available from the Strategic Waste Management Assessment carried out by the Environment Agency shows that in the East of England in 1998/99, commercial and industrial waste 'arisings' totalled 6.1 million tonnes. In addition a further 7 million tonnes of construction and demolition waste were produced in the region. Municipal Solid Waste (MSW) collected by local authorities, or taken to their 'civic amenity sites' was 2.9 million tonnes, of which approximately 1.4 million tonnes was Biodegradable Municipal Waste (BMW). Large quantities of agricultural waste and significant amounts of hazardous and restricted wastes also required treatment or disposal. In 1998/99 the majority of waste produced in the region was deposited in landfill sites. In addition to the 5.4 million tonnes of municipal, commercial and industrial waste produced in the region and deposited in landfill sites, a further 3 million tonnes was brought into the region for disposal, mainly from the London area. Most of this also went to landfill, which is of limited capacity. Fly tipping, particularly of building waste from London, is increasingly affecting farmland and communities in the south of the region.

- **Renewable Energy –** Several contracts have been secured, or are being negotiated, by companies in the region to use locally grown energy crops to establish or supply fuel plants in the region and elsewhere.

During December 2002 and early January 2003 serious flooding affected the East of England following heavy rainfall. The main focus was the River Great Ouse where high levels and flows affected the entire extent of the river. December 2002 was a very wet month with double the long term average of rainfall being recorded across much of the region. Some areas had a fortnight's worth of rain in one day. It was estimated that just under 200 properties were flooded in the region, out of 180,000 at risk.

© Environment Agency

5 MEETING THE ENVIRONMENTAL CHALLENGE

The previous chapters show that the environment of the East of England is rich and diverse, but that its overall quality has been reducing over time. The environment is naturally dynamic, responding slowly to changes in the climate and natural processes such as erosion. However, over the last few thousand years, human activity has resulted in a much faster rate of change than has ever happened before. This has been particularly rapid over the last two hundred years. The nature of modern lifestyles has created a situation where natural processes struggle to keep up.

> *The principles of sustainable development require that we live within the capacity of natural systems to cope, and that we hand on our environmental heritage, whether natural or man-made, to future generations in at least as healthy a state as we found it.*

This puts enormous responsibility on us all to be very careful in the way that we treat and manage the environment. It also means that we all have to face up to some serious environmental challenges. This chapter sets out what these challenges are likely to be as we move towards the year 2021, drawing upon the assessment in the previous chapters.

Environmental Challenges Facing the East of England

- Delivering sustainable patterns and forms of development.
- Meeting the challenges and opportunities of climate change.
- Ensuring environmental sustainability in the economy.
- Enhancing environmental capital.
- Achieving sustainable lifestyles.

5.1 DELIVERING SUSTAINABLE PATTERNS AND FORMS OF DEVELOPMENT

Strategic Aims

SA1: Accommodate population and economic growth whilst protecting and enhancing the environment.

SA2: Reduce the need to travel and achieve a switch to more sustainable modes of transport.

SA3: Deliver sustainable design.

SA1: Accommodate Population and Economic Growth whilst Protecting and Enhancing the Environment

Key Issues

The East of England has one of the fastest growing populations and economies in the UK. Whilst there are no major urban conurbations, the region borders the vast metropolis of London, and rapidly expanding Milton Keynes. Many of the towns and

cities have attractive historic centres and a range of services and facilities that make them desirable places in which to live. Key issues include:

- Some brownfield sites exist, particularly in the larger settlements such as Ipswich and Norwich, and in regeneration areas such as the Thames Gateway. There is limited space to develop in many towns within their existing boundaries, although potential urban capacity has not been realised in all instances. But there is inevitable pressure to build on greenfield sites, especially close to economically dynamic towns and cities, such as Cambridge and settlements close to London.

There are significant opportunities to secure sustainable development in regeneration initiatives in the region. It is important to work in partnership to safeguard areas of high biodiversity value, including areas of brownfield land. In the Thames Gateway, birds such as the Black Redstart occur, plus a diverse assemblage of insects, including UK Biodiversity Action Plan species, such as the Shrill Carder Bee.

© English Nature/Mike Hammett

- Weakening links with agriculture and competition from large towns and cities and out-of-town shopping centres is eroding the traditional purpose of market towns. Some are becoming tourist centres whilst others have attracted new industries, especially where they are close to the major centres. Others have not been as successful in adapting to change. Similarly, traditional coastal resorts are struggling to cope with changes in tourism.

- London's influence is strong, particularly in the southern part of the region. The draft London Plan (2002) seeks to achieve a more sustainable city that will have less impact on its neighbours. But until substantial progress is made towards achieving this objective, the East of England will have to accommodate development that meets some of London's needs as well as its own. In Thames Gateway, one of three major growth areas proposed by Government that affect the region, the East of England is working closely with both London and the South East region in planning future major development. The other two growth areas, Milton Keynes–South Midlands, and the London–Stansted-Cambridge corridor, require similar co-ordination.

- The Regional Economic Strategy for the East of England sets a course for the economy of the region that is driven by growth. This presents a considerable challenge to ensure that it takes place in a form that is compatible with environmental objectives.

The assessment of the current state of the region's environment clearly shows that the pace and scale of growth has led to considerable erosion of the quality of the region's environment that is proving hard to halt:

- Housing development and infrastructure has affected the form and character of settlements and their landscape setting, and the wider countryside.

- Development of greenfield and some brownfield sites has led to fragmentation and loss of habitats and biodiversity.

- There has been a gradual erosion of the historic environment of the region, either through loss of features and assets, or through development damaging their setting and context.

- The environmental quality of town centres, in terms both of built fabric and vitality, has been eroded by some forms of development geared to the car.

- Considerable pressure is being placed on the natural resources of the region to support housing and economic growth, most notably on water resources.

- Development has interfered with natural processes, such as river catchments and drainage systems, resulting in an increased risk of flooding to people and property.

But one of the main reasons for the economic success of the region is its environment. People find the East of England an attractive place in which to live and work. Its natural and historic environment attracts investment, and can act as a catalyst for regeneration. It is important, therefore, that the environment is protected and enhanced for economic and social reasons, as well as for its own sake and its crucial role in supporting life. So we need to plan for more environmentally sustainable forms and patterns of development in the future.

Achieving the Aim

- Sustainable development is based on need, not unconstrained demand, so decisions should be made on the basis of a true and fair assessment of the contribution of development to all aspects of quality of life.

- Environmental objectives should be integrated in decision-making with, and given at least as much weight as, economic and social objectives.

- Development and economic activity should be within the capacity of the environment to accommodate it, and should make a positive contribution to strengthen the character and robustness of the environment.

- Development and economic activity should be within the capacity of the environment to accommodate it, and should make a positive contribution to strengthen the character and robustness of the environment.

- The scale, type and location of development and economic activity should support more sustainable living and urban renaissance, and not put an unsustainable strain on supporting natural resources (e.g. water resources, flood storage, air quality, land).

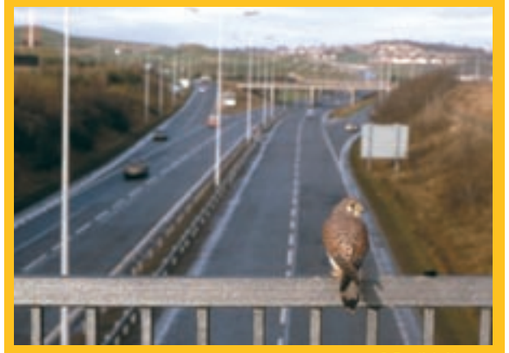
- Local people should be involved in understanding and valuing what it is that is important about their environment, so that this can be reflected in development decisions.

SA2: Reduce the Need to Travel and Achieve a Switch to More Sustainable Modes of Transport

Key Issues

Our quality of life depends upon effective transport for accessing goods, services, facilities, family and friends. This applies equally to people living in rural as well as urban areas. The East of England possesses many advantages in developing a sustainable transport system. Most travel is local, and the flat, dry nature of the region, together with the network of compact historic cities and market towns, provide the opportunity for using environmentally friendly modes of transport, in particular walking and cycling.

Wildlife is having to adapt to an increasingly urbanised region. Those that fail to do so risk extinction or reduced populations. Others have fared better. Kestrels can often be seen hovering above road verges in search of prey, as they used to do along field margins.



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Despite these advantages continuing growth in ownership and use of the car has created demand for new roads and improvements to those that already exist, which has led to a series of problems:

- Major roads in the region (e.g. the M1, M11, M25 and A1(M), A11, A12, and A14) are increasingly under strain, and urban congestion is increasing.

- Population growth in the rural parts of the region has been particularly rapid, putting pressure on the rural road network, but loss of facilities in rural areas has been directly linked to the trend of greater car dependency.

- Local trips, such as the 'school run' or the 'weekly shop' are now carried out by car, rather than walking or cycling, or having goods delivered to the home.

- Almost without exception the towns and villages of the East of England have become associated with commuting - some, like Bury St Edmunds, are now the focus of in-commuting, but most experience out-commuting, particularly to London and other major centres such as Cambridge, Ipswich and Norwich.

The East of England is strategically located on international shipping and aircraft routes. Gateways include ports at Felixstowe (the fourth largest container port in Europe), Harwich, Ipswich and Tilbury. The region has several international airports, which are all experiencing rapid growth, most notably at Stansted and Luton, which may increase further under Government proposals currently undergoing public consultation.

Without further investment, the rail networks that link major towns and cities to London will soon be running at full capacity, where this is not already happening. East-west rail links are poor. In the less accessible areas, transport needs can often only be met by infrequent buses. For many a car is a necessity.

The biodiversity of the East of England continues to suffer from fragmentation of habitats, and urbanisation. At Brampton, a flyover was constructed on the A1 that had a major impact on Brampton Meadow SSSI. The picture shows the flyover under construction in 1990.

© English Nature

The way in which we currently travel has a wide variety of environmental effects. Although road and rail corridors can contain important refuges for wildlife, too often transport schemes result in direct loss, severance and fragmentation of habitats. Indirect effects include emissions of a wide range of air pollutants, water pollution from accidental spillages, de-icing chemicals and run-off, disturbance from noise and lighting, and wildlife fatalities. Air travel in particular is a considerable source of greenhouse gases. Our unsustainable travel behaviour has implications for human health. Sedentary lifestyles are contributing to increases in obesity, coronary heart disease, strokes, and diabetes. People in low income groups and the elderly can have difficulty in accessing facilities that rely on use of the car.

The trend towards greater mobility, particularly by car, is an enormous challenge, especially in rural areas. But it is a challenge that the region has to address. The first priority must be to reduce the need to travel in the first place, and then to encourage a switch towards more sustainable modes. This will free up space on the strategic road network for essential journeys, and will enable people travelling by foot, cycle, and bus to move around more easily and safely on local road networks.

Achieving the Aim

- Settlements should be planned to maximise their self-sufficiency in terms of services and facilities, and act as hubs for their hinterlands, insofar as is commensurate with their size and location.

- Mixed-use developments that make efficient use of urban capacity, support vibrant town centres, and can be served by public transport systems should be pursued, and low density, peripheral housing avoided.

- Support for local economies, including local products and local trading, should be encouraged to reduce the distance travelled from home to work, and from producer to customer.

- Developments that generate a lot of people movements (e.g. schools, hospitals, shops, offices), and local green space, should where possible be located in places where it is easy to access them by walking, cycling or public transport.

- Unsustainable modes of transport, in particular travel by car and by plane, should be catered for on the basis of need not demand, and appropriate demand management measures considered to encourage a switch to other modes.

- Major improvements should be made to the rail network, especially to east-west links.

Sustrans National Cycling Network comprises 10,000 miles of routes, and passes through the East of England. Linked projects are adding value to the Network, such as 'Right Tracks', in Southminster, Essex, which aims to integrate cycling with healthy living and the economy, by encouraging people to explore their local countryside and support local businesses.

© Countryside Agency/Tony Jedrej

- At the local level, investment should be targeted at creating and improving integrated networks of walking, cycling and public transport that are sensitive to the environment, but which provide a real alternative for those who currently use a car.

- Full and proper use should be made of appraisal techniques in assessing transport options, such as environmental impact assessment and strategic environmental appraisal, with the early involvement of statutory and non-statutory environmental bodies.

- Sequential tests for road building should be applied so that roads are only built once all other alternatives have been examined and ruled out.

SA3: Deliver Sustainable Design

Key Issues

Current building techniques tend to pay more attention to constructing development at minimal financial, rather than environmental, cost. Awareness is increasing of the need to reduce the adverse impact of individual developments on the environment. There are two main types of environmental impact:

- Impact on, and from the use of, natural resources (e.g. energy consumption, use of materials in construction and operation, and pollution to air, land and water).

- Impact on environmental character (e.g. through the quality of design).

The Abode development, at New Hall, Harlow is part of a new residential neighbourhood close to the old town, which aims to provide popular housing, at higher densities. Proctor & Matthews, architects, have combined contemporary design with sensitivity to local materials, colour and texture, using thatch, weatherboarding and handmade bricks and modern materials. The development follows principles set out in the New Hall masterplan design code.

© Proctor & Matthews, Architects

In order to be sustainable, the region must deliver development that is environmentally benign. Some of the impacts of development can be minimised by guiding the right development to the right location, for example by helping to reduce traffic movements. However, the design of the development itself can reduce environmental impacts, and contribute to environmental character. Raising standards of design in new development of all kinds is a challenge. Nationally, this has been taken up by the Commission for Architecture and the Built Environment (CABE). Masterplanning of major urban sites can assist in the achievement of improved urban design. Public awareness and commitment to design issues is vital - the establishment of an Architecture Centre in Cambridge in May 2003 will help to raise awareness and involvement among members of the public, as well as helping engagement with the professional and business community. EEDA is also proposing that a Regional Centre of Excellence be set up to promote urban renaissance in the region.

90% of our existing urban fabric will still be with us in 30 years' time. Restoring the environmental and historic character of urban environments is important to make them attractive places in which people wish to live.

Achieving the Aim

- The region should be a leader in the field of sustainable built environments, using the latest design and construction techniques to deliver buildings and infrastructure that minimise impacts on the local and global environment.

- The region should be committed to the achievement of quality in the built environment as a whole, ensuring the knowledge in local authorities of design matters is improved, and that appropriate weight is given to design issues by the planning system.

- Development in the form of repair and re-use of buildings, as opposed to demolition and re-build, should be given greater priority, taking into account the embodied energy in existing buildings that could be wasted through demolition, and the energy expended in new construction.

The early 16th century grade II* listed maltings located within the conservation area of Great Dunmow, Essex, were disused and neglected, until taken over by a building preservation trust, repaired, and converted into a community arts centre. In 2001 the centre won the Civic Trust Access Award, sponsored by English Heritage. The Award is for a project that best reconciles the access needs of people with disabilities with the conservation requirements of a historic site or building.

© English Heritage

- Development should be energy efficient, through the use of low embodied energy materials, good insulation, passive solar energy techniques, and renewable sources.

- Development should conserve water resources, through the use of water efficient appliances, and reduce the risk of flooding through the use of Sustainable Drainage Systems (SUDS).
- Where possible recycled, low polluting, materials should be used in construction, preferably those that are local and distinctive to the area.
- New developments should contribute to the character of the area within which they are located, and in historic contexts, draw intelligent inspiration from their surroundings.
- Development should be adaptable and built for long-life, in order to stand the test of time.

The National Otter Survey for England has found that otters have increased in the East of England. Good practice guidelines have been agreed with Essex and Suffolk County Councils in their approach to road bridge maintenance and rebuilding where otters are known to exist. Maintenance work on an existing bridge included the addition of a bolt-on otter ledge, which allows safe access for otters underneath the bridge at most times.

© Environment Agency

- Development should seek to avoid damage to the natural and historic environment, and where possible deliver improvements overall, for example through habitat creation and improving access to the countryside, green space, and the historic environment.
- Provision should be made for long-term management and maintenance of development and associated environmental improvements to ensure their sustainability over the lifetime of the project.

5.2 MEETING THE CHALLENGES AND OPPORTUNITIES OF CLIMATE CHANGE

Strategic Aims

SA4: Reduce vulnerability of the region to climate change.

SA5: Promote energy conservation and a switch to renewable energy sources.

SA6: Harness environmental benefits arising from climate change.

SA4: Reduce Vulnerability of the Region to Climate Change

Key Issues

Climate change is the single most pressing environmental challenge facing society. There is a clear need for concerted global action to reduce significantly emissions of greenhouse gases, to help reduce the pace of climate change. There is also a need to take account of, and adapt to, the impacts of climate change.

The predictions for climate change generated in 2002 by the UK Climate Impact Programme (UKCIP02) set out different scenarios for how climate is predicted to change up to the 2080s. These use the latest models, depending upon the extent to which the emissions contributing to climate change are managed and controlled. The main climate changes predicted for the East of England are:

- Hotter drier summers (between 2°C and 5°C warmer, and between 30% and 60% drier) and milder wetter winters (between 1.5°C and 3.5°C warmer, and between 10% and 35% wetter).
- More frequent extreme high temperatures, and more frequent extreme winter rainfall.
- Significant difference in soil moisture content (decrease of between 10-50% in summer and autumn, and by up to 10% in winter).
- Increase in the thermal growing season (the period by which plants grow as determined by temperature) of between 45 and 100 days.
- A rise in net sea levels of between 22cm and 82cm (taking into account that the East of England is slowly sinking as a result of adjustments to land levels that have been occurring since the last Ice Age), and a possible increase in sea storm surges.

The main impacts upon the East of England are expected to be:

- An increase in the risk of both coastal and fluvial flooding.
- More frequent storm events, with potential damage to the natural, historic and built environment.

Hatfield Forest, along with other trees and woodland in the region, suffered considerable damage during the gales of the late 1980s and early 1990s. Such storm events are likely to increase in frequency and severity as a result of climate change.

© English Nature/Peter Wakely

- An increase in the demand for water, but potentially a decrease in the availability of water supply, particularly in the south-eastern part of the region.
- Possible saline intrusion into some of the coastal aquifers and freshwater habitats, leading to increased pressures on water resources and changes in biodiversity.
- An increase in the growing season for crops and trees, but reduced soil moisture and availability of water for irrigation.
- Stress on, and potentially erosion or loss of, existing habitats and dependent species, for example wetlands along the coast and inland watercourses, through both higher temperatures and a rise in algal blooms.
- Damage and loss of archaeological sites from erosion of the inter-tidal zone.

- Damage to historic buildings through flooding, and possibly loss of some tree species in historic parks and gardens as a result of changes in temperature and water availability.

A report *'Living with Climate Change in the East of England'* prepared for the Regional Assembly and the Regional Sustainable Development Roundtable (Stage 1 Interim Report, February 2003) concluded that the East of England should aim to work with climate change, rather than against it, and reduce risk from the potentially adverse impacts of climate change. Overall, a precautionary approach must be adopted whereby decisions taken now should not constrain or reduce the region's ability to adapt effectively to the impacts of climate change in the future.

Achieving the Aim

- Where possible, sea level rises should be allowed to take their natural course (e.g. some flood defences in the region have been constructed to protect agricultural land as well as built development).

- The need for 'technical fixes' to solve climate change impacts should be minimised (e.g. major investment in water supply schemes and flood defences), and natural techniques such as managed retreat and tree planting investigated and used as appropriate instead.

- New development should be guided to those areas that are not at risk from coastal and fluvial flooding, or from storm surges, and to locations that are least likely to experience subsidence or water supply shortages.

- Where possible, the loss of habitats should be compensated for by creation of similar habitats elsewhere in the region, and existing habitats and species given the conditions where they are able to migrate naturally in line with changes brought about by climate change.

The re-alignment scheme at Abbotts Hall, Essex, is an innovative approach to solve the problems caused by rising sea levels, which result in coastal marshes being squeezed out of existence against hard sea walls. The three kilometre sea wall will be breached in several places allowing the tide in and out and encouraging coastal marshes to grow behind the sea wall. As well as providing a wildlife habitat, the project includes an archaeological mitigation strategy to protect some sites and record those that would be damaged.

© Environment Agency

- The loss of archaeology and other irreplaceable historic assets should be anticipated and structures or remains recorded in advance where damage is unavoidable.

SA5: Promote Energy Conservation and a Switch to Renewable Energy Sources

Key Issues

As well as adapting to climate change, the region must reduce its contribution to greenhouse gas emissions. The main greenhouse gas is carbon dioxide (CO_2), which is produced principally from the burning of fossil fuels. The Energy White Paper (February 2003) sets a target for the UK to cut its CO_2 emissions by 60% by 2050. The UK has legal commitments to reduce greenhouse gas emissions by 12.5% of 1990 levels by 2008-2012. Such reductions are unlikely to be met without radical changes in the way we use and produce energy. There are two main solutions:

- Consuming less energy in total.

- Switching from carbon-based fuels, mainly oil and gas, to renewable sources, such as wind, wave, solar and bio-energy.

The East of England has set itself a target of producing 14% of its electricity needs from renewable sources by 2010. At present only 2% of the nation's energy comes from renewable sources, and in the East of England, only 0.45% of regional demand is met this way. The 14% target implies that by 2010, the region will:

- Have reduced its CO_2 emissions by 9% or 5 million tonnes.

- Be generating 350MW from around 150 offshore wind turbines.

- Have developed 460MW of onshore wind farms, equating to between 400 and 500 wind turbines.

- Have set aside 139,000 extra hectares to energy crops mostly from wood sources, but also from ethanol and biodiesel.

Other potential sources of renewable energy include photo-voltaics and solar panels, wave and tidal power. It is estimated that 4,400 new jobs could be created by the renewables industry in the region by 2010.

The East of England has good opportunities to generate renewable energy. There is already a land-based windfarm near the coast at Martham, Norfolk, but some of the greatest potential can be found offshore.

© English Nature/Rob Cooke

The development of renewable energy schemes is not without difficulty. In particular, there are concerns about the impact that wind turbines might have on the valued landscapes and seascapes of the region, as well as on historic features (e.g. the setting of church spires) and settlements. The siting of wind turbines, and other major sources of renewable energy generation, will therefore need to take into account visual impact, and the effects on habitats, species (e.g. birds) and tranquillity. Often smaller-scale initiatives, which have an element of community ownership, can help to engender acceptance of renewable energy schemes.

Achieving the Aim

- Energy should be conserved by reducing the need to travel, and by people switching from the car to walking, cycling, and public transport.

- Building techniques and materials that reduce energy consumption should be promoted (see 'SA3: Deliver Sustainable Design').

- The use of low energy appliances, for example washing machines, dishwashers, etc., should be encouraged.

- Awareness should be increased of simple, practical ways of reducing energy consumption, such as turning down thermostats, using low energy light bulbs, turning off televisions rather than leaving them on stand-by, etc.

- The full potential of renewable energy in the region should be pursued, in a way that minimises any adverse environmental impacts, and delivers social and economic benefits to local communities.

SA6: Harness Environmental Benefits Arising from Climate Change

Key Issues

Climate change offers not only a major challenge for the East of England, but also potential opportunities, across the spectrum of environmental, economic and social concerns. The region needs to be aware of this potential in order to plan to take advantage where it can.

There are huge opportunities for coastal habitat creation. Joint long-term planning should be promoted to secure integrated approaches to coastal management (Integrated Coastal Zone Management). This should ensure that there are no net losses of important habitats on the coast, whilst acknowledging that their locations may change (e.g. through Coastal Habitat Management Plans – CHaMPS). Where freshwater habitats are threatened, it may be impossible or undesirable to protect them. In such situations, these habitats should be replaced in areas inland that are safe from rising sea levels. There is a need to allow natural, dynamic coastal processes to operate by avoiding hard sea defences, minimising dredging and retaining dredged sediment within the system. A holistic approach to management of coastal processes must ensure that addressing problems in one area does not create problems elsewhere.

Other opportunities include:

- An increase in the relative attractiveness of the East of England for tourism, particularly the coast, as the climate gets warmer.

- A shift to an outdoor lifestyle, with associated health benefits through exercise and alleviation of stress.

- The need for more energy efficient industry, which could open up possibilities for Research & Development, in which the region is particularly strong, and also for environmental technologies.

- The advantages that the East of England has in the push for renewable energy due to its existing energy infrastructure associated with oil and gas and nuclear power, and because of the physical attributes that the coast offers for windpower, and that high quality agricultural soils offer for bio-energy crops.

- The potential to increase woodland cover in the region, which can act as a carbon sink, provide a source of renewable fuel, give a cooling effect in urban areas, protect soils from erosion, and be a sponge in absorbing rainwater and slowly releasing it over time thereby reducing flood risk.

Achieving the Aim

- The East of England should continue to research the likely impacts of climate change on the region, and the opportunities this will bring in environmental, economic and social terms.

- The region should develop a strategy for harnessing the opportunities afforded by climate change, including guidance to those who have a role in ensuring that these benefits are realised.

- Integrated Coastal Zone Management should take into account the effects of climate change, including the protection of historic assets, and in particular opportunities for habitat creation.

Broadland is under threat of flooding from a variety of sources, such as the encroaching sea and high river flows, putting homes, agriculture, commerce and wildlife at risk. Last year heralded the start of a £100 million contract for a Public/Private Partnership Programme to improve tidal flood defences and manage flooding. The partnership will work to repair, maintain, design and improve flood defences in one of the finest wetland areas in Britain.

© Environment Agency

5.3 ENSURING ENVIRONMENTAL SUSTAINABILITY IN THE ECONOMY

Strategic Aims

SA7: Improve the environmental awareness, skills, and housekeeping of business and the workforce.

SA8: Promote the environmental economy.

SA9: Deliver more sustainable agriculture.

SA7: Improve the Environmental Awareness, Skills, and Housekeeping of Business and the Workforce

Key Issues

The economy can have a significant impact on the environment, through consumption of natural resources, generation of waste and pollution, and damage to biodiversity, landscape and the historic environment. Commuting, freight transport and business trips generate significant amounts of traffic. But economic development need not be in conflict with the environment. Not only is a high quality environment good for business, environmentally responsible behaviour is linked with long-term regional and individual business competitiveness. Good environmental housekeeping can help to improve profitability and produce better returns on investment.

Improvements are happening. There is increasing recognition in the corporate world that environmental and other ethical considerations are as relevant to business as they are to other walks of life. An increasing number of companies are producing annual environmental reports alongside their annual accounts, as statements of how they are performing environmentally as well as financially. Such awareness brings a number of benefits to business:

- Consumers and other customers are demanding higher standards of corporate responsibility, and many take into account environmental impact in their choice of suppliers and products.

- Minimising environmental impacts, such as waste and pollution, reduce operational running costs, and for potentially polluting companies the risk of fines.

- Employees tend to respond positively to companies that take a responsible attitude to the environment (and their health and welfare), which can bring increases in productivity and competitiveness.

Some businesses are already taking steps to meet this challenge. For example, many have introduced Environmental Management Systems, under either the international standard ISO14001, the EC Eco Management and Auditing scheme or British Standard BS7750. Although there are some differences between them, particularly in the level of detail of assessment required, they all have a role to play in improving environmental performance. Critical to all of them is communication with staff, and the commitment of management.

Achieving the Aim

- The East of England should encourage and support continual improvements in environmental performance of the economy, and demonstrate the links with economic performance.

- Awareness and understanding of the importance of environmental improvements in small, medium and large businesses should be increased, and training provided to improve the skills of management and the workforce to deal with environmental aspects of their operations.

- Businesses should be encouraged to introduce Green Travel Plans to reduce commuting and unnecessary road-based journeys.

- Best practice, including the use of accreditation schemes, such as Environmental Management Systems, should be encouraged throughout the region.

SA8: Promote the Environmental Economy

Key Issues

The environmental economy is a major player in the East of England, supporting in the range of 108,000-180,000 jobs, and between 6% and 9% of regional employment. It embraces a wide-ranging group of activities that depend upon the region's environmental resources. Some are inherently sustainable, because they are focused on the management and improvement of the environment. Others are associated more with the exploitation of environmental resources than their sustainable management. The report *'Environmental Prosperity: Business and the Environment in the East of England'* (SQW and Land Use Consultants, 2001), analysed the constituent parts of the environmental economy and the contribution it makes to the region:

The Lodge, near Sandy in Bedfordshire, has been the RSPB's UK Headquarters since 1961. It is surrounded by woodland and heathland and has formal gardens, which are peat-free and run by organic methods. The Lodge was built in 1870 for Arthur Wellesley Peel, son of Robert Peel, and designed by Henry Clutton.

© RSPB

- Conserving the built and natural environment – the East of England accounts for more jobs concerned with conserving the built and natural environment than any other English region, with a number of organisations, such as the Forestry Commission, RSPB and English Nature, having their national headquarters here. The environmental protection sector can help underpin vulnerable rural economies where economic development options are limited. Skills shortages were identified in the region in particular areas, such as craft skills for traditional repair.

Pollarding is a traditional form of woodland management where the upper limbs of trees are removed every 20 years or so, while the trunk is retained. Pollarded trees, such as these found at Monks Wood National Nature Reserve, can live for hundreds of years and provide a vital habitat for many rare invertebrates. Epping Forest and Hatfield Forest are also fine examples of ancient pollarded woodlands. The skills needed for traditional woodland management are increasingly difficult to find.

© English Nature/Chris Gardiner

- Waste management – the move towards the reduction, re-use and recycling of waste is beginning to create new opportunities for jobs in the region.

- Water management – the Environment Agency estimates that the rural economy benefits from more than £500 million of expenditure each year on boating, angling and other water-based recreation.

A number of conservation and recreation activities have been introduced to maximise the enjoyment and appreciation of the wildlife and cultural heritage of the River Lark between Barton Mills and Mildenhall. Enhancements include the creation of wetland habitat, improvements to riverside access, and the installation of a viewing platform. Six angling platforms suitable for use by disabled anglers were also built. Future projects include interpretation panels, a 'riverside walk' leaflet and an education pack.

© Environment Agency

- The primary sector – the area of woodland in the region is increasing through initiatives such as Thames Chase, Watling Chase, and Marston Vale Community Forests, and sound woodland management is being promoted by organisations such as the Forestry Commission and Woodland Trust. The environmental performance of the minerals industry is improving and some important new habitats and amenity sites have been created from restored extraction sites.

- Environmental consultancies – around two-thirds of regional environmental consultancy firms have their head office in the East of England.

Other contributors to the environmental economy, dealt with elsewhere in this Strategy, include renewable energy, and agriculture.

The Forest of Marston Vale is transforming an area of former brick pits to the south of Bedford into an attractive countryside supporting wildlife and offering a variety of recreational opportunities. Since 1991 this multi-agency partnership has created over 300 hectares of new woodland planting, brought another 300 hectares of existing woodland into sustainable management, and developed new pedestrian, cycle & horse trails. The Forest Centre and Millennium Country Park incorporate environmentally sound building technologies. The project is making a major contribution to the quality of life of people who live and work in and around the area.

© Countryside Agency/John Tyler

Achieving the Aim

- The region should continue to recognise and enhance the potential of the environmental economy, particularly in its economic development strategies.
- The East of England should seek to become a region of excellence in environmental industries, both within the UK and internatonally.
- Those parts of the environmental economy that are not as sustainable as they might be, must receive the advice and encouragement they need to make a full and positive contribution to the environmental economy in the future.

SA9: Deliver more Sustainable Agriculture

Key Issues

Agriculture is a significant industry in the East of England, and a key component of the environmental economy. The predominantly low-lying topography of the region, combined with its climate and fertile soils, such as the peats and silts of the Fens, means that the East of England is well suited to agriculture. For millennia, agriculture has been the main force in moulding the region's countryside, and was vital in underpinning its prosperity. Until relatively recently, the resulting landscapes have been capable of sustaining a diversity of wildlife, natural features, historic landscapes and buildings, and distinctive local character. Whilst agriculture (with forestry and fishing) accounted for only 1.7% of regional GDP in 2001, it remains central to the economies and character of rural communities.

Key issues include:

- Encouraged by agricultural policies, economic pressures (e.g. the influence of supermarkets) and technological advances, the intensification and specialisation of farming methods has led to a serious reduction in the range and abundance of habitats and species, and widespread damage to archaeological sites and historic landscape features.

The RSPB/English Nature Stone Curlew protection project has worked successfully with landowners to ensure that the population is not affected by agricultural operations and continues to expand.

© RSPB

- The demand for water for spray irrigation, combined with excess use of nutrients and the damaging effects of sediment in run-off, has impacted particularly upon wetland sites, including fens and reedbeds. Farmland birds, mammals and arable plants have also seen a decline. Drainage and water abstraction can result in the loss of wetland organic archaeological remains.
- Whilst traditional agricultural practices continue to support important habitats and landscapes, there are significant opportunities for agriculture as a whole to contribute much more positively to the region's environment. There is mounting evidence that consumers are wishing to buy high quality wholesome food, with organic products in particular increasing in market share. Farmers markets selling local produce are becoming increasingly popular. Awareness is increasing amongst farmers, commercial customers and individual consumers of the role that sound management has to play in safeguarding the environment.

Achieving the Aim

- The contribution that sustainable agricultural land management can play in creating distinctive landscapes and wildlife habitats, in supporting the wider economy, and promoting quality of life should be properly recognised.
- The main influences on agricultural practice, particularly the major supermarkets and institutional landowners, should be made aware of, and take responsibility for, the effects that unsustainable agricultural practices have on the environment.
- Farming practices should be adopted that embrace nature conservation priorities set out in Biodiversity Action Plans, across the wider countryside.

The Norfolk Arable Land Management Initiative is bringing farmers and local people together to find solutions to some of the issues currently facing intensive arable farming. The aim is to promote more environmentally sustainable use of farmland whilst boosting farm incomes and meeting the social and economic needs of local people. NALMI is working with farmers to carry out up to 70 whole farm plans that will help to identify those with potential to trial these ideas.

© Countryside Agency/John Tyler

In 2003 there were 50 farmers markets in the East of England region, with Wymondham Farmers Market winning one of the 2003 Eastern Daily Press Food Awards. Stallholders are generally fairly local, reducing the pollution involved in transportation. A wide variety of foods are on offer such as meat, fruit, bread, cheese, and fudge, produced both organically and by conventional production methods. The markets provide an opportunity for customers and the food producers to interact, where topics such as animal welfare and land management are discussed. This proves a powerful way of promoting sustainability principles and healthy eating.

© Countryside Agency/David Burton

- Awareness of the existence and value of the historic environment in farmed areas should be improved, as must management measures, for example through agri-environment schemes, to prevent unnecessary damage or loss.
- Environmental management standards should be raised on farms, including the use of pesticides and fertilisers, conservation of soils and organic matter, and water supplies.
- Encouragement should be given to local products, by supporting local markets, and by exploring new crops of local value, such as bio-energy crops, supported by Government fiscal incentives.
- The role of trees and woodland in a sustainable and diverse agricultural sector should be recognised.

5.4 ENHANCING ENVIRONMENTAL CAPITAL

Strategic Aims

SA10: Maintain and strengthen landscape and townscape character.

SA11: Enhance biodiversity.

SA12: Conserve and enhance the historic environment.

SA10: Maintain and Strengthen Landscape and Townscape Character

Key Issues

The environmental character of the East of England is reflected in its landscapes and townscapes. Local distinctiveness in landscape and townscape character is an important element in the quality of life of residents and a vibrant economy. Locations that are scenically beautiful, towns with attractive historic centres, and places with a clean environment, are more appealing to companies and their employees, and have a beneficial impact on business image. Many town centre enhancement schemes are predicated on the principle that the repair of physical fabric, including historic and key landmark buildings, acts as a catalyst to business confidence and regeneration. A high quality environment, which helps to define the character of the region, is therefore crucial both to nurturing existing business and attracting inward investment.

Environmental character also underpins the tourism sector, which is a major component of the regional economy. In 1997, a total of 16.5 million visitor trips contributed £3.4 billion to the regional economy. Visitors to the countryside are clearly attracted by high environmental quality, for instance, bird watching, walking and visits to nature reserves. Historic cities, market towns and country houses are popular attractions in the region.

Key issues include:

- The environmental character of the East of England is under pressure from a range of sources. Development and associated infrastructure is impacting on the form and distinctiveness of settlements and their landscape setting. Standard building designs are eroding local distinctiveness. Rising traffic volumes are leading to a loss of tranquillity.
- In the countryside, demand for outdoor leisure is leading to changes in land uses and increases in associated facilities. Telecommunications infrastructure and potentially wind turbines are further changing the character of the region's landscapes. Agricultural intensification has led to a loss of field features, such as hedgerows and trees and historic interest.
- Local services, shops and pubs in many villages have closed due to commercial demands and increased competition, although many need to accommodate some housing and employment development to ensure their continuing vitality.
- The interface between town and country is often marred by insensitive development, and by poorly managed landholdings that are run-down in the hope of securing permission for development.
- The continuing pressure for development on greenfield land, including Green Belt, and also on those towns and villages beyond the Green Belt, can fundamentally affect the character of the landscapes and settlements of the region, and may also lead to unsustainable travel patterns.

The overall effect has been an increasing urban influence, particularly in the south of the region, and a loss of distinctive rural character and landscapes. Whilst the environmental character of the region will always be in an evolving state, greater recognition is needed of the importance of positive change, so that development and land management strengthens the character of the East of England, rather than dilutes it.

Achieving the Aim

- Landscape and townscape change should be evaluated and managed within the wider context of sustainable development.
- Designated landscapes and townscapes should be protected and managed according to their national or local importance, with stakeholders fully engaged in their protection and management, and adequate investment made in securing the social, economic and environmental benefits of these areas.
- A strategic approach should be applied to planning and managing change in the countryside, underpinned by landscape character assessment, and historic landscape characterisation, backed up by area based strategies that set long term goals and target resources effectively, and identify indicators to monitor change and inform future actions.
- People's awareness and understanding of the value of landscape and townscape character should be improved, and encouragement given to foster pride in their settlements and countryside.
- More opportunities for people to access, enjoy and celebrate their local environments should be pursued, particularly close to where people live.
- The fundamental objectives of Green Belt policy should continue to be supported and pursued in the region.
- Development beyond the Green Belt should be consistent with sustainability objectives, including the protection and enhancement of the wider countryside and settlement character, and reducing the need to travel.

The Fakenham Townscape Enhancement Partnership was formed in the 1990s to tackle the effects of economic decline in the market town. A major project was to restore the 1855 Corn Exchange for use as a three-screen cinema. An Arts Lottery Fund grant was used for public realm enhancement, to commission artist-designed street furniture and paving surfaces. The results have won a number of awards, including one from the British Council of Shopping Centres.

© English Heritage

SA11: Enhance biodiversity

Key Issues

Different habitats are influenced by different factors and to varying degrees:

- Chalk and lowland grassland, heath and arable habitats by agricultural practices.
- Freshwater habitats by water quality and water resources management.
- Bog, fen and swamp habitats by the need for active management, agricultural activity, water quality and water resources management.
- Woodland habitats by impacts of grazing animals, particularly deer, and the need for active management.
- Maritime habitats by coastal management and sea-level rise, and offshore by pollution, maritime dredging, and over-fishing.

There is a need to protect and actively manage wildlife sites to sustain their wildlife interest. There is also a need to reverse earlier habitat fragmentation by restoring and re-creating habitats to ensure long-term survival of communities and species. The Fens offer the single largest area of potential for wetland creation in the UK. Similarly, the coast presents a greater opportunity for the creation of mudflat and saltmarsh than anywhere else in the UK - 40% (13,000 hectares) of the potential sites are within the East of England.

The RSPB, working closely with the Environment Agency, is delivering one of the UK's most ambitious large scale habitat re-creation projects at Lakenheath. In turning carrot fields to 170 hectares of wetland, including meres, reed-fringed channels and wet grassland, the RSPB has already planted more than a quarter of a million reeds and created 20 km of channels and pools, Wildlife has responded quickly. The number of reed warblers increased from just four pairs in 1996 to 250 pairs in 2001. The RSPB expects that bearded tits, marsh harriers and bitterns will soon follow. The new reedbed represents more than 10% of the UK Government's biodiversity action plan target for new reedbed creation by 2010.

© RSPB/M.Page

Reversal of fragmentation requires action over the long-term, but mechanisms like the Rural Development Plan, associated agri-environment schemes, English Nature's Wildlife Enhancement Scheme, lottery funds and landfill tax money provide significant current opportunities to restore landscapes to ensure sustainable habitats and species populations.

There is a need to increase the positive, and reduce the negative, impacts of agricultural systems and practices on wildlife, not only in terms of direct habitat management but also indirect effects such as nutrient run-off and agro-chemical dispersion. Habitats need to be recreated on former agricultural land, and buffers created for sensitive sites.

There is a need to ensure that water quality and quantity is sufficient to sustain the wildlife interest of the many water dependent sites. Maintaining freshwater systems without salt-water incursions will be a challenge given sea-level rise. There is also a need to improve the fisheries environment, with habitat enhancement a priority. There are particular concerns associated with transferring water of different qualities from one catchment to another. This can lead to the movement of alien species and diseases between different river habitats, changing their natural ecology and character. The reduction in the quantity of water in the donor catchment could also lead to adverse effects on biodiversity.

Urban habitats are strongly influenced by planning and economic development, and management for recreation. Many are vulnerable to new development, particularly given the Government's 'brownfield first' approach to new development. Those especially under threat are wastelands, backland gardens, allotments, and decommissioned institutional and utility land, such as hospital grounds and railway sidings. Some of these sites have nature conservation interest or important ecological functions, and development may not always be the most sustainable approach. The fringes of our urban areas are often under intense pressure, yet these are the very areas that offer the greatest number of people contact with nature.

The Hanson-RSPB wetland project is a visionary partnership between industry and nature conservation to create the 700-hectare Ouse Fen Nature Reserve at Hanson's Needingworth quarry, near Cambridge, over the next 30 years. By restoring the lost wetland heritage of the Fens it will also provide a valuable place for people to enjoy wildlife and the countryside. Hanson will donate the entire site to the RSPB, progressively handing over small parcels of land as sand and gravel quarrying is completed and reed beds planted. This exciting and far-sighted project will create Britain's biggest reedbed and will become one of the most important wetlands for wildlife in southern Britain, with the potential to double the current UK population of bittern from 30 to 60 pairs.

© Hanson

The declaration of Local Nature Reserves (LNRs) by urban local authorities is a means of providing quality natural spaces for people. English Nature's *Wildspace!* scheme aims to enhance existing LNRs and encourage the declaration of new ones, particularly in areas of high deprivation. A number of other organisations also administer schemes, aimed at directing resources to enable communities to create and enhance their local environment.

Rides are an important habitat within woodland, where the extra light reaching the woodland floor allows a variety of different plants and butterflies to flourish. These shrub zones provide a good habitat for nesting birds and invertebrates. Today, modern machinery is used to replicate traditional management techniques.

© English Nature/Chris Gardener

Achieving the Aim

- Strong protection of nationally and internationally important wildlife sites should be provided by the land use planning system, and safeguards improved for locally important habitats such as County Wildlife Sites, ancient woodland, and other non-designated sites, which help to support the overall wildlife interest of the region.

- Access to, and understanding of, local greenspace should be improved, and the role of the voluntary sector in managing both our best and local sites promoted.

- Both small and large-scale initiatives should be encouraged that enhance biodiversity whilst providing employment, recreational opportunities, and economic returns.

- Areas for major habitat creation initiatives should be selected, involving a wide range of partners with access to funding sources, creating economic, environmental and social benefits.

- More extensive farming methods should be supported, agri-environment schemes targeted to maximise the value of the rare and special farmland habitats and species, and good agricultural practice and examples of shared economic and wildlife successes promoted and disseminated.

- Water resources and water quality should be sufficient to sustain wildlife interest, and any transfer of raw or treated water to meet particular needs and demands should take into account the environmental effects.

- Brownfield sites that support important biodiversity, including nationally important invertebrate fauna, should be considered for stronger protection from development, if satisfactory mitigation measures are not possible.

SA12: Conserve and Enhance the Historic Environment

Key Issues

The historic environment of the region is under continuing pressure from development, from economic and societal change, and also from a lack of understanding and awareness:

- Growth on the edge of urban areas has diminished the functions of traditional town centres, and there is a need to re-establish or find new roles for market towns and coastal resorts.

- Agricultural buildings are threatened from changing farming methods, sometimes leading to dereliction but also unsuitable conversion.

Traditional barns can easily fall into disrepair when they are no longer used as a part of traditional farming practices. At Waxham Great Barn, Norfolk, some repairs have been completed and a project to provide visitor facilities is about to begin so the full potential of the building as a tourist attraction and exhibition centre can be realised. Carters building firm will use this project to train crafts-people in traditional construction skills.

© Norfolk County Council

- Many of the region's historic churches are facing redundancy as church-going continues to decline.

- Tourism has a major role to play in supporting the historic environment, but insensitive tourism can lead to erosion of assets.

- Coastal and marine archaeology, and other historic structures, are being damaged by the natural forces of erosion, coastal defence works and infrastructure development.

- Modern farming practices are eroding historic landscapes and archaeological sites.

The urban renaissance agenda presents both a challenge and an opportunity. Accommodating development within urban areas can help enhance the historic environment through re-use of historic buildings, support for traditional town centres, and a move away from car dependency. Historic settlements provide a template for high density, high quality, urban form. But to achieve successful higher density in new housing, design standards must be raised. Account must also be taken of the historic grain of settlements and underlying archaeology, including any special interest of brownfield sites.

Small scale changes represent a significant and insidious threat to the quality of the historic environment. 'Modernisation' of buildings through the replacement of windows and other features is a major cause of erosion of historic character. The loss of traditional building skills has led to some examples of poor workmanship in repair of historic buildings and use of inappropriate building materials. During the last 25 years or so many smaller building firms have been absorbed by larger ones. Lack of in-house training in larger firms has meant that as older craftsmen have retired, their trade knowledge has tened to retire with them.

Sources of locally distinctive building materials have become increasingly limited, constraining the use of traditional materials either for repair of traditional buildings, or in new development. The main challenge is to heighten public awareness of the range and significance of different materials to raise expectations and hence demand for their production and use. Abandoned sites of small scale building materials production are often rich havens for wildlife and the greatest sensitivity is needed to balance the conflict between wildlife protection and the needs of local distinctiveness in the built environment.

Potentially positive trends include a move towards less intensive agriculture, which may allow land management regimes more appropriate to conservation of archaeological remains. Increased use of IT may allow scope for remote working and thus greater choice in location of homes/businesses - in the past remoteness has been an obstacle to ensuring continued use of historic buildings, whether in market towns, or in the countryside.

Achieving the Aim

- Our understanding and analysis of the historic environment should be improved through conservation area appraisals, conservation plans for major historic buildings, urban capacity studies that take account of the historic environment, historic landscape characterisation, and a systematic survey of below ground archaeological resources in both rural and urban areas, to allow more effective management and protection of our history.

- Settlement character should be looked at in a holistic way, which means ensuring that new development fits the grain and characteristics of historic towns and landscapes.

- Historic buildings should be repaired and where appropriate re-used, and their potential to act as a catalyst for regeneration fully exploited.

Halesworth, a market town in Suffolk, has benefited from a programme of regeneration funding since 1999, through an English Heritage grant scheme. This focussed on shop fronts and the refurbishment and expansion of premises including an organic food shop and an Internet café. Part of the redundant Old Maltings building was renovated for commercial use, whilst the larger part received a package of funds for conversion into an arts centre.

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- Use should be made of local traditional skills and knowledge of local traditional repair techniques, and training in these skills introduced into the NVQ curriculum, supported by a Centre of Vocational Excellence.

- Grant schemes should actively encourage the use of craft and building skills, and locally derived materials within the context of new development, while fiscal incentives should be used to encourage building firms to train craftsmen, and provide apprenticeships, in the use of traditional materials and skills.

- Better maintenance of historic buildings should be promoted to prevent buildings becoming 'at risk', supported by guidance to owners and those involved in the marketing of historic properties (e.g. estate agents), and a tax system which encourages maintenance and repair.

- Protection of below ground archaeology should be improved beyond scheduled sites and voluntary agreements to control damage from ploughing.

- The integrity of water dependent archaeo-logical sites within the region should be maintained and restored where feasible, and Integrated Coastal Zone Management and Shoreline Management Plans should ensure protection of historic assets.

- The economic benefits of tourism should be used to secure repair and protection of historic environment assets, and the appropriate management of tourist pressure.

5.5 ACHIEVING SUSTAINABLE LIFESTYLES

Strategic Aims

SA13:Reduce the region's global environmental impact.

SA14:Increase understanding and ownership of environmental issues.

SA13: Reduce the Region's Global Environmental Impact

Key Issues

The wealthiest countries in the World tend to have a disproportionate impact on the global environment. They consume more resources and generate more pollution and waste than the poorest countries. This was recognised by the World Summit on Sustainable Development, held in Johannesburg in 2002, which highlighted the linkages between the environment, economic progress and the eradication of poverty. Addressing these issues means following the slogan of sustainable development - 'think global, act local'.

The mission of this Regional Environment Strategy is to place the environment firmly within the family of regional strategies now being developed in our region. However, the East of England exists within an international context, and it should acknowledge its part in the global linkages that were confirmed, and celebrated, at the Johannesburg Summit.

This Strategy has already highlighted why it is important for the East of England to play its part in facing up to perhaps the biggest challenge facing the planet – the threat of climate change. But there are other issues that also have a global environmental dimension, which the region must address. One of the most important of these is waste.

Waste results from inefficient production processes, low durability of goods and unsustainable consumption patterns. Managing waste properly is a key requirement of sustainable development.

There are strong arguments to suggest that the region's current level of resource consumption and waste production is not sustainable.

In many cases the true costs to the environment of certain waste management practices are not borne by those who produce or dispose of the waste. Damage to the environment is often a hidden cost that is not usually included when the economics of various waste management options are taken into account. The inefficient use of raw materials not only produces waste and pollution, it also represents a loss of productivity and potential profit. Without proper controls waste can lead to disease spread by vermin, health effects from hazardous waste, fire, explosions, an increase of global warming resulting from methane produced by decomposing organic wastes, and pollution of surface and ground waters.

The construction industry accounts for 70 million tonnes of waste per year, of which 13 million tonnes are unused materials. The East of England construction company, French Kier, has set up an Environmental Performance Improvement Club to raise awareness of its staff and supply chain partners and to improve their environmental performance. Such companies have reported cost savings through improved efficiencies, better compliance with legislation, and raised staff interest in environmental issues.

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The increasing amount of waste production and the predominance of landfill represent a significant waste of non-renewable resources. The East of England must become more self-sufficient, and reduce the amount of waste produced, re-use waste wherever it can, and promote the development of recycling and recovery activities. The East of England Regional Waste Management Strategy sets out a series of objectives for the region to achieve this, backed up by some tough recovery targets, which present a major challenge for local authorities and for regional bodies. The targets set by the Regional Waste Management Strategy are:

- Municipal Waste – recovery of 40% at 2005, 50% at 2010 and 70% at 2015.
- Commercial & Industrial Waste – recovery of 66% at 2005, and 75% at 2015.

If the East of England achieves these targets, then it will have taken a big step towards a more sustainable use of the planet's resources.

There are many other global responsibilities that the East of England must address. The aim should be to reduce the impact (sometimes known as the 'ecological' or 'environmental footprint') of the region on the world's environment. Examples include:

- Reducing the use of tropical hardwoods in construction and furnishings.
- Reducing the import of food products and other goods produced using unsustainable practices in their place of source.
- Halting the illegal trade in endangered species from around the world, which often find their entry point into the UK through the East of England's ports and airports.
- Reducing pollution to the water environment, which can affect not only the region's rivers and coasts, but also the wider marine environment.
- Reducing pollution to air, which can have a damaging effect not only on the health, biodiversity, agriculture, woodland and historic environment of the East of England, but also of other countries and regions downwind.

The region must address these and other global issues if it is to become truly sustainable.

Achieving the Aim

- The region should reduce the amount of waste it produces, and increase the amount of waste recovered under the waste hierarchy.
- The import of unsustainable products from overseas should be reduced, and encouragement given instead to sustainable sourcing.
- The region's contribution to the illegal trade in endangered species should be stopped.
- Pollution to air and water should be reduced to agreed international and national standards.

SA14: Increase Understanding and Ownership of Environmental Issues

Key Issues

The region's environmental performance would be greatly improved if individuals, businesses, and institutions were prepared to take greater responsibility for their actions. There are very good reasons for doing so. In addition to the significant economic benefits highlighted elsewhere in this Strategy, a high quality environment provides:

- Healthier and more inspiring living and working surroundings (e.g. well-being from high quality neighbourhoods, green spaces and aesthetically pleasing buildings).
- A resource for recreation (e.g. everyday play in gardens, visits to historic sites).

- Cultural, spiritual and historic meanings (e.g. folklore, sense of place, local distinctiveness, historic settings).

- Artistic inspiration (e.g. nature in poems, novels and articles, music and visual arts, Constable country, sculpture, historic buildings as marketing images).

- Opportunities for personal development (e.g. conservation volunteers, ecological surveys/ archaeological investigations, skills for work).

- A sense of community (e.g. a focus for building community spirit).

Too often, however, environmental issues are thought of as 'somebody else's problem'. People look to their local councils to deal with litter and pollution, businesses often feel they have a right to generate waste, and public bodies do not always practice what they preach!

We all have a responsibility for ensuring that we put the region on a more sustainable footing. A good starting point is our schools, colleges and universities. Study of the environment is part of the national curriculum and citizenship studies offer opportunities for pupils to discuss and get involved in environmental issues. An increasing number of higher education institutions offer environmental courses, and volunteering in environmental conservation organisations is now a recognised path to developing a career in the field. But the region should aim higher and wider than this – it should make environmental consciousness part of mainstream thinking.

Achieving the Aim

- Regional bodies and local authorities should lead by example, to show how environmental considerations can successfully permeate through all decision-making.

- Agencies, local authorities, and other institutions with responsibilities for environmental issues should work together more closely, and with business and local communities, to increase awareness, and encourage joint ownership of environmental issues, with the aim of achieving improvements to all aspects of the environment.

- Environmental performance should be monitored, and challenging targets set for enhancing the environment, to celebrate success where it happens, and take action where it does not.

6 THE WAY FORWARD

In May 2002 the Government issued a White Paper on Regional Governance: 'Your Region, Your Choice' which set out Government proposals to:

- Promote the gradual development of Regional Governance arrangements in all regions, including the role of voluntary regional chambers.

- For those regions where there is a particular demand, proposals to introduce directly elected assemblies.

The East of England Regional Assembly (EERA) has a policy position of wanting to concentrate on the gradual development of the Regional Assembly, in its current voluntary regional chamber state. This work has become known, in shorthand, as the 'Chapter 2 agenda' as it relates to Chapter 2 of the Regional Governance White Paper. For the foreseeable future, therefore, EERA will be concentrating on aligning a number of regional strategies for the East of England, and building a consistent vision for the sustainable social, economic and environmental development of the region.

Within this context, EERA has a key role to play in promoting this Environment Strategy. But its implementation will only happen if all those with an interest are prepared to act. EERA will therefore work with regional stakeholders to take it forward, and to monitor its success.

To help in this process, this section sets out the Key Actions that need to be taken with respect to each of the Strategic Aims (SAs) identified in Chapter 5. In many instances there will be a number of additional actions that can, and should, be taken. The focus of the Key Actions presented here is to make sure that those that are fundamental to the region as a whole are understood and carried out. Key Indicators are also given. These are included in order to measure success in implementing the Key Actions.

6.1 DELIVERING SUSTAINABLE PATTERNS AND FORMS OF DEVELOPMENT

SA1: Accommodate population and economic growth whilst protecting and enhancing the environment

Key Action	Key Indicator
Identify environmental objectives on the basis of this Environment Strategy to guide the strategic scale and pattern of development in RPG14	Inclusion of environmental objectives
Ensure that development plans and local development documents, properly integrate environmental objectives into spatial strategies and planning policies	Inclusion of environmental objectives
Establish environmental thresholds to development at the regional and local scales	Environmental thresholds established
Ensure environmental capacity is integral to PPG3 urban capacity studies	Number of urban capacity studies incorporating environmental criteria
Include evaluation and aspirations for local environments as a specific requirement of Community Strategies	Inclusion of local environmental objectives

SA2: Reduce the need to travel and achieve a switch to more sustainable modes of transport

Key Action	Key Indicator
Plan to provide a full range of essential services and facilities within communities commensurate with their size and location	Essential services and facilities available
Introduce demand management measures to encourage people to use more sustainable modes of transport	Proportion of journeys using different modes
Target investment on the rail network, and on creating and improving integrated local networks of walking, cycling and public transport	Proportion of journeys using different modes
Plan opportunities for people to live close to where they work	Average length of journeys between home and work

SA3: Deliver sustainable design

Key Action	Key Indicator
Ensure that all local planning authorities are aware of, and use, guidance and checklists on sustainable design in determining planning permissions	Use of guidance and checklists by local planning authorities
Ensure that the design of all new development minimises impact on natural resources (e.g. consumption of energy, water and materials) during both construction and operation	Use of conservation features and recycled materials in new build
Ensure that new development contributes to the environmental attributes of its locality	People's perceptions of the quality of new development
Include long-term environmental maintenance and management agreements relating to new developments	Proportion of new developments with agreements

6.2 MEETING THE CHALLENGES AND OPPORTUNITIES OF CLIMATE CHANGE

SA4: Reduce vulnerability of the region to climate change

Key Action	Key Indicator
Avoid development from being located in areas at risk from coastal flooding, fluvial flooding or storm surges	Number and frequency of damage to property due to flooding
Guide development to locations where water resources are available	Average distance between source of water and consumers
Plan for environmental mitigation measures in response to climate change	Number and extent of mitigation measures, including archaeological recording and habitat schemes, introduced to adapt to climate change

SA5: Promote energy conservation and a switch to renewable energy sources

Key Action	Key Indicator
Encourage the use of low energy household appliances	Sales of low energy appliances as a proportion of all appliance sales
Increase awareness of households and businesses of practical energy conservation measures	Average energy consumption per person
Meet targets at the regional and local level for renewable energy production	Proportion of energy generated that is renewable compared to targets

SA6: Harness environmental benefits arising from climate change

Key Action	Key Indicator
Prepare a strategy for realising the economic, environmental and social benefits arising from climate change	Preparation of strategy, and monitoring of its implementation
Prepare and implement Integrated Coastal Zone Management for the whole coast, incorporating Coastal Habitat Management Plans (CHaMPS), and protection of historic assets found in the coastal zone	Implementation of a comprehensive Integrated Coastal Zone Management plan

6.3 ENSURING ENVIRONMENTAL SUSTAINABILITY IN THE ECONOMY

SA7: Improve the environmental awareness, skills, and housekeeping of business and the workforce

Key Action	Key Indicator
Ensure that the whole of the East of England is covered by environmental advice and support systems as part of mainstream business advice	Coverage of environmental advice and support
Encourage businesses to include environmental awareness in training programmes	Proportion of businesses whose employees have attended environmental training
Encourage businesses to operate Green Travel Plans	Number and proportion of businesses with Green Travel Plans
Encourage adoption by businesses of Environmental Management Systems	Number and proportion of businesses with accreditation

SA8: Promote the environmental economy

Key Action	Key Indicator
Include the environmental economy as a core sector in regional and local economic development strategies	Inclusion of the environmental economy in strategies
Ensure that all components of the environmental economy adopt sustainable practices	Number and severity of pollution incidents arising within the environmental economy sector

SA9: Deliver more sustainable agriculture

Key Action	Key Indicator
Promote and support markets and schemes that provide for sustainable food production	Percentage of food products purchased from environmentally accredited sources
Promote take up of whole farm plans to include incorporation of Biodiversity Action Plan and historic environment objectives	Coverage by number and hectarage of whole farm plans that refer to BAP targets and historic environment objectives
Encourage farmers to adopt practices that encourage wildlife	Number and populations of farmland birds
Introduce guidance to farmers on the identification and protection of historic features on farmland	Number of historic features on farmland lost or damaged
Reduce the use and mis-use of agricultural inputs such as pesticides, and fertilisers	Number and severity of pollution incidents involving agriculture
Encourage more sustainable use of water supplies	Amount of water abstracted for agricultural use
Encourage more sustainable types of crops, such as woodland, bio-energy fuels, and organic produce	Percentage of agricultural land under different crop types

6.4 ENHANCING ENVIRONMENTAL CAPITAL

SA10: Maintain and strengthen landscape and townscape character

Key Action	Key Indicator
Ensure that the social and economic benefits of designated and locally valued landscapes are properly recognised in regional strategies	Number and percentage of regional strategies including landscape benefits
Fully engage with regional and local stakeholders to increase awareness of, and involvement in, strengthening and management of landscape character	Number and percentage of local authorities with mechanisms set up for involving stakeholders
Increase funding available for the management of landscapes commensurate with the environmental, economic and social benefits they deliver	Amount of funding spent on landscape management as percentage of total funding
Develop area wide strategies, based on character assessments, to set long term goals for landscape change and to target tools and resources to influence change	Percentage of the region covered by area wide strategies

SA11: Enhance biodiversity

Key Action	Key Indicator
Ensure that the social and economic benefits of biodiversity are properly recognised in regional strategies	Number and percentage of regional strategies including biodiversity benefits
Ensure strong protection and active management of wildlife sites to sustain or restore their interest	% area of SSSIs destroyed, part destroyed, or in favourable condition
Increase the coverage of locally important habitats, such as County Wildlife Sites, Local Nature Reserves, etc.	Area or number of locally important wildlife sites
Implement Biodiversity Action Plans (BAPs) to enhance the region's biodiversity	Achievement of regional and local BAP targets
Increase the uptake of agri-environment schemes	% area of farms with Countryside or Arable Stewardship or ESA Agreements
Create or restore large-scale habitats, including woodland and wetland, particularly where opportunities arise as a result of climate change	Hectares in the region covered by large scale habitat creation
Ensure that sufficient water resources are available to support wetlands, rivers and other water dependent habitats	Flow in rivers and/or ground water levels
Provide guidance to planners and developers on maximising biodiversity benefits in developments	Number and percentage of local authorities with guidance for developers on biodiversity

SA12: Conserve and enhance the historic environment

Key Action	Key Indicator
Ensure that the social and economic benefits of the historic environment are properly recognised in regional strategies	Number and percentage of regional strategies including benefits of historic environment
Ensure strong protection of nationally and regionally important historic sites and features through the land use planning system	Loss or damage to nationally and regionally important historic sites and features
Increase awareness of the role of the historic environment as providing a catalyst for regeneration	Number of local authorities specifically promoting historic environment in regeneration
Ensure protection of historic landscapes	Proportion of region covered by historic landscape characterisation, backed by appropriate development plan policies
Improve coverage of management plans and appraisals of historic settlements, areas, sites, landscapes and features	Number and percentage of registered/designated historic assets covered by management plans
Improve understanding, awareness and knowledge of the region's historic resource	Number of educational visits to historic sites, including the socially excluded
Improve standard of repair and maintenance of historic buildings	Estimated number of builders and craftsmen with conservation skills such as qualifications/training
Increase the range of regionally distinctive traditional building materials in the region	Number of traditional building products available

6.5 ACHIEVING SUSTAINABLE LIFESTYLES

SA13: Reduce the region's global environmental impact

Key Action	Key Indicator
Reduce the amount of waste the region produces	Total waste produced by type
Of waste produced, increase the amount recovered under the waste hierarchy in line with national and regional targets	Amount of waste recovered
Reduce the import of unsustainable products from overseas	Proportion of imports covered by environmentally accredited schemes
Stop the ports and airports of the East of England being used as an entry point for the illegal trade in endangered species	Number of instances of illegal trade being recorded
Reduce pollution to the water environment to within agreed standards	Water quality of rivers, streams, aquifers, and coastal waters
Reduce pollution to air to within agreed standards	Number of days that air pollution exceeds quality standards

SA14: Increase understanding and ownership of environmental issues

Key Action	Key Indicator
Increase the number of education opportunities in the region offering environment related courses	Number of courses offering environment related courses

Integrate environmental considerations into decision-making of all public bodies and agencies in the region, by requiring the environmental impacts of all policies, plans and programmes to be included in a public statement	Number and percentage of public bodies policies, plans and programmes accompanied by environmental statements
Improve information and awareness for the public and businesses on how to reduce the impact of their lifestyles on the environment	Number and proportion of households and businesses in receipt of information
Set targets and measure environmental performance of the region	Achievement of environmental targets

The East of England Regional Assembly and the East of England Environment Forum commend this Strategy to the region. It sets out quite a challenge, but one that we believe the region can grasp. We look forward to working with all stakeholders in the region to make sure this happens.

We are confident that substantial progress can be made, and that we will be able to take pride in the environment of the East of England and its contribution to our quality of life and our economy. Our environment is truly our future.

'Our Environment, Our Future'

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EERA – East of England Regional Assembly
EEEF – East of England Environment Forum

APPENDIX 3 – OTHER REGIONAL STRATEGIES

Work towards an Integrated Regional Strategy continues to evolve. In addition to the Regional Environment Strategy, the following strategies have also been produced or are being prepared. Additional strategies may also be required in the future in order to complete the set. For example, a Regional Woodland Strategy is currently being produced.

Sustainable Development Framework (SDF)

The Sustainable Development Framework for the East of England provides overarching guidance to encourage the adoption of sustainable development principles in all regional strategies and action plans. Published in October 2001, it identifies a set of high-level sustainable development objectives for the region in addition to more detailed challenges and objectives.

Regional Planning Guidance (RPG)

In light of the new arrangements for regional planning introduced in April 2001, the East of England Regional Assembly is preparing revised East of England Regional Planning Guidance (RPG14). This will set out a spatial strategy for new development. Regional planning policies will identify locations for planned development and in some cases prescribe how much development there should be. Although detailed site selection will be left to local development plans, some major development projects will be identified. RPG will also contain policies that protect designated environmental assets and set criteria for providing environmental infrastructure such as flood defence and water supply. In selected locations, sub-regional planning studies have been identified to examine in more detail strategic growth locations and to address specific issues of concern. RPG14 will be published in the spring of 2004.

The revised RPG will incorporate a **Regional Transport Strategy.** In addition to providing a long-term regional framework for transport planners and operators, this will support the spatial, economic and social strategy for the region. The transport component of RPG will in turn be informed by a series of other strategic studies being undertaken within the region, including multi-modal, ports and airport studies.

RPG will also include the **Regional Waste Management Strategy** published by the East of England Regional Waste Technical Advisory Body (RWTAB) in January 2003. The objective of the Strategy is to reduce the amount of waste produced and to change to more sustainable waste management. The principal purpose of the Strategy is to provide guidance on the land use planning aspects of waste management by considering regional needs and the provision of sufficient facilities. It also provides the context for Local Waste Plans prepared by the strategic planning authorities, guides the waste collection and disposal plans of all authorities in the East of England, and informs and influences the private sector in their activities. In line with the timescale for RPG, the period that this Strategy covers extends to 2021.

Regional Economic Strategy (RES)

The East of England Development Agency published 'East of England 2010, the Regional Economic Strategy' in June 2001. This includes an environment chapter that recognises that *'no organisation, public or private can afford to make business decisions on short-term economic grounds alone. Clients, customers and employees expect organisations to have concern for the environmental and social impact of their decisions'.* The Strategy discusses how the high quality of the East of England's natural and built environment makes an important contribution to economic objectives. It highlights that businesses and organisations of the East of England need to act urgently to secure environmental assets, adapt to environmental changes and to exploit the global environmental business opportunities, which are emerging. Its three strategic environmental priorities are to:

- Encourage the take-up of sustainable policies and practices by all businesses.
- Promote the environmental business sector.
- Protect and support the natural and built environment.

The RES recognises that the region faces a major challenge in achieving economic growth and regeneration, while safeguarding and enhancing the natural and built environment.

A revised RES will be completed and published in 2004.

Regional Social Strategy

In Autumn 2002, the Health and Social Inclusion Panel of the Regional Assembly commenced work on developing a Regional Social Strategy for the East of England. The Strategy will describe the role the environment has in enhancing well-being and quality of life in tackling inequalities in health, social exclusion and neighbourhood renewal.

The Strategy will be completed in 2004.

Regional Cultural Strategy

The environment contributes significantly to the region's cultural life, providing the context for much tourism and leisure activity. The Regional Cultural Strategy, produced by the Regional Cultural Forum in July 2001, acknowledges the importance of the natural and built environment to the cultural make-up of the region. References are made to the region's environmental strengths, including historic cities, ports and seaside resorts, churches, fine landscapes, farmland and scenery. Case studies of environmental projects are highlighted, indicating the importance to the region of areas such as the Norfolk Broads and Wicken Fen for tourism. The valuable cultural associations of the region's landscapes, both natural and man-made are recognised. The Strategy also includes targets for regeneration projects for the built and natural environments. The action plan includes a commitment to establish high profile landmarks through public art or architecture at regional gateways, and supports the development of a regional design statement on architecture and the built environment.

Regional Housing Strategy

The Regional Housing Forum produced a first Regional Housing Strategy for the region in June 2003, which will help to shape and influence the direction housing will take in the East of England.

Appendix 3 - Other Regional Strategies

Appendix 3 - Other Regional Strategies


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