Introduction

Appendix E sets out the collated contextual and baseline information, on a topic-by-topic basis, for each of the 10 assessment topics:

1. **Biodiversity and Nature Conservation** (including Fauna and Flora)
2. **Population** including demographics, socio-economics
3. **Human health**
4. **Soil** including geology and land use
5. **Water** quality (including surface and ground water quality and availability)
6. **Air quality**
7. **Climatic Factors** including climate change and adaptation and flood risk
8. **Material Assets** waste management and minerals
9. **Cultural Heritage** including architectural and archaeological heritage
10. **Landscape and Townscape**

The information for each topic is structured as follows in compliance of the SEA Directive Annex I (b) – (g) requirements:

Annex I SEA Directive Requirements	Sub section in the Topic chapter
	Introduction - provides an overview and definition of the topic.
e) The environmental protection, objectives, established at international, Community or national level, which are relevant to the plan or programme and the way those objectives and any environmental, considerations have been taken into account during its preparation.	**Summary of national and regional plans and programmes** - provides an overview of the policy context in which the revocation plan sits and identifies the environmental protection, objectives, established at international, Community or national level that are relevant to the Regional Strategy.
b) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.	**Overview of the baseline -** provides an overview of the relevant aspects of the current state of the environment at a national and regional level and the key topic specific baseline factors which will need to be considered as part of the assessment. **The likely evolution of these baseline conditions without the implementation of the revocation plan** - provides an overview of how the baseline is likely to change in the absence of the revocation plan, an understanding of this is key to understanding the effects of the revocation plan on the topic area.

Annex I SEA Directive Requirements	Sub section in the Topic chapter
c) The environmental characteristics of areas likely to be significantly affected.	**The environmental characteristics of areas likely to be significantly affected** – provides a summary of those key aspects of the region most likely to be affected by the plan.
d) Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC.	**Current problems in areas of particular environmental importance** (such as those designated under the Wild Birds and Habitats Directives and further expanded upon in **Appendix G**). Given the focus on European designated conservation sites this sub-section appears in biodiversity.
f) The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors. (Footnote: These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects).	**Assessing significance** –provides an outline of the illustrative guidance used to assess the potential effects for each topic. **Assessment of likely significant effects of retention, revocation and partial revocation** - including information on the likely significant effects.
g) The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.	**Proposed mitigation measures** – including proposed measures identified.

A1. Biodiversity and Nature Conservation

1.1 Introduction

The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of the Revocation Plan on biodiversity and nature conservation. Information is presented for both national and regional levels.

Biodiversity in this context is defined by the ***Convention on Biological Diversity***[1] as 'the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.' Biodiversity is integral to the functioning of ecosystems and these, in turn, provide 'ecosystem services' which include food, flood management, pollination and the provision of clean air and water.

There are links between the biodiversity and nature conservation topic and other topics in the SEA, including water, soil and geology, land use, and climate change.

1.2 Summary of Plans and Programmes

1.2.1 International

The UK is a signatory (along with another 189 parties) to the **Convention on Biological Diversity**, Nagoya, Japan, 2010 which sets out a conservation plan to protect global biodiversity, and an international treaty to establish a fair and equitable system to enable nations to co-operate in accessing and sharing the benefits of genetic resources. The new global vision is: 'By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.' The parties also agreed a shorter-term ambition to 'Take effective and urgent action to halt the loss of biodiversity, [so] that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication'.

In March 2010, the European Union (EU) agreed to **an EU vision and 2020 mission for biodiversity**:

- By 2050, EU biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their

[1] The convention uses this definition to describe 'biological diversity' commonly taken to mean the same as biodiversity.

essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided;

- Halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restore them insofar as is feasible, while stepping up the EU contribution to averting global biodiversity loss.

The European Commission adopted a new **EU Biodiversity strategy** to help meet this goal. The strategy provides a framework for action over the next decade and covers the following key areas:

- Conserving and restoring nature;
- Maintaining and enhancing ecosystems and their services;
- Ensuring the sustainability of agriculture, forestry and fisheries;
- Combating invasive alien species;
- Addressing the global biodiversity crisis.

There are a number of EU Directives focusing on various types of wildlife and habitat that provide a framework for national action and international co-operation for conservation on land and in the sea. In particular the ***Habitats Directive*** and ***Birds Directive*** include measures to maintain or restore important natural habitats and species including through the designation of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). These Directives are transposed into United Kingdom law through a number of regulations and planning policy documents. The ***Freshwater Fish Directive*** includes measure on the quality of fresh waters needing protection or improvement in order to support fish life.

The ***Marine Strategy Framework Directive 2008/56/EC*** requires Member States to develop a marine strategy, including determining Good Environmental Status (GES) for their marine waters, and designing and implementing programmes of measures aimed at achieving it by 2020, using an ecosystem approach to marine management. It takes account both of socioeconomic factors and the cost of taking action in relation to the scale of the risk to the marine environment. Draft regulations establish a legal framework which assigns duties to the Secretary of State, Welsh and Scottish Ministers and the Department of the Environment in Northern Ireland have been published for consultation.

Under the ***Ramsar Convention***, wetlands of international importance are designated as Ramsar Sites. As a matter of policy, Ramsar sites in England are protected as European sites. The vast majority are also classified as SPAs and all terrestrial Ramsar sites in England are notified as Sites of Special Scientific Interest (SSSIs).

1.2.2 National

UK

The Wildlife and Countryside Act 1981 is the main UK legislation relating to the protection of named animal and plant species includes legislation relating to the UK network of nationally protected wildlife areas: Site of Special Scientific Interest (SSSIs[2]). Under this Act, Natural England now has responsibility for identifying and protecting the SSSIs in England. The ***Countryside and Rights of Way Act 2000*** (CROW) strengthens the powers of Natural England to protect and manage Sites of Special Scientific Interest. The CROW Act improves the legislation for protecting and managing SSSIs so that:

- Natural England can change existing SSSIs to take account of natural changes or new information;
- all public bodies have a duty to further the conservation and enhancement of SSSIs;
- neglected or mismanaged sites can be brought into favourable management;
- new offences and heavier penalties now apply to people who illegally damage SSSIs.

The ***UK Biodiversity Action Plan 1994*** was the UK Government's response to signing the Convention on Biological Diversity (CBD) at the 1992 Rio Earth Summit. The CBD called for the development and enforcement of national strategies and associated action plans to identify, conserve and protect existing biological diversity, and to enhance it wherever possible. The UK Biodiversity Action Plan was then established to conserve and enhance biodiversity in the UK through the use of Habitats and Species Action Plans to help the most threatened species and habitats to recover and to contribute to the conservation of global biodiversity. The plan set out a programme for conserving the UK's biodiversity. It also led to the production of 436 action plans between 1995 and 1999 to help many of the UK's most threatened species and habitats to recover. A review of the UK BAP priority list in 2007 led to the identification of 1,150 species and 65 habitats that meet the BAP criteria at UK level. As well as having national priorities and targets, action was taken at a local level to create Local Biodiversity Action Plans (LBAPS). These identify local priorities for biodiversity conservation and work to deliver agreed actions and targets for priority habitats and species and locally important wildlife and sites.

Conserving Biodiversity – The UK Approach (2007) sets out an approach to halt UK biodiversity loss by 2010 using an integrated framework of an Ecosystem Approach[3]. Key targets include:

[2] As amended by the *Countryside and Rights of Way (CROW) Act 2000* and the *Natural Environment and Rural Communities (NERC) Act 2006*

[3] The Convention on Biological Diversity (http://www.cbd.int/ecosystem/) defines the Ecosystem Approach as *'a strategy for the integrated*

- for 95% of SSSIs to be in favourable or recovering condition by 2010;
- to halt the loss of biodiversity by 2010; and
- to reverse the long-term decline in the number of farmland birds by 2020.

More recently the ***Conservation of Habitats and Species Regulations 2010*** requires that sites of importance to habitats or species are to be designated and any impact on such sites or species must be considered in regards to planning permission applications.

The ***Environmental Protection Act 1990*** sets out key statutory requirements for the UK regarding environmental protection (including waste and nature conservation).

The ***Marine and Coastal Access Act 200)*** sets out a number of measures including the establishment of Marine Conservation Zones (MCZs) and Marine Spatial Plans. The ***Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007*** apply in the 'offshore area' beyond 12 nautical miles from the UK coast. They provide protection for a variety of marine species and wild birds through a number of offences that aim to prevent damaging activities affecting protected species and habitats.

The ***National Parks and Access to the Countryside Act 1949*** aims to conserve and protect countryside and National Parks through legislation.

The ***Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007*** apply in the 'offshore area' beyond 12 nautical miles from the UK coast. They provide protection for a variety of marine species and wild birds through a number of offences that aim to prevent damaging activities affecting protected species and habitats.

England

The Natural Environment and Rural Communities (NERC) Act 2006 establishes Natural England as the main body responsible for conserving, enhancing and managing England's natural environment. It also covers biodiversity, pesticides harmful to wildlife and the protection of birds.

The ***Natural Environment White Paper (2011)*** recognises that nationally, the fragmentation of natural environments is driving continuing threats to biodiversity. It sets out the Government's policy intent to:

- improve the quality of the natural environment across England;

management of land, water and living resources that promotes conservation and sustainable use in an equitable way.'

- move to a net gain in the value of nature;
- arrest the decline in habitats and species and the degradation of landscapes;
- protect priority habitats;
- safeguard vulnerable non-renewable resources for future generations;
- support natural systems to function more effectively in town, in the country and at sea; and
- create an ecological network which is resilient to changing pressures.

By 2020, the Government wants to achieve an overall improvement in the status of the UK's wildlife including no net loss of priority habitat and an increase of at least 200,000 hectares in the overall extent of priority habitats. Under the White Paper, the Government has also put in place a clear institutional framework to support nature restoration which includes Local Nature Partnerships creating new Nature Improvement Areas (NIAs).

Biodiversity 2020: A strategy for England's wildlife and ecosystem (2011) is a new biodiversity strategy for England that builds on the Natural Environment White Paper and provides a comprehensive picture of the Government is implementing the international and EU commitments. It sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea.

The ***National Planning Policy Framework (NPPF) (2012)*** replaces the majority of previously used planning policy including Planning Policy Statement 9 on Biodiversity and Geological Conservation. The NPPF includes key policies to ensure the planning system contributes to and enhances the natural and local environment by:

- protecting and enhancing valued landscapes, geological conservation interests and soils;
- recognising the wider benefits of ecosystem services;
- minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and

- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

The Framework states that, when preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment. Local planning authorities are expected to set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity or landscape areas will be judged. In doing so they must take into account the policies in the Framework including those which set out the circumstances where in order to conserve and enhance biodiversity planning permission should be refused.

1.2.3 East of England Regional Plans

The East of England Biodiversity Forum Delivery Plan (2008) was designed to enable the East of England to tackle the six challenges it is facing in an organised and coherent fashion. The six challenges are:

- Networking nature;
- Realising biodiversity's true value;
- Ensuring there is water;
- Responding to a changing coast;
- Safeguarding the seas;
- Enhancing the evidence base.

Meeting these challenges will help the Forum to meet their three core goals:

- securing a resilient environment;
- demonstrating the benefits from biodiversity;
- ensuring that biodiversity is perceived to be at the heart of Regional policy-making.

There are seven local biodiversity partnerships acting through Local Biodiversity Action Plans (LBAPs) that relate to the East of England (as at March 2011):

- Bedfordshire & Luton LBAP;
- Cambridgeshire County and Peterborough Biodiversity Action Plan;

- Essex Biodiversity Project;
- Hertfordshire (50 Year Vision for the Wildlife and Natural Habitats);
- Norfolk Biodiversity Action Plan;
- Suffolk Biodiversity Action Plan;
- Test LBAP (Peterborough).

LBAPs are normally prepared and coordinated at the county level. The plans usually include actions to address the needs of the UK priority habitats and species in the local area, together with a range of other plans for habitats and species that are of local importance or interest.

1.3 Overview of the Baseline

1.3.1 England

There are over 4,100 SSSIs in England, covering 1,076,986ha (including open water and coastal habitats). In terms of land area, approximately 8% of England is designated as SSSI.[4]

In England there are 250 SACs, 85 SPAs and 74 RAMSAR sites.[5]

As at 01 May 2012 the overall condition of SSSIs in England was assessed by Natural England to be 37.25% as area favourable; 59.4% area unfavourable recovering; 2.21% area unfavourable no change; 1.11% area unfavourable declining and 0.03% area destroyed/part destroyed.[6] The reasons for adverse conditions at sites are set out in **Table 1.1**. This indicates that planning permission (general) was linked to 0.93% of the area not meeting the Natural England Public Service Agreement (PSA) targets and planning permission (mineral and waste) 0.25%.[7] Whilst these targets have been superseded, they were linked to delivering the commitments in the 2007 Conserving Biodiversity Strategy such as the requirement to have 95% of SSSIs to be in favourable or recovering condition by 2010.

[4] Natural England http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/sssi/default.aspx

[5] JNCC Protected sites http://jncc.defra.gov.uk/page-1456

[6] http://www.sssi.naturalengland.org.uk/special/sssi/reportAction.cfm?Report=sdrt15&Category=N&Reference=0

[7] http://www.sssi.naturalengland.org.uk/special/sssi/reportAction.cfm?Report=sdrt17&Category=N&Reference=0

Table 1.1 Reasons for Adverse Condition Summary

Reason for adverse condition	Percentage of unit area not meeting the PSA target	Reason for adverse condition	Percentage of unit area not meeting the PSA target
Inappropriate scrub control	14.46%	Fire - other	1.73%
Under-grazing	13.95%	Inappropriate coastal management	1.71%
Overgrazing	11.66%	Vehicles - other	1.68%
Water pollution - agriculture/run off	11.31%	Moor burning	1.62%
Inappropriate water levels	10.48%	Earth science feature obstructed	1.51%
Invasive freshwater species	8.75%	Vehicles - illicit	1.33%
Forestry and woodland management	5.90%	**Planning permission - general**	0.93%
Drainage	5.27%	Inappropriate css/esa prescription	0.79%
Coastal squeeze	5.16%	Sea fisheries	0.71%
Inappropriate weirs dams and other structures	4.46%	Air pollution	0.60%
Inappropriate weed control	4.28%	Peat extraction	0.50%
Water pollution – discharge	4.25%	Inland flood defence works	0.40%
Inappropriate cutting/mowing	3.95%	Game management - pheasant rearing	0.35%
Deer grazing/browsing	3.60%	Game management - other	0.32%
Public access/disturbance	3.30%	Inappropriate dredging	0.25%
Inappropriate ditch management	3.19%	**Planning permission - other mineral and waste**	0.25%
Siltation	3.06%	Inappropriate pest control	0.22%
Fish stocking	2.75%	Earth science feature removed	0.14%
Fertiliser use	2.67%	Inappropriate stock-feeding	0.09%
Water abstraction	2.06%	Pesticide/herbicide use	0.04%
Agriculture – other	1.77%	Other	14.07%

1.3.2 East of England

Biodiversity interest in the East of England is dominated by coastal and wetland landscapes, but there are notable areas of woodland and the open grassland, heathland and agricultural landscapes of the Brecks. Baseline data findings show the region to be rich in habitats and wildlife and to have a high quality environment.

Coastal saltmarsh and mudflats

- The extensive coast supports 40% of England's inter-tidal mudflat area.
- These habitats are important staging posts for migrating birds and feeding sites large numbers of internationally important waders and wildfowl throughout the winter.
- Coastal saltmarshes play an important role in reducing wave energy in front of tidal defences.
- According to the Environment Agency, nationally 100 hectares of saltmarsh and mudflat are lost each year because of sea-level rise and the current location of some sea-walls.
- Future climate change could increase the rate of habitat loss on the coast.

Fens, reed beds and grazing marsh

- 45% of England's reed beds are found in the region, concentrated across Norfolk and Suffolk, and nearly 20% of England's coastal and freshwater grazing marsh.
- Wetlands and other habitats can help reduce the effects of climate change by absorbing carbon dioxide emissions, protecting carbon contained within soils and storing flood waters to reduce the impacts of flooding on people and property downstream.
- However, drainage, losses to agriculture and development have reduced the area of our fens, reed beds and grazing marshes.

Woodland

- There are about 140,000 hectares of woodland in the East of England, or 7.3% of the total land area. In addition, there are approximately 13.5 million trees outside woodland in the countryside.
- The majority of the woodland is broadleaved, with the main species being oak and ash. The percentage of this that has been designated as Ancient Semi-natural (i.e. it has existed relatively unchanged in species composition since at least 1600) is higher than the national average.
- 11% of the country's deciduous woodland is found in the Anglian Region for example the Corsican and Scots pine woodlands on the Suffolk coast and Thetford Forest. Thetford Forest has significant conservation value and is home to rare plants, insects, and declining farmland

birds like yellowhammer and linnet.

- 10% of England's ancient woodland is found in the Anglian Region, as well as notable concentrations of wet woodland on fens, although there is no precise data on the total extent of wet woodland in the UK.

- Wet woodland is increasingly recognised for its biodiversity, landscape, and flood risk management value. Appropriately sited wet woodland will help meet the Water Framework Directive (WFD) objectives and will allow species to adapt to a changing climate.

- The area of woodland in the region has increased steadily and significantly over the last 100 years, with the most obvious examples being the mainly coniferous woodlands established from the middle of the twentieth century.

Chalk rivers

- Nearly 1,200km of the chalk rivers in England are located in the region, comprising nearly 25% of the total length in England.

- The Rivers Wensum and the Nar are both chalk river SSSIs and in 2010 their condition was 'unfavourable, no change'. The main threats to chalk rivers are water abstraction, nitrogen pollution and physical modification.

Internationally designated sites

The East of England hosts 33 Special Areas of Conservation, 25 Special Protection Areas and 19 Ramsar sites as listed in Annex C. These sites are subject to the highest level of protection.

SSSIs

Sites of Special Scientific Interest (SSSIs) cover around 200,000 hectares of the region (around 7%). SSSI condition has improved significantly over recent years. In May 2012, 199,000 ha (94.19%) of this area was 'favourable' or 'recovering' condition. This compares with 79% in 2006.

Beaches, sand banks and inter-tidal mudflats cover the largest SSSI area - over 100,000 ha, with 65% in 'favourable' condition. However, around 28,000ha of SSSI is still in poor condition, mainly because of coastal squeeze, water pollution and water abstraction. The South Holland district which includes the

Wash (the largest SSSI in England) has the largest area of SSSIs in the region, totalling nearly 40,000 hectares. All the SSSIs in the district are in 'favourable' or 'recovering' condition. Lowland chalky grassland; fen, swamp and marsh; open standing waters and canal habitats are mostly in unfavourable condition. These habitats are particularly affected by water abstraction and agricultural diffuse pollution.

Table 1.2 East of England SSSI Extent and Condition, November 2008

	Extent (ha)	Favourable or recovering condition (ha)		Unfavourable condition (ha)	
			%		%
Coastal	39,650	22,793	57	16,857	43
Woodlands:	24,959	23,019	92	1,940	8
Coniferous woodland	20,598	20,598	100	0	0
Broadleaved, mixed and yew woodland	11,312	9,387	83	1,925	17
Arable and horticulture	13,647	13,632	100	15	0
Grassland:	18,151	14,241	78	3,910	22
Neutral grassland	11,252	8,398	75	2,854	25
Acid grassland	3,424	2,941	86	483	14
Calcareous grassland	2,703	2,130	79	573	21
Improved grassland	772	772	100	0	0
Lowland heath	4,166	3,545	85	620	15
Freshwater:	12,788	8,058	63	4,729	37
Fen, marsh and swamp	6,578	3,691	56	2,886	44
Lakes, ponds and canals	5,920	4,342	73	1,578	27
Rivers and streams	290	25	9	265	91
Other habitats	716	600	84	116	16
Geological features	1,296	1,191	92	106	8
Total	122,324	94,045	77	28,278	23

Table 1.3 Adverse Condition of SSSIs in the Region: Main Reasons, November 2008[8]

Reason for adverse condition*	% of total area (28,278 ha) in unfavourable condition	Area unfavourable (ha)
Coastal squeeze	58	16,540
Water pollution – discharge	24	6,917
Water pollution – agriculture/run off	21	5,882
Water abstraction	14	3,888
Insufficient water levels	10	2,848
Disturbance from public access	6	1,779
Lack of scrub control	5	1,355
Undergrazing	5	1,284
Drainage	3	803
*More than one adverse condition reason may be affecting the same area.		

Whilst overall wild bird populations have remained broadly stable in England from 1970 to 2007, farmland birds have not fared so well. Farmland bird numbers are now 52% lower than in 1966. Farmland birds have been adversely affected by changes in farming practices, particularly during the 1970s and 1980s. The recently published regional sustainable development indicators confirm the assessment that farmland birds had declined in the East of England in the decade to 2005. Between 1970 and 1994, farmland bird numbers in the East of England declined by 44%. From 1994 to 2006, the decline in the region was less marked (7%) and was comparable with national figures[9].

1.4 Environmental Characteristics of those Areas most likely to be Significantly Affected

Many of the region's biodiversity 'hotspots' tend to be in more rural areas and at the coast. In general, the spatial strategy aims to ensure that growth is targeted towards existing urban areas, which will go some way towards ensuring that many of the more direct biodiversity impacts are avoided. Furthermore, avoiding growth at the coast is beneficial as development can often have an 'opportunity cost' if it constrains future options to manage the coast with climate change adaptation, natural processes and biodiversity in mind.

North Norfolk and Great Yarmouth are two sensitive coastal districts that are allocated very little growth. Coastal districts that are allocated significant levels of growth are Kings Lynn and West Norfolk, Suffolk

[8] Natural England (2008) Investing in the East of England's natural assets: state value and vision
[9] Natural England (2008). Investing in the East of England's natural assets: state, value and vision

Coastal (the area outside of the Ipswich Policy Area), Tendring and Colchester. The Environment Agency highlighted at the draft review stage that 'In the east of the region, many [coastal] habitats are already under threat from coastal change linked to sea level rise caused by climate change and protecting and replacing these habitats where necessary is a challenging task. This task will be made even more complex if additional growth is targeted towards the vulnerable Suffolk coast.' As identified above, nationally, coastal squeeze is one of the main causes of adverse effects to SSSIs (5% of the SSSI area identified to be in adverse condition).

Aside from the coast, Breckland District is another biodiversity hotspot. There is potential for growth in Breckland to impact on the extensive areas of important and sensitive heathland in the area. Recreation and air pollution will undoubtedly be important impact pathways, and there may also be the potential for urban extensions or extensions of smaller settlements to lead to habitat loss and fragmentation. It is thought that mitigation measures can be implemented, but that there is a likelihood of some unavoidable impacts to this nationally significant, biodiversity rich landscape. Breckland is allocated two new homes for every new job, although it is not clear whether this will lead to out commuting (which could have air quality implications).

Impacts to water resources are particularly significant. The Wildlife Trusts highlighted during the review of the Plan that 'many wetland SSSIs are in unfavourable condition as a result of over-abstraction'. As part of the consultation on the growth scenarios, a number of respondents had stated that chalk streams were one important habitat within the region that is particularly sensitive to water resource impacts. Chalk stream habitats can suffer as a result of abstraction from aquifers as well as from excessive discharge from sewage treatment works. In 2009, the Environment Agency modelled the impact of the four regional Growth Scenarios considered in the review of the Plan on the supply/demand balance within each of the water company areas across the region. The Environment Agency stated their view that the Chilterns chalk streams (such as the Rivers Gade and Bulbourne that flow through Dacorum Borough Council, and the River Ver that flows through St Albans) represents a biodiversity hotspot comparable to Breckland. The Wildlife Trusts stated that the Upper Lee and its chalk stream tributaries (Mimram, Beane, Ash, Rib and upper Stort) already suffer dwindling flows and high nutrient levels as a result of sewage treatment effluent.

Cambridgeshire hosts a sensitive biodiversity. A large amount of growth is targeted to Cambridgeshire, with the focus very much on Cambridge and Peterborough. Growth within Cambridgeshire was also identified to have implications in terms of allowing people to access high quality countryside and gain an understanding and appreciation of local landscapes and associated biodiversity. It was considered, for example, that growth spread across Cambridgeshire might be seen to have benefits in this respect, as a result of good access to the Fens, where much work is underway to restore parts to a more natural landscape that is accessible to the public (e.g. the Great Fen Project). The Environment Agency highlighted at the Plan review stage that the Great Ouse Wetland Vision was another important landscape scale project that will deliver flood alleviation, water quality improvements and result in the

creation of a mosaic of important habitats.

Similarly, Norwich is a part of the region with good access to high quality countryside - particularly the Broads, Breckland and the North Norfolk Coast - although it is important to consider that in these areas there may be potential for recreational use to conflict with biodiversity objectives (although access to nature and the countryside is important, the overriding objective is considered to be to prevent adverse recreational impacts on sensitive areas). The Plan targets significant growth at Norwich and the surround districts of Broadland and South Norfolk.

Other parts of the region - in particular the London Arc - are associated with a fragmented biodiversity resource that may be of lesser value than some of the region's biodiversity hotspots, but require close attention nonetheless because of their vulnerability.

Thurrock has an extensive brownfield biodiversity resource, some of which is of at least national importance, and this will undoubtedly come under greater pressure as a result of the need to accommodate high levels of growth. There are 10 SSSIs in Thurrock, which is representative of the diversity of the natural environment in the Borough.

1.5 Summary of Existing Problems Relevant to Revocation of the Plan

The following existing problems for biodiversity have been identified:

- condition of some SSSIs (including internationally designated sites), particularly as a result of coastal squeeze;
- direct and indirect impacts of development and infrastructure on biodiversity more generally (e.g. from habitat loss and fragmentation; recreational pressure; over abstraction of water, and air and water pollution);
- the impacts of climate change on habitats and species, including the loss of habitat resulting from sea-level rise; and
- loss of wider biodiversity interest within non-designated areas - e.g. within non-designated countryside and built up urban areas - including on some brownfield land.

The HRA undertaken in 2010 identified which European and Ramsar sites were potentially susceptible to a range of pressures including direct and indirect effects of urbanisation, deterioration of air quality, over abstraction of water, deterioration of water quality, coastal squeeze and loss of supporting habitat

outside of the boundary of the designated area. The assessment is summarised in Appendix G.

1.6 Likely Evolution of the Baseline

1.6.1 Likely Evolution of the Baseline - England

Results of the 2008 reporting round of the UK Biodiversity Action Plan indicate that in England:[7]

Habitats:

- 17% of priority habitats were increasing (compared to 24% in 2005);
- 12% of priority habitats were stable (compared to 12% in 2005);
- 12% of habitats were declining (continuing/accelerating) (compared to 2% in 2005);
- 24% of habitats were declining (slowing) (compared to 34% in 2005);
- 24% of habitats were fluctuating (compared to 7% in 2005); and
- the status of 10% of habitats was unknown (compared to 20% in 2005).

Species:

- 8% of species were increasing (no change since 2005);
- 22% of species were stable (no change since 2005);
- 24% of species were fluctuating (compared to 19% in 2005);
- 6% of species were declining (slowing) (compared to 8% in 2005);
- 8% of species were declining (continuing/accelerating) (compared to 10% in 2005);
- 3% of species were lost (pre BAP publication) (no change since 2005);
- 5% of species showed no clear trend (compared to 7% in 2005); and
- the status of 21% of species was unknown (no change since 2005).

In England, in 2009 over 80% of SACs and SPAs were in favourable or recovering condition. For the decade up to 2008, SSSI condition in England has experienced a dramatic improvement in the overall site condition over the last 10 years as a result of protection and management[10]. However, some species in particular continue to be impacted upon. The trend in populations of breeding wading birds on unprotected lowland wetland grasslands is towards a major decline.[11]

Despite the increase in area protected for its biodiversity there is concern that the protected site network as it exists is insufficient to protect biodiversity in England as a whole and that some species and habitats will be confined to these protected areas and more vulnerable to pressures and threats, including climate change.[12]

1.6.2 Likely Evolution of the Baseline - East of England

The SEA Directive requires a consideration of the evolution of the baseline without the proposed plan or programme being in place. Slightly confusingly in this assessment, 'without the proposed plan or programme' actually refers to the plan to revoke the regional strategy. So the evolution of the baseline without the plan will mean in this instance, the evolution of the baseline with the existing regional strategy in place. Therefore, the assessment has used the findings of the 2010 sustainability appraisal and appropriate assessment to the East of England plan to provide an informed understanding of likely future evolution of the biodiversity/wildlife baseline.

There remained some potential for significant (adverse) effects, because of the level of housing and employment growth proposed focussed on the key centres for development and change. The main policies in the Plan that are most likely to lead to adverse effects on biodiversity are those relating to housing provision (Policy H1), to job growth (Policy E1) and to the provision of land for employment (Policy E2), together with the more locationally specific sub-area policies in section 13.

In response, the Regional Strategy contains a number of key policies which seek to provide protection for designated sites, to increase the area of land protected for its biodiversity interest, to provide stepping stones between important areas and to mitigate the effects of the development policies in the plan. This is particularly true of those polices which were identified through the Habitats Regulation Assessment (HRA) to have the potential to have adverse impacts on internationally important sites (i.e. SACs, SPAs and Ramsar sites).

Plan policy ENV3 deals specifically with biodiversity. In addition to reminding local authorities of their legal requirements to ensure that nationally and internationally designated sites are given the strongest

[10] Natural England (2008) State of the Environment Report

[11] Joint Nature Conservation Committee, Protected Areas, http://www.jncc.gov.uk/page-4241)

[12] Lawton *et al* (2010) Making Space for Nature: A review of England's Wildlife Sites and Ecological Network

level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation, the policy seeks to ensure that the region's wider biodiversity is protected and enriched through the conservation, restoration and re-establishment of biodiversity.

Policy ENV1 states that areas and networks of green infrastructure should be identified, created, protected, enhanced and managed to ensure an improved and healthy environment, and in doing so maximise its biodiversity value. It identifies a number of assets of regional significance for green infrastructure which could provide opportunities for strategic biodiversity gain through habitat restoration and creation. Similarly, policy ENV 5 (woodlands) provides a strong presumption against development that would result in the loss or deterioration of ancient semi-natural woodland and other woodlands of national and regional importance, while requiring that aged or veteran trees are conserved. More generally, the policy should enhance biodiversity by seeking to increase the woodland cover in the region, targeting, for example, schemes for the restoration of derelict or contaminated land, green infrastructure projects associated with growth areas and schemes to expand and link areas of native woodland and create new wet woodland to meet regional and local Biodiversity Action Plan Targets.

Policy SS8 (The Urban Fringe) states that local planning authorities should enhance the biodiversity of the urban fringe through the effective use management and appropriate use of land in the urban fringe. Policy HA1 (Harlow Key Centre for Development and Change) is the only sub-regional policy that explicitly states that Local Development Documents should provide for the creation and maintenance of a network of multi-function green spaces within and around the town protect and maintain designated wildlife sites and provide for biodiversity.

Finally Policies SS8 (The Urban Fringe), ENG2 (Renewable Energy Targets) and Policy M1 (Land Won Aggregates and Rock) all contain the phrase "*avoiding harm to sites of European and international importance for wildlife*" to ensure that the delivery of the policy does not contravene the requirements of the Habitats Directive.

Taken together, the policies in the Plan, if properly implemented, underpinned by strong legal requirements and the National Planning Policy Framework would be most likely to contribute to a continuing improvement in the overall biodiversity resource in the East of England. It would not solve all of the problems for biodiversity, as this is mainly outside the control of the planning system.

1.7 Assessing Significance

Table 1.5 sets out guidance utilised during the assessment to help determine the relative significance of potential effects on the biodiversity objective. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

Table 1.5 Approach to Determining the Significance of Effects on Biodiversity

Effect	*Description*	*Illustrative Guidance*
++	Significant positive	• Alternative would have a significant and sustained positive impact on European or national designated sites and/or protected species. (e.g. – fully supports all conservation objectives on site, long term increase in population of designated species) • Alternative would have a strong positive effect on local biodiversity (e.g. – through removal of all existing disturbance/pollutant emissions, or creation of new habitats leading to long term improvement to ecosystem structure and function). • Alternative will create new areas of wildlife interest with improved public access in areas where there is a high demand for access to such sites.
+	Positive	• Alternative would have a minor positive effect on European or national designated sites and/or protected species (e.g. – supports one of the conservation objectives on site, short term increase in population of designated species). • Alternative may have a positive net effect on local biodiversity (e.g. – through reduction in disturbance/pollutant emissions, or some habitat creation leading to temporary improvement to ecosystem structure and function). • Alternative will enhance existing public access to areas of wildlife interest in areas where there is some demand for such sites.
0	No (neutral effects)	• Alternative would not have any effects on European or national designated sites and/or any species (including both designated and non-designated species). • Alternative would not affect public right of way or access to areas of wildlife interest.
-	Negative	• Alternative would have minor residual impact on European or national designated sites and/or protected sites (e.g. – prevents reaching one of the conservation objectives on site, short term decrease in population of designated species). These impacts could not be effectively avoided but could be effectively compensated for. • Alternative would have minor short-term negative effects on non-designated conservation sites and species (e.g. – through a minor increase in disturbance/pollutant emissions, or some loss of habitat leading to temporary loss of ecosystem structure and function). • Alternative will decrease public access to areas of wildlife interest in areas where there is some demand for such sites.
--	Significant negative	• Alternative would have a major negative and sustained effect on European or national designated sites and/or protected species (e.g. – prevents reaching all conservation objectives on site, long term decrease in populations of designated species). These impacts could not reasonably be compensated for. • Alternative would have strong negative effects on local biodiversity (e.g. – through an minor increase in disturbance/pollutant emissions, or considerable loss of habitat leading to long term loss of ecosystem structure and function).
?	Uncertain	• From the level of information available the impact that the Alternative would have on this objective is uncertain.

1.8 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 1.6 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the biodiversity topic.

Table 1.6 Significant Effects against the Biodiversity Topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
SS1 Retention	++	++	++	The policy seeks to ensure that development respects environmental limits by seeking net environmental gains wherever possible, or at least avoiding harm, or minimising, mitigating and/or compensating for that harm. The supporting text specifically ensures that no development adversely affects the integrity of sites of European or international importance for wildlife - in line with the requirements of the Habitats Regulations. However, it also applies more generally to biodiversity including sites and species protected under domestic legislation. The policy is reflected in the RES which sets out a Vision to include being at the forefront of a low-carbon and resource efficient economy. Also of particular relevance to SS1 are two of the RESs Priorities within the context of a spatial economy which are 'Creating sustainable places for people and business' and 'Adapting the region's places to meet the challenges and opportunities of climate change. In consequence retention has been assessed as scoring a significant positive against the biodiversity topic.
SS1 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation would be unchanged by revocation. Paragraph 6 of the NPPF makes clear that the purpose of the planning system is to contribute to the achievement of sustainable development. It makes specific reference to the five 'guiding principles' of sustainable development set out in the UK Sustainable Development Strategy: Securing the Future. These include living within the planet's environmental limits. The policies in paragraphs 18 to 219, taken as a whole, constitute the Government's view of what sustainable development in England means in practice for the planning system. Paragraph 117 states that planning policies should: • plan for biodiversity at a landscape-scale across local authority boundaries; • identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation; • promote the preservation, restoration and re-creation of priority habitats, ecological

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan; • aim to prevent harm to geological conservation interests; and • where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas. The plan policies are supported by the development management requirements set out in paragraph 118. In addition, the introduction of Local Nature Partnerships announced in the Natural Environment White Paper which will complement existing local partnerships which deal with matters such as provision of green infrastructure will improve the chances of the delivery of the policy. Such partnerships will be able to work across administrative boundaries enable planning of networks at the scale that has the most impact. In consequence, revocation has been assessed as having the same positive benefits as retention.
SS8 Retention	++	++	++	The policy seeks to protect and enhance the biodiversity value of the urban fringe by ensuring that new development contributes to enhancing its biodiversity value and avoids harm to sites of European and international importance for wildlife. It also seeks to provide networks of accessible green infrastructure linking urban areas with the countryside. The protection policies will apply through the short to long term, while the benefits of new areas of green infrastructure are likely to increase with time. The RES reflects this policy in recognising that design quality will help ensure sensitivity to vulnerable landscapes. Also the RES acknowledges that high quality natural environments across urban and rural landscapes are among a range of key factors in attracting investment and supporting the economy. In consequence retention has been assessed as scoring a significant positive against the biodiversity topic.
SS8 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation would be unchanged by revocation. Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement of the natural and local environment. This includes recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity and providing net gains in biodiversity where possible. In addition, the introduction of Local Nature Partnerships announced in the Natural Environment White Paper which will complement existing local partnerships which deal with matters such as provision of green infrastructure will improve the chances of the delivery of the policy. Such partnerships will be able to work across administrative boundaries enable planning of networks at the scale that has the most impact. In consequence, revocation has been assessed as having the same positive benefits as retention.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
SS9 Retention	++ -	++ -	++ -	The policy seeks the conservation of the coastal environment and coastal waters, including the natural character, historic environment and tranquillity of undeveloped areas, particularly in the areas of coastline and estuary designated as sites of European or international importance for wildlife. The policy also seeks to investigate and pursue opportunities for the creation of new coastal habitats, such as salt marsh and mudflat, in areas identified for managed realignment. New development should not be permitted in such areas. Given the extent of the coast in the East of England, its importance for wildlife but also historic losses of particular habitats such as salt marsh and mudflat, this policy seeks to redress the situation In consequence retention has been assessed as scoring a significant positive against the biodiversity topic.
SS9 Revocation	++ -	++ -	++ -	The NPPF (paragraphs 105 to 108) contains a number of policies specific to the coast. Local planning authorities should apply Integrated Coastal Zone Management across local authority and land/sea boundaries. Legislation on biodiversity, the NPPF and the use of Shoreline Management Plans will ensure that revocation will also have significant positive effects against the biodiversity topic.
ENV1 Retention	++	++	++	The policy aim is for areas and networks of green infrastructure to be identified, created, protected, enhanced and managed to ensure an improved and healthy environment. They should be developed so as to maximise their biodiversity value. The policy will therefore protect, create and enhance biodiversity and make a significant contribution to mitigating many of the effects arising from the delivery of homes and infrastructure identified in the plan. In consequence retention has been assessed as scoring a significant positive against the biodiversity topic.
ENV1 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation would be unchanged by revocation. Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement of the natural and local environment. This includes recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity and providing net gains in biodiversity where possible. In addition, the introduction of Local Nature Partnerships announced in the Natural Environment White Paper which will complement existing local partnerships which deal with matters such as provision of green infrastructure will improve the chances of the delivery of the policy. Such partnerships will be able to work across administrative boundaries enable planning of networks at the scale that has the most impact. In consequence, revocation has been assessed as having the same positive benefits as retention.
ENV2 Retention	++	++	++	While the focus of this policy is on landscape conservation and enhancement, it also provides significant benefits for wildlife (not only in designated landscapes). In consequence retention has been assessed as scoring a significant positive against the biodiversity topic.
ENV2 Revocation	++	++	++	Paragraph 115 of the NPPF continues the emphasis placed on conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				The NPPF also maintains the policy previously contained in PPS7 that local planning authorities should set criteria based policies against which proposals for any development on or affecting protected landscape areas will be judged (paragraph 113), while landscape character assessments should be prepared where appropriate (paragraph 170). In consequence, revocation has been assessed as having the same positive benefits as retention.
ENV3 Retention	++	++	++	The main focus of this policy is on the protection and enhancement of biodiversity in the region. It explicitly protects sites of European and international importance (as required by the Habitats Regulations), as well as requiring proper consideration of the potential effects of development on the conservation of habitats and species outside designated sites, and on species protected by law. It seeks to ensure that new development minimises damage to biodiversity, avoids harm to local wildlife sites and where possible achieves net gains in biodiversity in development sites, and ensuring the appropriate management and further expansion of wildlife corridors important for the migration and dispersal of wildlife. In consequence retention has been assessed as scoring a significant positive against the biodiversity topic.
ENV3 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation would be unchanged by revocation. Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement of the natural and local environment. This includes recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity and providing net gains in biodiversity where possible. Paragraph 117 states that planning policies should: • plan for biodiversity at a landscape-scale across local authority boundaries; • identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation; • promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan; • aim to prevent harm to geological conservation interests; and • where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas. The plan policies are supported by the development management requirements set out in paragraph 118. In addition, the introduction of Local Nature Partnerships announced in the Natural Environment White Paper which will complement existing local partnerships which deal with matters such as provision of green infrastructure will improve the chances of the

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				delivery of the policy. Such partnerships will be able to work across administrative boundaries enable planning of networks at the scale that has the most impact. In consequence, revocation has been assessed as having the same positive benefits as retention.
ENV4 Retention	+	++	++	The main focus of the policy is on agri-environmental schemes and seeking to encourage an increase in the wildlife value of farmland and to reduce diffuse pollution. Given the link to agriculture of much of the deterioration of many SSSIs, this policy if successfully implemented would probably have the greatest effect on biodiversity of all the policies in the plan -although actions are outside the scope of the planning system. More generally the policy seeks to maximise opportunities for restoring land to beneficial uses including habitat creation schemes and woodland. In consequence retention has been assessed as scoring a significant positive against the biodiversity topic. The effects of this policy are more likely to materialise in the medium to long term.
ENV4 Revocation	+	++	++	Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement of the natural and local environment. This includes recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity and providing net gains in biodiversity where possible. Paragraph 109 in the NPPF states that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interests and soils and preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil (and other types) of pollution. The NPPF requires local planning authorities to take into account the economic and other benefits of the best and most versatile agricultural land (paragraph 112). Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality. In consequence, revocation has been assessed as having the same positive benefits as retention. The effects of this policy are more likely to materialise in the medium to long term.
ENV5 Retention	++	++	++	The key impact of this policy is the protection it gives of ancient and semi natural woodland and to aged and veteran trees. However, it also seeks to enhance the biodiversity value of existing and new woodland. The policy explicitly seeks to expand and link areas of native woodland and create new wet woodland (which is a priority in this region), to meet regional and local BAP targets. In consequence retention has been assessed as scoring a significant positive against the biodiversity topic.
ENV5 Revocation	++	++	++	The protection of ancient semi-natural woodland and other woodlands of acknowledged national or regional importance would remain in the absence of the plan (Paragraph 118 of the NPPF). In consequence, revocation has been assessed as having the same positive benefits as retention.
M1 Retention	++	++	++	The policy refers to the statutory requirement to avoid harm to sites of European and international importance for wildlife when extracting minerals. More generally, as the

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				supporting text recognises the restoration of worked-out mineral workings provides opportunities for biodiversity enhancement such as creation of Biodiversity Action Plan priority habitats. In consequence retention has been assessed as scoring a significant positive against the biodiversity topic.
M1 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation would be unchanged by revocation. Paragraphs 143 and 144 provide strong protections for the natural and historic environment and important landscapes. It also provides for the restoration and aftercare of worked sites at the earliest opportunity and for it to be carried out to the highest standards. In consequence, revocation has been assessed as having the same positive benefits as retention.
HA1 Retention	++	++	++	The policy states that Local Development Documents should provide for the creation and maintenance of a network of multifunctional green spaces within and around the town; and protect and maintain designated wildlife sites and provide for biodiversity. In consequence retention has been assessed as scoring a significant positive against the biodiversity topic.
HA1 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation would be unchanged by revocation. Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement of the natural and local environment. This includes recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity and providing net gains in biodiversity where possible In addition, the introduction of Local Nature Partnerships announced in the Natural Environment White Paper which will complement existing local partnerships which deal with matters such as provision of green infrastructure will improve the chances of the delivery of the policy. Such partnerships will be able to work across administrative boundaries enable planning of networks at the scale that has the most impact. In consequence, revocation has been assessed as having the same positive benefits as retention.

1.8.1 Effects of Revocation

The Government's aim, as announced in the Natural Environment White Paper is that by 2020, there will be an overall improvement in the status of wildlife. The planning system can make an important contribution to achieving these goals, although it has to be recognised that the most influence will come from land uses outside the control of the planning system, and in particular, agriculture, and will depend on the uptake and success of agri-environment schemes.

Key indicators for biodiversity are the number and extent of protected areas and their condition. In particular, the Natural Environment White Paper states that 90% of priority wildlife habitats should be in recovering or favourable condition by 2020. There will be more, bigger, better and less-fragmented areas for wildlife, including no net loss of priority habitat and an increase of at least 200,000 hectares in the overall extent of priority habitats. At least 50% of Sites of Special Scientific Interest will be in favourable condition, while maintaining at least 95% in favourable or recovering condition.

According to the baseline figures, the 2020 target has already been achieved in the East of England (95.8% in favourable or recovering condition).

Revocation of the East of England Plan could, in theory, remove or reduce any such remaining potential for biodiversity improvements set out in policies contained in the Plan. However, the NPPF together with legislation and wider national policies on biodiversity provides a strong framework for protecting the existing biodiversity resource. For example, given the continued application of the legal and policy protection given to European and Ramsar sites and to SSSIs and further application of agri-environment schemes it is expected that revocation of the Plan would not change the positive direction of travel. Achievement of legally binding targets for water and air quality will also be significant contributory factors in improving the quality of areas important for wildlife, while enhanced provisions on aspects such as the delivery and protection of green infrastructure will play an important role in increasing the overall area with significant biodiversity value. Statutory and policy protection for AONBs and National Parks will continue to protect the biodiversity value with these areas, at least in so far as the planning system is concerned.

Despite these safeguards, it is far from certain that this would be the outcome and will depend on decisions taken by local authorities in consultation with their communities, and by businesses and other partners, on the future scale, nature and location of housing and other development in order to meet identified need. This is particularly the case with respect to non-designated sites and their associated biodiversity.

Removal of the target for the use of previously developed land (Plan Policy SS2) could have benefits for biodiversity where it reduces the pressure on local planning authorities to develop areas of brownfield land which have biodiversity interest. In its place, paragraph 111 of the NPPF encourages the effective use of land by re-using land that has been previously developed (i.e. brownfield land), provided that it is not of high environmental value. However, moving some development away from brownfield land may increase the pressure to locate development on non-designated areas of the countryside. The effects of this are uncertain as they will depend on the quantum of development away from urban areas and on site specific circumstances, including the biodiversity value on and in the vicinity of the development. It should also be recognised that well planned development which optimises the opportunities for biodiversity - as envisaged in the NPPF - can result in net gains to biodiversity.

1.8.2 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

The likely significant effects on biodiversity associated with the revocation and retention of the quantitative and spatially specific policies are summarised in **Table 1.6** for policy M1 and HA1. However, in neither instance were the effects associated with the policy revocation considered to be negative or different from retention. The combination of legislative requirements for protecting biodiversity, the policy and guidance in the NPPF and the actions of other organisations (such as Natural England) as well the LPAs themselves creates a framework where the effects of revocation are considered to deliver similar positive benefits to biodiversity and nature conservation as retention.

The assessment has found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

1.8.3 Effects of Retention

Assessment of the effects of retention of the Plan are predicated to the assumption that in the absence of the legislation and regional architecture enabling the updating of the Plan, the policies they contain will remain and become increasing outdated and in some cases in conflict with the national policies in the NPPF. They will therefore play an increasingly smaller role in plan making and development control over time.

However, as all the policies in the Plan identified to have significant effects on biodiversity are non-locationally specific, beneficial and seek to mitigate the adverse effects of development, and in most cases consistent with legal requirements, it can be assumed that the effects of retention will mirror the anticipated evolution of the baseline as set out in section 1.6.2 and are unlikely to be materially different

from revocation.

A2. Population

2.1 Introduction

In the absence of detailed SEA guidance on the content of the population topic, 'population' includes information on demographics and generic socio-economic issues. The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of the proposals on the plan to revoke on population and socio-economics. Information is presented for both national and regional levels.

There are links between the population topic and a number of other SEA topics, in particular the effects of population on human health, material assets, air quality and climate change.

2.2 Summary of Plans and Programmes

2.2.1 International

The United Nation's ***Aarhus Convention (2001)*** grants the public rights and imposes on Parties and public authority's obligations regarding access to information, public participation and access to justice. It contains three broad themes or 'pillars':

- access to information;
- public participation; and
- access to justice.

The ***SEA Directive*** creates the following requirements for public consultation;

- Authorities which, because of their environmental responsibilities, are likely to be concerned by the effects of implementing the plan or programme, must be consulted on the scope and level of detail of the information to be included in the Environmental Report. These authorities are designated in the SEA Regulations as the Consultation Bodies (Consultation Authorities in Scotland).
- The public and the Consultation Bodies must be consulted on the draft plan or programme and the Environmental Report, and must be given an early and effective opportunity within

appropriate time frames to express their opinions.

- Other EU Member States must be consulted if the plan or programme is likely to have significant effects on the environment in their territories.

- The Consultation Bodies must also be consulted on screening determinations on whether SEA is needed for plans or programmes under Article 3(5), i.e. those which may be excluded if they are not likely to have significant environmental effects.

The ***European Employment Strategy*** seeks to engender full employment, quality of work and increased productivity as well as the promotion of inclusion by addressing disparities in access to labour markets. These overarching aims are further espoused in the ***Integrated Guideline for Growth and Jobs 2008-11*** and later documents relating policy objectives into broad actions for the member states (***A Shared Commitment for Employment***, 2009; and, ***Implementation of the Lisbon Strategy Structural Reforms in the context of the European Economic Recovery Plan***, 2009).

2.2.2 National

England

The ***Government's Housing White Paper 'Laying the Foundations'*** sets out the Government's policies to support the housing market, especially house building. The Government believes that a well functioning housing market is vital to competitiveness and attractiveness to business. Housing is also seen as crucial to social mobility, health and well being - with quality and choice having an impact on social mobility and wellbeing from an early age. The Government is putting in place new incentives for housing growth through the New Homes Bonus, Community Infrastructure Levy and proposals for local retention of business rates.

The ***Local Growth White Paper (October 2010)*** sets out the Government overarching goal is to promote strong, sustainable and balanced growth. It restates the Government's role in providing the framework for conditions for sustainable growth by:

- creating macroeconomic stability, so that interest rates stay low and businesses have the certainty they need to plan ahead;

- helping markets work more effectively, to encourage innovation and the efficient allocation of resources;

- ensuring that it is efficient and focused in its own activities, prioritising high-value spending and reducing tax and regulatory burdens; and

- ensuring that everyone in the UK has access to opportunities that enable them to fulfil their potential.

The White Paper focuses on the approach to local growth proposing measures to shift power away from central government to local communities, citizens and independent providers. It introduced Local Enterprise Partnerships (LEPs) to provide a vision and leadership for sustainable local economic growth. The number of LEPs has increased to 39 from the 24 originally announced. Across England the LEP's are at different stages of establishment and are subject to further development and consultation. LEPs will be expected to fund there own day to day running costs but may wish to submit bids to the Regional Growth Fund (RGF). The RGF is a discretionary £1.4bn Fund operating for three years between 2011 and 2014 to stimulate enterprise by providing support for projects and programmes with significant potential for creating long term private sector led economic growth and employment and, in particular, help those areas and communities that are currently dependent on the public sector make the transition to sustainable private sector-led growth and prosperity.

There are a number of policies set out with the ***National Planning Policy Framework (NPPF) (2012)*** that set out how local planning authorities should plan for the supply of housing. The new policies explain that to boost significantly the supply of housing, local planning authorities should:

- use their evidence base to ensure that their Local Plan meets the full, objectively assessed housing needs;
- identify and update annually a supply of specific deliverable sites sufficient to provide five years worth of housing;
- identify a supply of specific, developable sites or broad locations for growth, for years 6-10 and, where possible, for years 11-15;
- provide a housing trajectory and set out a housing implementation strategy for the full range of housing; and
- set out their own approach to housing density to reflect local circumstances.

The policy outlines measures that local planning authorities should take order to deliver a wide choice of high quality homes, widen opportunities for home ownership and create sustainable, inclusive and mixed communities. The policy states that Local planning authorities should identify and bring back into residential use empty housing and buildings in line with local housing and empty homes strategies.

The Government's ***Planning Policy for Traveller Sites (2012)*** should be read in conjunction with the National Planning Policy Framework. The policy replaces Circular 01/2006: Planning for Gypsy and Traveller Caravan Sites and Circular 04/2007: Planning for Travelling Showpeople. The overarching aim

of the new policy is to ensure fair and equal treatment for travellers, in a way that facilitates the traditional and nomadic way of life of travellers while respecting the interests of the settled community.

2.2.3 East of England

Local Enterprise Partnerships in the East of England

There are four Local Enterprise Partnerships in the area covered by the East of England plan, covering Norfolk and Suffolk; Greater Cambridge and Greater Peterborough; Hertfordshire and the south-east including Essex, Kent and East Sussex. These are described in more detail below.

New Anglia (Norfolk and Suffolk)

New Anglia's three key priority areas are tourism, energy and business support. These are the sectors and the areas that offer real and immediate potential for growth and job creation, especially for small and medium sized enterprises. The Local Enterprise Partnership:

- Is working with experts and partners in the private sector to cut through the red tape, and support real tourism business growth. East Anglia is also looking to become the UK's Energy Coast.
- Aims to secure investment in major renewable energy programmes along the coastline, and provide the support services/businesses that a successful energy sector needs. The Great Yarmouth/Lowestoft enterprise zone is focused around the energy sector - both offshore renewables and nuclear energy.
- Acting as a co-ordinator and 'enabler' of business support across Norfolk and Suffolk.
- Has launched a Green Economy Pathfinder Strategy which sets out how it will seek to help strengthen supply chain for green goods and services across the two counties.

Greater Cambridge Greater Peterborough (Cambridge, East Cambridgeshire Fenland, Forest Heath, Huntingdonshire, Kings Lynn and West Norfolk, North Hertfordshire, Peterborough, Rutland, St Edmundsbury, South Cambridgeshire, Uttlesford)

The Local Enterprise Partnership is seeking to broaden and deepen:

- the Cambridge 'ideas brand' to become Europe's leading high-tech research and development centre;
- the Peterborough Environment City current designation to become the UK's Environment Capital; and
- the strengths, opportunities and synergies of their market towns and rural economy.

Its four priority areas of focus are:

- skills and employment;
- strategic economic vision, infrastructure, housing and planning;
- economic development and support for high growth business; and
- funding, including EU funding, regional growth funding and private sector funding.

The LEP is also providing strategic leadership around the delivery of the Alconbury enterprise zone. Its sectoral focus is ICT, bio-technology, pharmaceuticals, advanced manufacturing, creative industries, engineering and processing.

Hertfordshire (Hertfordshire)

The Local Enterprise Partnership is focusing on:

- stimulating innovation, particularly around the county's key strengths in research and development, life sciences, telecoms and information technology;
- encouraging enterprise to maintain high levels of business start ups and encouraging growth of local SMEs; and
- attracting inward investment into the county.

South East Local Enterprise Partnership (includes Essex as well as Kent and East Sussex)

The South East Local Enterprise Partnership has four core objectives. These are to:

- secure the growth of the Thames Gateway;

- promote investment in its coastal communities ensuring that they area able to take advantage of future opportunities in tourism, low carbon technologies (including offshore wind, solar power and other renewable energy sources), creative and cultural industries, manufacturing, engineering and business services;
- strengthen its rural economy to ensure growth in tourism and high value added services as super fast broadband is rolled out across the LEP area; and
- strengthen the competitive advantage of strategic growth locations.

Great Yarmouth and Lowestoft.

In 2011 the New Anglia LEP established Enterprise Zones for the coastal towns of Great Yarmouth and Lowestoft, to foster green economic growth. To simplify the planning framework in line with the Enterprise Zone requirements, Local Development Orders (LDOs) have been introduced. This enhances permitted development rights for Energy, Offshore Engineering and Ports & Logistics businesses.

2.3 Overview of the Baseline

2.3.1 UK

National Demographics

In mid 2010 the resident population of the UK was 62,262,000[13] and 64.8% of the population was working age (aged 16 to 64) (65.8% males and 63.8% females). The working age population in 2010 was broken down as follows: [14]

- 77.0% economically active;
- 70.5% in employment; and
- 8.2% unemployed.

The breakdown of qualifications of the working age population in 2010 was as follows:

[13] Office for National Statistics 2010 mid-year population estimates
[14] NOMIS, Official Labour Market Statistics, Annual Population Survey, 2010, https://www.nomisweb.co.uk

- 31.2% had NVQ4 and above;
- 50.9% had NVQ3 and above;
- 67.2% had NVQ2 and above;
- 80.1% had NVQ1 and above;
- 8.4% had other qualifications; and
- 11.6% have no qualifications.

In England and Wales, between 2008/09 and 2009/10 estimates from the British Crime Survey (BCS) indicate vehicle-related thefts fell by 17%, burglary fell by 9% and violent crime fell by 1%. All BCS crime fell by 9%.

Table 2.1 Number of Crimes Recorded by the Police in England and Wales:[15]

	2008/09	2009/10	Change
	Number of offences (thousands)		%
Vandalism	2,700	2,408	-11
Burglary	725	659	-9
Vehicle-related theft	1,476	1,229	-17
Bicycle theft	527	480	-9
Other household theft	1,155	1,163	1
Household acquisitive crime	3,883	3,531	-9
All household crime	6,583	5,939	-10
Theft from the person	725	525	-28
Other theft of personal property	1,096	1,036	-5
All violence	2,114	2,087	-1
Personal acquisitive crime	2,094	1,895	-9
All personal crime	3,936	3,648	-7
All BCS Crime	10,518	9,587	-9

In 2010/11, the UK had a total of 32,750 schools which were broken down as follows:

- 3,130 nursery (138,300 students);
- 21.244 primary (4,922,000 students);
- 4,121 secondary (3,888,700 students);

[15] Home Office, British Crime Survey in England and Wales 2009/10, http://rds.homeoffice.gov.uk/rds/pdfs10/hosb1210.pdf

- 1,293 special (102,800 students); and
- 427 pupil referral units (12,500 students)[16] .

(Total of 9,064,300 pupils at maintained schools and a further 589,800 at non-maintained schools)[16].

National Socio-Economic

In 2010 UK per capita Gross Value Added (GVA) was £20,476[17]. The 2010 headline estimates show that both total GVA and GVA per head at current basic prices have increased in all UK regions. In 2010, London's gross value added (GVA) per head of population was 71.1% above the average for the United Kingdom (UK), while that of Wales was 26.0% below the average.

In 2009 the median full-time gross hourly pay in UK was £12.43 (males' median being £13.09 and the female median being £11.42). This compares to £11.98 in 2008[18]. In the three months to July 2010 pay growth (including bonuses) rose by 1.2% in the private sector over the previous year compared with 2.7% for the public sector. Excluding bonus payments, growth in the private sector over the year was 1.3% compared with 2.8% for the public sector[19].

In the period February - April 2012 the UK had a total of 29,280,000[20] people in employment aged 16 and over, up 166,000 on the quarter. The number of people employed in the private sector increased by 205,000 to reach 23.38 million but the number of people employed in the public sector fell by 39,000 to reach 5.90 million.

In February 2012 - April 2012, the UK had an unemployment rate of 8.2% (all people of working age). This is a reduction of 0.2% on the previous quarter and compares to the previous year when the UK had an unemployment rate of 5%[21].

The recent UK recession has caused a downturn in many sectors and markets of the UK economy. UK gross domestic product (GDP) in volume terms decreased by 0.3%in the first quarter of 2012, revised from a previously estimated decline of 0.2%. Production industries fell by 0.4%, within which

[16] DCSF, Education and Training Statistics for the United Kingdom: 2011, http://www.education.gov.uk/rsgateway/DB/VOL/v001045/v02-2011c1v2.xls
[17] Regional, sub-regional and local gross value added 2010, http://www.statistics.gov.uk/pdfdir/gva1210.pdf
[18] NOMIS, Official Labour Market Statistics, Annual survey of hours and earnings - resident analysis https://www.nomisweb.co.uk/output/dn87000/{AFB7B1A5-142C-4D4F-BDE2-467C1389CB90}/nomis_2009_08_20_160703.xls
[19] ONS Labour Market Statistics, June 2012, http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/june-2012/index.html
[20] ONS Labour Market Statistics, June 2012, http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/june-2012/index.html
[21] NOMIS, Official Labour Market Statistics, National Indicators, June-August 2009, https://www.nomisweb.co.uk/articles/news/files/LFS%20headline%20indicators.xls

manufacturing output was flat whilst the output the service industries rose slightly by 0.1%[22] .

2.3.2 England

Demographic

In mid-2010 England had a resident population of 52,234,000 and 64.8% of the population is of working age (aged 16 to 64) split by gender, 65.8% males and 63.8% females.

In 2010 the working age population breakdown was as follows:

- 77.2% were economically active;
- 70.5% of working age population were in employment; and
- 8.3% of working age population were unemployed[23].

The working age population in 2010 had the following qualification breakdown:

- 31.1% have NVQ4 and above;
- 50.7% have NVQ3 and above;
- 67.0% have NVQ2 and above;
- 80.3% have NVQ1 and above;
- 8.6% have other qualifications; and
- 11.1% have no qualifications[24].

In 2008/09, England had 24,737 schools:

- 438 nursery (37,200 students);
- 17,064 primary (4,074,900 students);

[22] ONS, UK Snapshot, http://www.ons.gov.uk/ons/dcp171778_264972.pdf
[23] ONS Economic activity time series https://www.nomisweb.co.uk/reports/lmp/gor/2092957699/subreports/nrhi_time_series/report.aspx?
[24] ONS https://www.nomisweb.co.uk/reports/lmp/gor/2092957699/report.aspx

- 3,361 secondary (3,271,100 students);
- 1,058 special (85,500 students); and
- 458 pupil referral units (15,200 students)[25].

Socio-Economic

In 2010 England's per capita Gross Value Added (GVA) was 20,974.[26]

In 2011 the median full-time gross hourly pay in England was £12.85 (males' median being £13.44 and the female median being £12.00). This compares to £12.75 in 2010 and represents growth of 0.78% in nominal hourly total full time pay over the previous year[27].

In 2010, England had a total of 26,295,000 jobs[28].

In Feb 2008 - Jan 2010, England had an unemployment rate of 7.8% (all people of working age). This compares to the previous year when it had an unemployment rate of 6%[29].

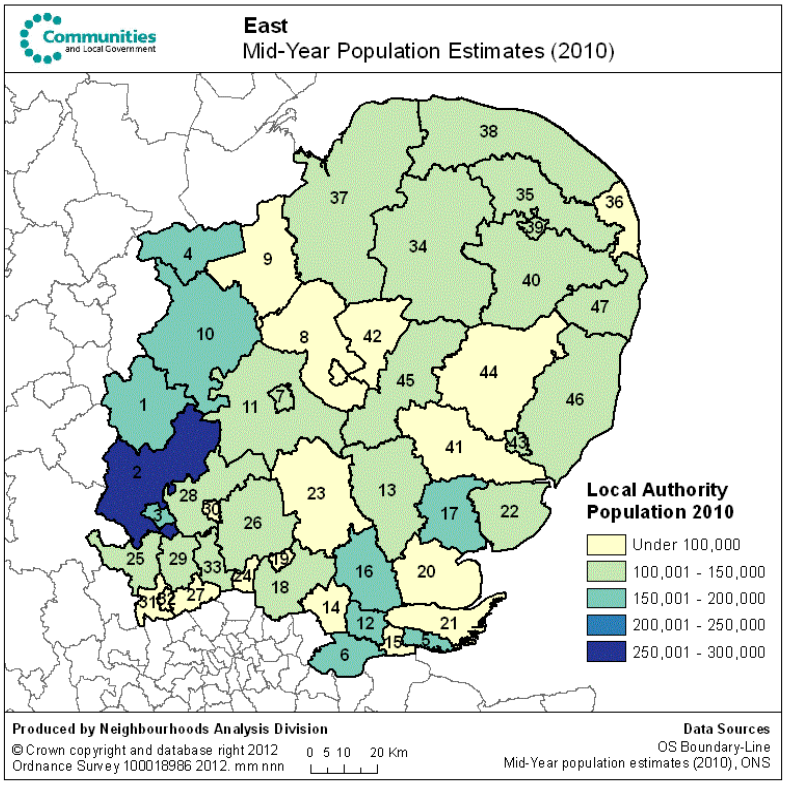
2.3.3 East of England

Demographics

In 2010, over 5.8 million people were living in the Eastern region, which represents 11% of the English total[30]. Locally, Central Bedfordshire, Luton and Colchester had the largest populations in 2010. Figure 2.1 illustrates how the population is distributed across local authority areas within the region.

[25] DCSF, Education and Training Statistics for the United Kingdom: 2009, http://www.dcsf.gov.uk/rsgateway/DB/VOL/v000891/Chapter1.xls
[26] Regional, sub-regional and local gross value added 2010, http://www.ons.gov.uk/ons/rel/regional-accounts/regional-gross-value-added--income-approach-/december-2011/stb-regional-gva-dec-2011.html
[27] ONS: Earning by workplace https://www.nomisweb.co.uk/reports/lmp/gor/2092957699/subreports/gor_ashew_time_series/report.aspx
[28] ONS https://www.nomisweb.co.uk/reports/lmp/gor/2013265930/report.aspx
[29] ONS https://www.nomisweb.co.uk/reports/lmp/gor/2092957699/subreports/nrhi_time_series/report.aspx
[30] Office for National Statistics, *Population estimates, mid 2010*, http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-231847

Figure 2.1 East of England Population Distribution



Key for map:

	Local authority area	Population		Local authority area	Population		Local authority area	Population
1.	Bedford UA	160,797	17.	Colchester	181,016	33.	Welwyn Hatfield	114,368
2.	Central Bedfordshire UA	255,219	18.	Epping Forest	124,738	34.	Breckland	130,925
3.	Luton UA	198,752	19.	Harlow	81,658	35.	Broadland	123,676
4.	Peterborough UA	173,423	20.	Maldon	63,242	36.	Great Yarmouth	97,179
5.	Southend-on-Sea UA	165,311	21.	Rochford	83,354	37.	King's Lynn and West Norfolk	143,631
6.	Thurrock UA	159,658	22.	Tendring	148,543	38.	North Norfolk	101,667
7.	Cambridge	125,717	23.	Uttlesford	77,501	39.	Norwich	143,488
8.	East Cambridgeshire	84,931	24.	Broxbourne	90,609	40.	South Norfolk	121,780
9.	Fenland	91,927	25.	Dacorum	142,881	41.	Babergh	85,561

10.	Huntingdonshire	167,301	26.	East Hertfordshire	138,476	42.	Forest Heath	64,345
11.	South Cambridgeshire	146,406	27.	Hertsmere	99,924	43.	Ipswich	128,269
12.	Basildon	175,212	28.	North Hertfordshire	125,809	44.	Mid Suffolk	94,987
13.	Braintree	144,032	29.	St Albans	138,753	45.	St Edmundsbury	104,533
14.	Brentwood	74,785	30.	Stevenage	81,766	46.	Suffolk Coastal	124,281
15.	Castle Point	89,402	31.	Three Rivers	88,932	47.	Waveney	117,535
16.	Chelmsford	169,542	32.	Watford	86,003			

Between 2000 and 2010 the population of the East of England grew by 9%, the fastest growth rate of all the English regions. The population increase was the result both of natural change and net inward migration.

The share of the population of the Eastern region aged 65 and over is slightly greater than in England as a whole (17.5% compared to 16.5%). There were proportionately fewer people aged between 16 and 64 than the England average of (63.7% compared to 64.8%).

The East of England is second only to the South West region in terms of the proportion of its population that lives in rural areas. On the basis of rural-urban classifications developed by the Office for National Statistics, approximately 31% of the population of the East of England lives in areas classified as rural[31], compared to 19% for England as a whole.

Housing

There was steady year-on-year increase in housing delivery in the East of England between 2001-02 and 2007-08. The number of net additional dwellings per annum rose from 17,900 to 26,800 during this period[32]. However as the economy entered recession in 2008, the number of net additions in the region fell by 39% over a two year period. Housing supply (based on completions) hit a low of 16,200 in 2009-10, before rising slightly to 17,100 in 2010-11.

This level of housing provision is significantly below the target level of 26,800 net additional dwellings set

[31] Office for National Statistics (June 2011), *Regional Trends No. 43*, http://www.ons.gov.uk/ons/rel/regional-trends/regional-trends/no--43--2011-edition/index.html

[32] Department for Communities and Local Government, *Table 118: Annual net additional dwellings*, http://www.communities.gov.uk/documents/housing/xls/118.xls

out in the adopted East of England Plan.

Housing associations and local authorities have played a significant role in housing supply in the region. In 2011-12 3,500 new dwellings were completed by these organisations. This amounts to 22% of the total number of housing completions in the region, which, although substantial, is less than the target that 35% of developments should be affordable[33].

Home ownership is still the most common form of housing tenure in the region, although the percentage of owner occupied dwellings has fallen from 74% in 2000 to 69% in 2010, in line with broader national trends. The proportion of dwellings rented from a council or housing association remained relatively constant over the period, whilst the proportion of privately rented dwellings rose by 7 percentage points.

House prices in the East of England were around 6% higher than the England average in 2011, at £227,000[34]. Prices in the region fell during the recent recession but have subsequently recovered and are now close to the peak of £231,000 seen in 2007.

Consequently affordability pressures have eased only slightly as a result of the recession. The ratio of lower quartile house price to lower quartile earnings - a standard measure of peoples' ability to afford to buy a house - stood at 7.6 in 2011. This is higher than the England average affordability ratio of 6.5[35].

Housing affordability varies significantly from place to place within the region. In general housing tends to be least affordable in southern parts of the region, such as areas close to London and along the Stansted-Cambridge corridor. For instance the lower quartile affordability ratio is almost 13 in St Albans. This compares to 5.5 in Peterborough.

The number of households accepted as homeless by local authorities in the East of England rose 27% year-on-year to 5,030 in 2011[36]. This was the greatest increase of any region. However, the rate of statutory homelessness per 1,000 households in the region (2.1) is close to the national rate of 2.2 and homeless acceptances remain at less than half of levels seen in the early 2000s.

[33] Department for Communities and Local Government, *Table 232: Housebuilding: permanent dwellings completed by tenure and region*, http://www.communities.gov.uk/documents/housing/xls/2145747.xls

[34] Department for Communities and Local Government, *Table 507: Housing Market: mix adjusted house prices*, http://www.communities.gov.uk/documents/housing/xls/2105102.xls

[35] Department for Communities and Local Government, *Table 576: ratio of lower quartile house prices to lower quartile earnings*, http://www.communities.gov.uk/documents/housing/xls/152924.xls

[36] Department for Communities and Local Government, *Table 772: Statutory homelessness,* http://www.communities.gov.uk/documents/statistics/xls/2102069.xls

Gypsies and Travellers

While pitch figures are not readily available, the number of caravans on authorised sites in the East of England in January 2006 was 3,045. In 2011 it was 3,566. This is a 17% increase.

The ratio of pitches to caravans on authorised residential sites in 2006 in the East of England is approximately 1.7. Using this, the 3566 caravans on authorised sites in 2011 indicate there would be about 2098 total pitches.

In 2011 there were 851 caravans on unauthorised sites in the East of England (Caravan Count, January 2011).

Socio-economics

Economically, the East is one of the most successful regions in the country. It had the third highest Gross Value Added (GVA) per head of any region in 2010[37]. However, the economy in the East was hit hard by recession in 2009, with total GVA falling more than 3%.

The proportion of working households in the region fell during the recession but has subsequently recovered and the East now has the highest proportion of working households of any region (59% compared to the England average of 54%)[38]. In 2011, median gross weekly earnings for full-time employees in the East were £495. This is higher than all other regions apart from London and the South East.

In April-June 2011, the East had the lowest proportion of workless households of any region (15% compared to England average of 19%)[39]. Just 0.8% of households in the East of England had never worked, compared to an England average of 1.8%. A lower proportion of children in the East (11.9%) lived in workless households in the second quarter of 2011 than the England average of 16%. The proportion of the working age population in the East of England claiming a key social security benefit was 11.7% in November 2011 - three percentage points lower than the average across Great Britain[40].

[37] Office for National Statistics (December 2011), *Regional Gross Value Added (Income Approach)*, http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-250308

[38] Office for National Statistics (September 2011), *Working and workless households*, http://www.ons.gov.uk/ons/rel/lmac/working-and-workless-households/2011/index.html

[39] Office for National Statistics (September 2011), *Working and workless households*, http://www.ons.gov.uk/ons/rel/lmac/working-and-workless-households/2011/index.html

[40] Nomis, *Official Labour Market Statistics*, https://www.nomisweb.co.uk/reports/lmp/gor/2013265926/report.aspx

2.4 Environmental Characteristics of those Areas most likely to be Significantly Affected

2.4.1 National

Output in the UK economy has been largely flat for a year and half and was estimated to have contracted slightly in the past two quarters. There are weaknesses within domestic demand. Consumption fell, as the squeeze on real incomes continued and households saved more. And business investment remained significantly below its pre-crisis level, held back by weak demand, heightened uncertainty and tight credit conditions. Growth in the rest of the economy was also estimated to be weak, with manufacturing and services output both broadly flat. But business surveys, labour market developments and Bank of England reports all point to somewhat stronger activity in the first quarter, suggesting that the underlying picture is less weak.

Unemployment rates have been on a rising trend although in May 2012, this trend was abated slightly. Disadvantage continues to exist in communities, both in remote areas and inner cities.

2.4.2 East of England

The key issues for the region are identified as:

- Housing provision. There is debate over the quantity of housing that would stabilise affordability in the East of England. It is also unclear whether targets set within the East of England Plan can be met given the most recent data showing numbers of housing completions are significantly below target levels.

- Housing affordability. The second affordability issue relates to the provision of affordable housing. The region is currently falling well short of its target of 35% of new developments being affordable.

- Provision of affordable housing. This relates to increasing lower quartile (LQ) house price to LQ income since 1997. Although there is intra-Regional variation, affordability ratios in almost all districts exceed the England average.

- Non Decent Homes. While vast improvements have been made, preliminary reports suggest that the East of England is unlikely to meet the Governments Public Service Agreement (PSA) 2010 targets.

2.5 Likely Evolution of the Baseline

2.5.1 National

Demographic

The current UK population is generally increasing, and projected to reach 73.2 million by 2035 [41].

The age structure of the UK population is moving towards an ageing population: those of pensionable age are projected to increase by 28% from 2010 to 2035 (note that the pensionable age is to change over this period). Those aged between 15-64 years are projected to decrease from 62.1% to 60.5% of the population, whilst those under 16 are projected to decrease from 18.7% to 17.9% of the population by 2033[41].

There are no formal targets for population growth in the UK (other than the recent intention to introduce non-EU immigration caps).

Socio-Economic

There are current uncertainties over market conditions and the range of economic forecasts available indicate a number of future scenarios. The Bank of England recently concluded that "*underlying growth is likely to remain subdued in the near term before a gentle increase in households' real incomes and consumption helps the recovery to gain traction. … The possibility that the substantial challenges within the euro area will lead to significant economic and financial disruption continues to pose the greatest threat to the UK recovery*".[42]

2.5.2 England

Demographic

Between 2008 and 2033, the population of England is projected to increase from 51.46 million to 60.715 million, an increase of 17.9%. The number of children aged under 16 is projected to increase by 12.8%

[41] ONS, National Population Projections 2008-based, http://www.ons.gov.uk/ons/rel/npp/national-population-projections/2010-based-projections/sum-2010-based-national-population-projections.html
[42] Bank of England, Overview of the Inflation Report May 2012 http://www.bankofengland.co.uk/publications/Pages/inflationreport/infrep.aspx

from 9.669 million in 2008 to 10.916 million by 2033; the number of people of working age is projected to increase by 7.7% from 33.503 million in 2008 to 36.101 million; the number of people of pensionable age is projected to rise by 65.2% from 8.289 million in 2008 to 13.697 million.[43]

Socio-Economic

No GDP values for England were available but trends will closely match that of the UK as a whole.

2.5.3 East of England

Demographics

Over the 10 years to 2020 the East is projected to be the third fastest growing region in England, behind only London and the East Midlands. Over this period the population of the East is expected to grow by 10%, or 580,000 people, reaching a total of 6.4 million[44]. This is likely to put continued pressure on the natural environment (including water resources), the character of the landscape and local environment to meet the regions housing need.

Population growth will be accompanied by changing age-structure of inhabitants. The age group expected to grow most in size is expected to be persons aged 65 or over. By 2020 this group comprise 20% of the population of the East.

There will be significant local variation in the rate of population growth. The fastest growing local authorities between 2010 and 2020 are projected to be East Cambridgeshire, Welwyn Hatfield and Luton - where the population will expand by between 16% and 18%. On the other hand the population of Cambridge is expected to *decline* by 3% and the number of people living in Babergh and Waveney is projected to rise by just 4% over the period. Uneven population growth is likely to mean that environmental pressures are felt differently across different parts of the region.

Socio-Economic

Demographic pressures will give rise to considerable need for additional housing. In 2008, there were

[43] General Register Office for Scotland population projections, http://www.scotpho.org.uk/home/Populationdynamics/Population/DataPagesofPopulation/Population_scotprojections.asp
[44] Office for National Statistics, *2010 based sub-national population projections for England*, http://www.ons.gov.uk/ons/dcp171778_259219.pdf

2.4 million households in the region[45]. Between 2008 and 2023 the East is projected to experience the fastest rate of household growth of any English region. It is estimated that by 2023, when the population will have reached 6.5 million, the number of households living in the region will be 2.9 million.

2.6 Assessing Significance

Table 2.2 sets out guidance utilised during the assessment to help determine the relative significance of potential effects on the population objective. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

Table 2.2 Approach to Determining the Significance of Effects on Population

Effect	*Description*	*Illustrative Guidance*
++	Significant positive	• Alternative will provide a significant increase to housing supply above the current completion rate in the region, providing a wide choice of high quality homes for communities. • Alternative will provide a significant opportunity to create sustainable, inclusive and mixed communities. • Alternative will generate significant employment opportunities per annum, a large proportion of which will benefit local communities. • Alternative will facilitate significant long term investment in key regional sectors, specific localities or Nationally Significant Infrastructure Projects (NSIPs)
+	Positive	• Alternative will lead to an increase to housing supply above the current completion rate in the region, providing a wide choice of high quality homes for communities. • Alternative will provide opportunities to create sustainable, inclusive and mixed communities. • Alternative will generate employment opportunities, some of which will benefit communities within the region. • Alternative will facilitate long term investment in key regional sectors and specific localities.
0	No (neutral effects)	• Alternative will not affect the current rate of housing supply within the region. • Alternative will not affect the provision of opportunities to create sustainable, inclusive and mixed communities. • Alternative will not affect the creation of employment opportunities within the region. • Alternative will not affect long term investment in key regional sectors and specific localities.

[45] Department for Communities and Local Government, *Table 403: household projections by region*, http://www.communities.gov.uk/documents/housing/xls/140945.xls

Effect	Description	Illustrative Guidance
-	Negative	• Alternative will lead to a decrease in housing supply below the current completion rate in the region, affecting the choice of homes for communities. • Alternative will reduce opportunities to create sustainable, inclusive and mixed communities. • Alternative will lead to a minor increase in unemployment. • Alternative will reduce the resilience and diversity of the regional and local economy. • Alternative will reduce the long term investment in key regional sectors and specific localities.
--	Significant negative	• Alternative will lead to a significant decrease in housing supply below the current completion rate in the region, affecting the choice of homes for communities. • Alternative will significantly reduce opportunities to create sustainable, inclusive and mixed communities. • Alternative will lead to a significant sustained increase in regional unemployment and worklessness. • Alternative will significantly reduce the resilience and diversity of the regional and local economy • Alternative will significantly reduce the long term investment in key regional sectors and specific localities.
?	Uncertain	• From the level of information available the impact that the alternative would have on this objective is uncertain.

2.7 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 2.3 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the population topic.

Table 2.3 Significant Effects against the Population Topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
SS1 Retention	++	++	++	The policy seeks to bring about sustainable development by applying the guiding principles of the UK Sustainable Development Strategy 2005. These are: living within the planet's environmental limits; ensuring a strong, healthy and just society; achieving a sustainable economy; promoting good governance; and using sound science responsibly. It also aims to contribute to the creation of sustainable communities described in Sustainable

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				Communities: Homes for All. In doing so it sets the overarching framework for the remainder of the Plan. In providing this framework, the assessment identified significant positive benefits for population and human health through the provision of high quality housing, employment opportunities and access to green space important to the creation of sustainable, inclusive and mixed communities. The policy is reflected in the RES which sets out a Vision to include being at the forefront of a low-carbon and resource efficient economy. Also of particular relevance to SS1 are two of the RESs Priorities within the context of a spatial economy which are 'Creating sustainable places for people and business' and 'Adapting the region's places to meet the challenges and opportunities of climate change. In consequence retention has been assessed as scoring a significant positive against the population topic.
SS1 Revocation	++	++	++	As paragraph 6 of the NPPF makes clear, the purpose of the planning system is to contribute to the achievement of sustainable development. It makes specific reference to the five 'guiding principles' of sustainable development set out in the UK Sustainable Development: Strategy Securing the Future. Each of the elements contributing to the creation of sustainable communities described in 2003 Sustainable Communities: Homes for All are reflected in the NPPF, particularly in the core planning principles set out in paragraph 12, but also in more detail in specific policies. The revocation of this policy would not remove the requirement for local plans to be consistent with legal and national policy requirements on climate change. In consequence, revocation has been assessed as having the same positive benefits as retention.
SS2 Retention	++	++	++	This policy aims to support economies of existing centres. Improving correlation between jobs, housing and services – thus reducing need to travel, car reliance and improving access for all. In consequence, in providing for housing need and employment, the assessment scored this significantly positive. The Policy is reflected in the RES which under the priority of 'Creating sustainable places for people and business' focuses on the need for the region to have a balanced approach to the provision of homes and jobs to support economic growth and regeneration. Furthermore the RES recognises that the spatial response which is crucial to the prosperity and well-being of the region includes a network of small and medium sized cities and market towns. In consequence retention has been assessed as scoring a significant positive against the population topic.
SS2 Revocation	++	++	++	This focus continues in the NPPF in paragraph 6 (on the delivery of sustainable development) and it is therefore considered that revocation of Policy SS2 would have no material change to the identified effects. In consequence, revocation has been assessed as having the same positive benefits as retention.
SS4 Retention	++	++	++	The policy recognises the role of market towns and larger villages in providing employment and services to their rural hinterlands and meeting housing needs. This could have

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				significant benefits to the population particularly when related to Policy H2 on affordable housing. The policy supports regeneration of town centres and market town economies and the provision of and access to services, shops and facilities locally – reducing travel need, and reducing related inequality. The policy is supported by the RES which in the context of a spatial economy recognises the economic roles of towns and rural areas and the important linkage between urban and rural economies. In particular it recognises that in rural areas including market towns there is a need to enable people and businesses to thrive. In consequence retention has been assessed as scoring a significant positive against the population topic.
SS4 Revocation	++	++	++	The NPPF provides a strong policy framework for ensuring the vitality of town centres (paragraphs 23 - 27) and on supporting a prosperous rural economy (paragraph 28 It also seeks through the transport policies (paragraphs 29-41) to promote sustainable transport and support reductions in greenhouse gas emissions and congestion. In consequence, revocation has been assessed as having the same positive benefits as retention.
SS5 Retention	++	++	++	The policy lists a number of priority areas for regeneration because of their generally weak economic performance and significant areas of deprivation, but leaves it to local authorities to set out policies in their Local Development Documents and relevant non-statutory plans to tackle the problems of economic, social and environmental deprivation in these areas. The policy is reflected in the RES whose Engines for Growth include several priority areas for regeneration (e.g. Thames Gateway, Great Yarmouth and Lowestoft). Also the RES includes priorities to tackle barriers to employment in the poorest 20% of communities and to promote increased economic opportunity in areas with low economic activity rates. In consequence retention has been assessed as scoring a significant positive against the population topic.
SS5 Revocation	++	++	++	Paragraph 21 of the NPPF states that in drawing up Local Plans, local planning authorities should identify priority areas for economic regeneration. This requirement would have similar significant benefits to the population as retention of the policy and is therefore considered that revocation of Policy SS5 would have no material change to the identified effects.
SS6 Retention	++	++	++	This policy supports regeneration, investment and environmental enhancement of town centres. It includes the provision of, and access to, services, shops and facilities locally – reducing travel need, and reducing related inequality. In consequence retention has been assessed as scoring a significant positive against the population topic.
SS6 Revocation	++	++	++	Paragraph 21 of the NPPF states that in drawing up Local Plans, local planning authorities should identify priority areas for economic regeneration. This requirement would have similar significant benefits to the population as retention of the policy and is therefore considered that revocation of Policy SS6 would have no material change to the identified effects.
SS8 Retention	++	++	++	The policy seeks to enhance the character and appearance of the urban fringe and its recreational and/or biodiversity value, including through the provision of networks of accessible green infrastructure linking urban areas with the countryside. This should have

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				significant benefits for biodiversity and for the population through increased access to green space and recreational opportunities. In consequence retention has been assessed as scoring a significant positive against the population topic.
SS8 Revocation	++	++	++	The NPPF contains a range of policies which seek to ensure the environmental protection and enhancement of the areas affected. It provides supportive policies to deliver green infrastructure and also continues to support appropriate recreational uses within the urban fringe (with benefits to biodiversity and the population and health). It is therefore considered that revocation of Policy SS8 would have no material change to the identified effects.
E1 Retention	++	++	++	The policy sets out indicative targets for a net growth in jobs in the region over the plan period. It requires local development documents to provide an enabling context to achieve the targets. This would have significant positive effects for population. The job targets in the East of England Plan are also reflected in the RES although they extended to 2031 in line with the long term vision of the RSS. The East of England Plan's job targets also reflect the RES seven Engines for Growth. In consequence retention has been assessed as scoring a significant positive against the population topic.
E1 Revocation	?	?	++	One of the key planning principles set out in paragraph 17 of the NPPF is to proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs. Paragraphs18-22 deal with building a strong, competitive economy. Paragraph 158 of the NPPF seeks to ensure that Local Plans are based on adequate, up-to-date and relevant evidence about the economic characteristics and prospects of the area. The policies on the indicative targets for employment have been examined in all adopted local plans and/or core strategies in the East of England region. The analysis shows that the indicative targets for net growth in jobs are reflected in local plans or core strategies adopted after the adoption of the East of England Plan, or plans adopted just before the East of England Plan was adopted. For the other 23 local plans in the region, the vast majority allocate land for employment (see policy E2) but no direct link is given to the number of jobs this is intended to support. For these authorities the short term impact is more difficult to determine since allocations of land within these plans cannot be directly linked to the number of jobs these are intended to support. Revocation of the policy is therefore unlikely to lead to local authorities not providing an enabling context for job growth, and therefore there are expected to be similar benefits to the population as with retention of the policy; however, the benefits may be reduced in the short to medium term due to uncertainties arising from revocation until up to date Local Plans are adopted across the region.
E2 Retention	++	++	++	This policy concerns the allocation of an adequate range of sites/premises to accommodate the full range of sectoral requirements to achieve the indicative job growth targets of Policy E1 will have significant benefits for the population. It is also the intent of the policy to minimise commuting, maximising the use of public transport and minimising the loss of, or damage to environmental capital (with the substitution of any losses and securing positive enhancements).

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				In consequence retention has been assessed as scoring a significant positive against the population topic.
E2 Revocation	+	+	++	As with the assessment of the revocation of policy E1, one of the key planning principles set out in the NPPF is to proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs. However, this should be in accordance with other policies in the NPPF which seek to minimise environmental effects. This includes minimising impacts on biodiversity and providing net gains where possible (paragraph 109), having access to high quality public transport facilities (paragraph 35) and aiming for a balance of land uses within their area so that people can be encouraged to minimise journey lengths for employment, shopping, leisure, education and other activities (paragraph 37). The policies on the indicative targets for employment have been examined in all adopted local plans and/or core strategies in the East of England region. The analysis shows that the indicative targets for net growth in jobs are reflected in local plans or core strategies adopted after the adoption of the East of England Plan, or plans adopted just before the East of England Plan was adopted. For the other 23 local plans in the region, the vast majority allocate land for employment (see policy E2) but no direct link is given to the number of jobs this is intended to support. For these authorities the short term impact is more difficult to determine since allocations of land within these plans cannot be directly linked to the number of jobs these are intended to support. This is likely to provide similar significant benefits as retention of the plan in the long term although the additional uncertainty arising in nearly half the LPAs until new plans are adopted in compliance with NPPG guidance may reduce the likelihood of significant effects in the short to medium term. The application of the NPPFs presumption in favour of sustainable development will help where plans or policies are absent, silent or out of date.
E3 Retention	++	++	++	The policy seeks the identification in LDDs of readily-serviceable strategic employment sites at specific strategic locations. The supporting text indicates that in some areas appropriate land has already been allocated and there is need to safeguard and promote its use or redevelopment. In other areas additional sites will need to be allocated in locations which satisfy the criteria in Policy E2. The locations are reflected in the RES including the seven Engines for Growth and the Milton Keynes and South Midlands Sub Regional Strategy. The effects of retaining the policy will be significantly positive for population.
E3 Revocation	+	+	++	Revocation of the policy is unlikely to affect the benefits identified due to the policy and guidance contained in the NPPF. However, there is likely to be a temporary (short to medium term) period where those local authorities without a plan that is in conformity with the regional strategy have to revert to the original Local Plan whilst it develops a replacement. This is likely to provide similar significant benefits as retention of the plan in the long term although the additional uncertainty arising in nearly half the LPAs until new plans are adopted in compliance with NPPG guidance may reduce the likelihood of significant effects in the short to medium term. The application of the NPPFs presumption in favour of sustainable development will help where plans or policies are absent, silent or out of date.
E4 Retention	++	++	++	The policy seeks to support the growth on intra- and inter-regional sectors and business clusters. As the supporting text makes clear, such concentrations often depend on access to specialist skills and infrastructure. The Policy is also reflected in the RES which identifies

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				strengthening clusters as a means of encouraging innovation. In consequence retention has been assessed as scoring a significant positive against the population topic.
E4 Revocation	+	++	++	Paragraph 21 of the NPPF states that local planning authorities should plan positively for the location, promotion and expansion of clusters or networks of knowledge driven, creative or high technology industries. While not giving explicit examples as in the plan, the same positive population benefits would be expected following revocation. However, there is likely to be a temporary (short to medium term) period where those local authorities without a plan that is in conformity with the regional strategy have to revert to the original Local Plan whilst it develops a replacement. This is likely to provide similar significant benefits as retention of the plan in the long term although the additional uncertainty arising in nearly half the LPAs until new plans are adopted in compliance with NPPG guidance may reduce the likelihood of significant effects in the short to medium term. The application of the NPPFs presumption in favour of sustainable development will help where plans or policies are absent, silent or out of date.
E5 Retention	++	++	++	The policy seeks to restrict major new retail development and complementary town centre uses to those cities and towns which are identified in the policy as regional centres and major town centres. A key purpose of the policy is to ensure that the retail sector is an important driver of the regional economy. In consequence retention has been assessed as scoring a significant positive against the population topic.
E5 Revocation	++	++	++	Paragraph 23 of the NPPF seeks to promote competitive town centres and leaves it to local planning authorities to define the extent of town centres and primary shopping areas and set policies that make clear which uses will be permitted in such locations. While not giving explicit examples as in the plan, the same positive population benefits would be expected following revocation.
E6 Retention	++	++	++	This policy concerns job creation, rural regeneration and diversification and promotion of the regional image could be beneficial to the population. The policy states that proposals for tourism development should be fully sustainable in terms in terms of their impacts on host communities, local distinctiveness and natural and built environments. In consequence retention has been assessed as scoring a significant positive against the population topic.
E6 Revocation	++	++	++	The NPPF strongly supports sustainable economic growth across all sectors, which would include the Tourism sector (paragraph 18-21) and it also contains specific policies on tourism, linked to the vitality of town centres (paragraph 23), and supporting a prosperous rural economy (paragraph 28). While not giving explicit examples as in the plan, the same positive population benefits would be expected following revocation.
E7 Retention	++	++	++	This policy relates to the development of the region's airport consistent with the 2003 Aviation White Paper. It recognises the role of the airports (Stansted and Norwich are named) in providing airport capacity and contributing to local and regional economic development. In consequence retention has been assessed as scoring a significant positive against the population topic.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
E7 Revocation	++	++	++	Informed by local needs and national policies (the White Paper), the benefits to communities and populations of growth will continue to be delivered.
H1 Retention	+	++	++	This policy concerns regional housing provision up to 2021. In seeking to meet the demand for housing, the increased provision of housing in this policy is likely to lead to positive effects on the population in the medium to long term. Short term effects are assessed as less reflecting current completion rates.
H1 Revocation	?	+	++	Revocation of the Regional Strategy will not remove the need for more houses within the region. Paragraph 159 of the NPPF states that local planning authorities should have a clear understanding of housing needs in their area. However, in the short term following revocation the impact will be uncertain in those 23 local authorities that do not have a plan that was in conformity with the regional strategy. For those authorities, the RS provided clarity on the quantum of development required; however, in the short and medium term following its revocation, there may be a temporary period where some local authorities revert to the original Local Plan whilst it develops a replacement. The amount of development anticipated in this short to medium period may be lower than if the RS were in place. This will mean that the positive effects on population will be lower than those for retention. The application of the NPPFs presumption in favour of sustainable development and its policies to boost the supply of housing will help where plans or policies are absent, silent or out of date.
H2 Retention	++	++	++	This policy makes provision within the overall housing allocations in H1, that DPDs should also set appropriate targets for affordable housing. Whilst no explicit target is mentioned, the policy recognises that on occasion local circumstances may take this above 35%. Given the level of housing need in the region, this will have significant benefits to the population.
H2 Revocation	+	++	++	Paragraph 47 of the NPPF seeks to boost significantly the supply of housing and states that local planning authorities should use their evidence base to ensure that their local plan meets the full objectively assessed needs for affordable housing. This is expected to have the same significant benefits to the population as retention of the policy although as with revocation of policy H1 there could be fewer benefits to the population in the short term in those local authorities without an up to date plan.
H3 and H4 Retention	++	++	++	This policy concerns the provision of sites/pitches to the identified needs of gypsies and travellers, and travelling showpeople living within or resorting to the area. The H4 refers to the 2009 revision. It seeks to address the shortage of sites for gypsies and travellers and the issues arising. Providing permanent sites also families to have access to a variety of community facilities that are otherwise difficult to access. The East of England is identified as having the largest gypsy and traveller community and as such the policy is assessed as having a significant effect in meeting the needs of this community.
H3 and H4 Revocation	?	?	++	The new national policy for gypsies and travellers, and travelling showpeople should provide the required provision for these groups. It asks local authorities to use a “robust evidence base” to assess needs for the purposes of planning and managing development of traveller sites, and to set targets for traveller sites based on their needs assessment. The policy asks local authorities to bring forward a five-year supply of land for traveller sites in their plans to meet the targets they have set and to update it annually. The policy also asks local authorities to look into the longer term and also to identify a supply of specific developable sites or broad locations for years six to ten and, where possible, for years 11-15. Local Plans adopted after the East of England plan was put in place in May 2008 are

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				consistent with the allocations set out in the regional strategy policy H3 and H4 (hence positive). However, the 23 LPAs who had local plans adopted before 2008, have allocations of pitches for gypsies and travellers and plots for travelling show people in individual local plans that differ from those set out within the East of England plan (hence uncertain). The analysis shows for these authorities' that some of the allocations in adopted plans are less than that set out in the East of England Plan and some adopted plans do not have allocations beyond 2011 (details in Appendix C). For those authorities, revocation of the East of England Plan will affect the short and medium term, until new local plans are adopted, consistent with the NPPF guidance. In these instances, benefits in the short to medium term will be affected.
C1 and C2 Retention	++	++	++	The policy will help contribute to local regeneration and help deprived areas. It should contribute significantly to maintaining and enhancing the built and historic character. Policy C2 will also help improve the management of the impacts of access & recreation as well as contribute to local regeneration and help deprived areas. In consequence retention has been assessed as scoring a significant positive against the population topic.
C1 and C2 Revocation	++	++	++	The NPPF (Paragraph 70) sets out policies to deliver the social, recreational and cultural facilities and services the community needs. It states that local planning authorities should plan positively for the provision and use of shared space, community facilities (such as sports venues and cultural buildings), to enhance the sustainability of communities and residential environments. Paragraph 28 of the NPPF sets this out for rural areas. In consequence, revocation has been assessed as having the same positive benefits as retention.
T1 Retention	++	++	++	This policy sets out the Regional Transport Policy objectives and outcomes which gives a priority to increasing passenger and freight movements by more sustainable modes. The policy aims for the region to benefit from increased mobility and access whilst minimising the impacts on the environment and inhabitants. The policy is reflected the RES which recognises the importance of a transport system that fully supports sustainable economic growth. To support this, the RES includes a number of transport specific priorities including investment in transport to maximise economic growth and reducing the environmental impacts of moving goods and people. In consequence retention has been assessed as scoring a significant positive against the population topic.
T1 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF deals with promoting sustainable transport. In consequence, there will be similar significant benefits to the population following revocation of this policy as would accrue from the RS policy itself.
T2 Retention	++	++	++	This policy seeks to change patterns of travel behaviour, reducing distances travelled and promoting more sustainable modes of transport. In consequence retention has been assessed as scoring a significant positive against the population topic.
T2 Revocation	++	++	++	Paragraph 17 of the NPPF identifies as a core principle of planning the actively management of patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				made sustainable. In consequence, revocation has been assessed as having the same positive benefits as retention.
T4 Retention	++	++	++	See assessment of likely significant effects in human health topic chapter.
T4 Revocation	++	++	++	See assessment of likely significant effects in human health topic chapter.
T6 Retention	++	++	++	See assessment of likely significant effects in human health topic chapter.
T6 Revocation	++	++	++	See assessment of likely significant effects in human health topic chapter.
T7 Retention	++	++	++	See assessment of likely significant effects in human health topic chapter.
T7 Revocation	++	++	++	See assessment of likely significant effects in human health topic chapter.
T8 Retention	++	++	++	See assessment of likely significant effects in human health topic chapter.
T8 Revocation	++	++	++	See assessment of likely significant effects in human health topic chapter.
T9 Retention	++	++	++	The policy seeks to tackle congestion and its environmental impacts, improve safety and facilitate the provision of safe and efficient public transport, walking and cycling. This will have significant benefits to the population and human health, and potentially benefits to air quality. In consequence retention has been assessed as scoring a significant positive against the population topic.
T9 Revocation	++	++	++	Paragraph 29 of the NPPF recognises the important role that transport can play in contributing to wider sustainability and health objectives. However it also recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas. Paragraph 30 states that encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion. In preparing Local Plans, local planning authorities should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport. It is therefore expected that the significant benefits to the population and human health, air quality and climatic factors will continue if the policy is revoked. In consequence, revocation has been assessed as having the same positive benefits as retention.
T10 Retention	++	++	++	This policy seeks to achieve a modal shift encouraging a transfer of freight from road to rail and water an approach which supports regional economic development, and hence population whilst having the potential to reduce emissions to air.
T10 Revocation	++	++	++	The effect of revocation will remain the same, the NPPF states that local authorities should work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development, including

Regional Plan Policy	Score			Commentary
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				large scale facilities such as rail freight interchanges and transport investment necessary to support strategies for the growth of ports.
T11 Retention	++	++	++	This policy concerns the management and enhancement of access to the region's ports to support their ongoing development and contribute to the region's growth. Significant benefits were identified to the population through the economic development envisaged to follow the delivery of this policy.
T11 Revocation	++	++	++	Revocation is anticipated to have no change to the positive environment effects associated with retaining the policy. This reflects the NPPF guidance that local authorities should work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development, including large scale facilities such as rail fright interchanges and transport investment necessary to support strategies for the growth of ports, airports or other major generators of travel demand in their areas.
T12 Retention	++	++	++	This policy concerns the management and enhancement of access to the region's airports to support their ongoing development and contribute to the region's growth. Significant benefits were identified to the population through the economic development envisaged to follow the delivery of this policy.
T12 Revocation	++	++	++	Revocation is anticipated to have no change to the positive environment effects associated with retaining the policy. This reflects the NPPF guidance that local authorities should work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development, including large scale facilities such as rail fright interchanges and transport investment necessary to support strategies for the growth of ports, airports or other major generators of travel demand in their areas.
T13 Retention	++	++	++	This policy addresses public transport provision and the need for improvement, as part of any package of measures. In consequence retention has been assessed as scoring a significant positive against the population topic.
T13 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF deals with promoting sustainable transport. In consequence, there will be similar significant benefits to the population following revocation of this policy as would accrue from the RS policy itself.
ENV1 Retention	++	++	++	The policy addresses the provision and improvements to networks of green infrastructure that could have significant benefits for population through the enhancement of local environmental quality, access to green space and through the use of green infrastructure to provide flood attenuation. Such benefits would be likely to increase with time as the newer elements matured. This policy is reflected in the RES which seeks to minimise environmental and resource impacts. The RES sates that enhancing the region's green infrastructure provides a necessary counterpoint to investment in thriving town centres.
ENV1 Revocation	++	++	++	Paragraph 114 of the NPPF provides the same policy approach as the regional strategy to the creation, protection, enhancement and management of networks of green infrastructure. Paragraph 99 of the NPPF notes that planning for green infrastructure can be a suitable adaptation measure to managing risks, including flood risks, arising when new development is brought forward in areas vulnerable to climate change impacts In addition, the Natural Environment White Paper introduces Local Nature Partnerships

Regional Plan Policy	Score			Commentary
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				which will complement existing local partnerships which deal with matters such as provision of green infrastructure will improve the chances of the delivery of the policy. Such partnerships will be able to work across administrative boundaries enable planning of networks at the scale that has the most impact. In consequence, revocation has been assessed as having the same positive benefits as retention.
ENV2 Retention	++	++	++	See assessment of likely significant effects in human health topic chapter.
ENV2 Revocation	++	++	++	See assessment of likely significant effects in human health topic chapter.
ENV4 Retention	++	++	++	The policy seeks to encourage the sustainable use of soils and where soil and land have been degraded, to maximise opportunities for restoration to beneficial after-uses. The policy in part seeks to mitigate the effects of the housing allocations on greenfield land, recognising that there is insufficient previously developed land in suitable locations to accommodate all development. It is assumed that local planning authorities will make most effective use of suitable brownfield land, and uses the lower quality agricultural land where appropriate. This will indirect contribute towards housing supply in the region.
ENV4 Revocation	++	++	++	Revocation is unlikely to affect the continuation of these benefits. The NPPF requires local planning authorities to take into account the economic and other benefits of the best and most versatile agricultural land (paragraph 112). Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality.
ENV7 Retention	++	++	++	The policy seeks to create attractive urban environments with benefits to the population by improving local environmental quality, increasing the sense of place and local identity. In consequence retention has been assessed as scoring a significant positive against the population topic.
EN7 Revocation	++	++	++	The NPPF devotes a whole section to good design (Section 7) and taken together with other policies in the framework should help to maximise the positive effects of delivering the necessary development for communities. In consequence, revocation has been assessed as having the same positive benefits as retention.
ENG1 Retention	++	++	++	This policy seeks to encourage the supply of energy from decentralised, renewable and low carbon energy sources, and leaves it to local authorities to set 'ambitious but viable' proportions of the energy supply of new development to come from such sources. It also seeks the promotion of innovation. Low carbon and low energy buildings will benefit occupiers, both in terms of minimising greenhouse gas emissions and in reducing energy costs. In consequence retention has been assessed as scoring a significant positive against the population topic.
ENG1 Revocation	++	++	++	Revocation is unlikely to affect these benefits. Paragraph 95 of the NPPF seeks to support the move to a low carbon future, by stating that local planning authorities should plan for new development in locations and ways which reduce greenhouse gas emissions; actively support energy efficiency improvements to existing buildings; and when setting any local requirement for a building's sustainability, do so in a way consistent with the Government's

Regional Plan Policy	Score			Commentary
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				zero carbon buildings policy and adopt nationally described standards. Specifically, local planning authorities are expected to identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supplies (paragraph 97). In consequence, revocation has been assessed as having the same positive benefits as retention.
WAT2 Retention	0	++	++	This policy which seeks the timely provision of the appropriate additional infrastructure for water supply and waste water treatment to cater for the levels of development provided through this plan is largely delivered by mechanisms other than the Regional plan. As such it will aid communities to continue to have access to water supplies and enables projected growth to be accommodated. This policy is reflected in the RES which identifies water as a vital economic input. The RES has a headline ambition of achieving greater efficiency in water use. It also includes a specific target to reduce per capita consumption pf water by 20% by 2030. In consequence retention has been assessed as scoring a significant positive against the population topic.
WAT2 Revocation	0	++	++	It is expected that the impacts of revocation would be the same as retention of the policy. The water companies are required by provisions in the Water Resources Management Plan Regulations 2007 to prepare Water Resources Management Plans to address the challenges to water supplies from growth, climate change and environmental legislation. Paragraph 156 of the NPPF states that local planning authorities should set out the strategic priorities for the area in the Local Plan, including strategic policies to deliver the infrastructure for water supply and wastewater treatment. Paragraph 162 states that local planning authorities should work with other authorities and providers to assess the quality and capacity of infrastructure for water supply and waste water and its treatment , and its ability to meet forecast demands.
WAT4 Retention	++	++	++	This policy sets out the priorities to defend existing properties from flooding and locate new development where there is little or no risk of flooding. This will have significant benefits to the population as a result.
WAT4 Revocation	++	++	++	It is expected that the impacts of revocation would be the same as retention of the policy. The policy on the location of new development is covered by the policies in the NPPF, paragraphs 100 to 104. In particular, this seeks to ensure that inappropriate development is avoided in areas at risk of flooding, but where development is necessary that it is safe without increasing flood risk elsewhere. To this end, local plans should apply a sequential, risk-based approach to the location of development to avoid where possible flood risk to people and property. Aside from water compatible development and, exceptionally, essential infrastructure, development should not permitted in the functional floodplain.
WM1 Retention	++	++	++	The policy reinforces aspects of national policy that will need to apply across the region if waste generation is to be successfully decoupled from economic growth. It respects the European and national policy context and, in seeking to achieve the required shift towards more sustainable waste management, builds on principles set out in the Waste Strategy for England and PPS10. This policy is reflected in the RES which seeks to improve resource efficiency through a range of measures. It sets a target to reduce waste arisings per £million GVA to 37% below 2005 levels by 2013. It also aims to increase the levels of recycling. Ensuring timely provision of appropriate facilities will have significant benefits for

Regional Plan Policy	Score			Commentary
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				communities.
WM1 Revocation	++	++	++	It is expected that the impacts of revocation would be the same as retention of the policy as the policy mirrors other legislation and policy (which is still extant).
M1 Retention	++	++	++	This policy requires minerals planning authorities to plan for a specific amount of aggregate minerals from environmentally acceptable sources. Avoiding harm to designated sites and delivering high quality restoration of all minerals workings will also have a beneficial environmental effect on biodiversity, landscape and soils. The use of aggregate and rock in development will provide significant benefits to the population in ensuring development will continue at the level required to meet local and regional needs.
M1 Revocation	++	++	++	It is expected that the impacts of revocation would be the same as retention of the policy. Paragraphs 143 to 149 of the National Planning Policy Framework provide the national framework for minerals extraction. Its highlights the need to plan for minerals extraction, as part of the Government's overriding objective for securing a steady and adequate supply of minerals.
CSR1 Retention	++	++	++	This policy seeks to deliver significant development in the sub-region, but contains a number of provisions to minimise impacts. It seeks to promote a comprehensive approach to the provision of infrastructure including the necessary infrastructure and green space. In so doing it should help meet needs for development in the Cambridge area. The policy identifies the provision of a 10,000 new settlement at Northstowe. A new town at Northstowe is identified in the South Cambridgeshire Core Strategy (reflected in the Strategic Vision and in the Housing Provision policy, H2 and Employment Provision ST/8). A planning application has been received by the Council for 1500 dwellings, viewed as the first phase of development. In consequence retention has been assessed as scoring a significant positive against the population topic.
CSR1 Revocation	++	++	++	The NPPF provides a strong policy framework for ensuring the vitality of town centres (paragraphs 23 - 27) and on supporting a prosperous rural economy (paragraph 28 It also seeks through the transport policies (paragraphs 29-41) to promote sustainable transport and support reductions in greenhouse gas emissions and congestion. Given that the commitment is already reflected in the adopted Core Strategy, revocation is unlikely to have an affect on these proposals.
CSR2 Retention	++	++	++	This policy provides for employment land in and close to Cambridge and would have a positive effect on the population through employment opportunities.
CSR2 Revocation	++	++	++	Cambridge City adopted its Local Plan in July 2006. Policy in Plan states an additional 36.7 hectares of employment land is likely to be required between 2002 and 2016. The Council will need to review the Local Plan in light of the NPPF. Paragraph 158 of the NPPF seeks to ensure that Local Plans are based on adequate, up-to-date and relevant evidence about the economic characteristics and prospects of the area. Due to the provisions in the NPPF, revocation would not affect the ongoing delivery of positive effects.
CSR4 Retention	++	++	++	This policy looks to ensure transport provision around Cambridge should include an increase public transport, high levels of cycling and demand management measures to

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				reduce transport by car. In consequence retention has been assessed as scoring a significant positive against the population topic.
CSR4 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF deals with promoting sustainable transport. In consequence, there be similar significant benefits to the population following revocation of this policy as would accrue from the RS policy itself.
ETG1 Retention	++	++	++	This policy seeks to aims to achieve transformational development and change throughout the Essex Thames Gateway (comprising three key centres for development and change) and substantially increasing the number of jobs and homes, (with significant benefits for the population). Thames Gateway South Essex Partnership which was developed to assist with the delivery of the strategy has been restructured.
ETG1 Revocation	++	++	++	Revocation will not affect the ongoing delivery of this policy. A new partnership between the six local authorities covering South Essex has been formed to carry forward the work of driving the economic growth of the area. Leaders / Cabinet members from Basildon Borough Council, Castle Point Borough Council, Essex County Council, Rochford District Council, Southend-on-Sea Borough Council and Thurrock Council form the board of the new partnership. All such work will be subject to the guidance in the NPPF.
HG1 Retention	++	++	++	This policy aims to achieve development and change which will develop the diverse economy of the sub-region, including provision for the needs of an expanding tourism sector and recognition of the potential and need for employment growth in the smaller town and provide for major housing growth at Ipswich and Colchester. This will have significant benefits for population through more homes and jobs, particularly in the medium to long term.
HG1 Revocation	++	++	++	Revocation of the policy will leave decisions to local authorities collaborating under the duty to cooperate to bring forward the necessary development across the sub-region in line with the policies in the NPPF. The Core Strategies for Colchester Borough Council and Ipswich Borough Council (the two major housing growth points) were adopted in December 2008 and December 2011 and are in conformity with the development requirements in the East of England Plan. This will reduce the potential for short term uncertainty in these Boroughs following revocation of the policy and will deliver population benefits of a similar scale anticipated from the original policy.
HG2 Retention	++	++	++	The policy requires Local Development Documents to provide an enabling context for not less than 50,000 additional jobs in the sub region distributed as in Policy E1. This includes: supporting the maintenance and appropriate expansion of the ports, maritime and related activities; promoting the urban areas of Colchester and Ipswich as major centres of employment. In consequence retention has been assessed as scoring a significant positive against the population topic.
HG2 Revocation	++	++	++	Revocation of the policy will leave decisions to local authorities collaborating under the duty to cooperate to bring forward the necessary development across the sub-region in line with the policies in the NPPF. As noted above the Core Strategies for Colchester Borough Council and Ipswich Borough Council were adopted after the Regional Plan and are consistent with it. Whilst the Tendring District Local Plan pre-dates the Regional Plan by several months it was

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				prepared in parallel and contains regeneration policies for Harwich, Clacton and Jaywick. This will reduce the level of short term uncertainty in these Boroughs following revocation of the policy and will deliver population benefits of a similar scale anticipated from the original policy. .
LA4 Retention	++	++	++	The policy seeks continued employment growth with restructuring of employment areas and parts of the Watford town centre to meet the needs of established employment sectors and clusters and joint approaches to the provision of affordable housing inside and outside the Borough. In consequence retention has been assessed as scoring a significant positive against the population topic.
LA4 Revocation	++	++	++	The Watford Core Strategy was submitted to the Secretary of State in February 2012. Assuming adoption during the implementation period, it should enable realisation of these benefits.
CH1 Retention	0	+	++	This policy provides for growth for Chelmsford to provide for substantial growth of housing within an allocation of 16,000 for the District as a whole and further increase and diversify its employment base (with benefits to the population). This distribution of benefits over time reflects phasing in the development. In consequence retention has been assessed as scoring a significant positive against the population topic.
CH1 Revocation	0	+	++	The core strategy identifies (paragraph 1.22) that "the Borough Council is continuing to use the key components and proposals of the Draft East of England Plan, as set out below, as the baseline for the Spatial Strategy. However, the overall Borough-wide Spatial Strategy was designed from the outset to be capable of accommodating a higher housing allocation and is considered able to meet these potential increased growth requirements. Revocation will not therefore affect development in this area and the significant benefits that will accrue.
GYL1 Retention	0	+	++	The strategy for Great Yarmouth and Lowestoft is to promote the comprehensive regeneration of the two towns, capitalising on their strengths and protecting and enhancing their environmental assets. It seeks the delivery of at least 11,800 additional dwellings and encourages an urban renaissance. In consequence retention has been assessed as scoring a significant positive against the population topic.
GYL1 Revocation	0	+	++	Waveney District Council (which includes Lowestoft) published its core strategy in January 2009. As such this will be consistent with the regional strategy and policy GYL1. The core strategy for Great Yarmouth predates the regional strategy and a revised plan is expected to be consulted on in 2012 with intended adoption in 2013. Revocation of the policy is therefore unlikely to have any different effects from retention in Lowestoft, while in Great Yarmouth there may be greater reliance in the short term on the policies set out in the NPPF.
NR1 Retention	+	+	++	The aim is for Norwich to be a regional focus for housing, employment, retail, leisure, cultural and educational development. It seeks significant net additional dwellings over the period 2001-2012 which will have increasingly significant benefits to the population.
NR1 Revocation	+	+	++	A joint core strategy for Broadland, Norwich and South Norfolk was adopted in March 2011. It underwent SA and is in general conformity with the Regional Strategy. Revocation

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				of policy NR1 will leave decisions to the relevant local authorities set against the policies in the joint core strategy. Revocation of the RS policy is therefore unlikely to have any different effects from retention.
PB1 Retention	+	++	++	The policy seeks to achieve an increase of at least 20,000 additional jobs together with significant housing growth sustainable transport improvements and provision of green infrastructure in Peterborough. These will all lead to benefits in the medium to long term to the population.
PB1 Revocation	+	++	++	The Peterborough Core Strategy was adopted on 23 February 2011. Following revocation of the East of England Plan, this strategy, which is in conformity with the policies in the regional strategy (and particularly policy PB1) would become the main development plan document for the area. Revocation is not therefore expected to affect development in this area.
SV1 Retention	+	++	++	The policy seeks to provide for substantial employment growth in the Stevenage area, providing jobs for people in the region and encourage inward investment (significant benefits to population over that period).
SV1 Revocation	+	+	++	The Stevenage District Plan Second Review (District Plan) was adopted in 2004. In light of significant changes to the planning system since then, including publication of the NPPF, Stevenage Borough Council published an Interim Planning Policy Statement (IPPS) in April 2012. It will now proceed towards adopting a revised Local Plan in line with NPPF requirements. The amount of development anticipated in this short to medium period is likely to be lower than if the RS were in place, until the Local Plan is adopted. This will mean that the positive effects on population will be lower than those for retention.
TH1 Retention	+	++	++	The policy aims to provide for 'significant' service and employment development, which should encourage regeneration and living in the Thetford town centre. In consequence retention has been assessed as scoring a significant positive against the population topic.
TH1 Revocation	+	++	++	The Breckland Council received the Inspector's report into the soundness of the Thetford Area Action Plan Development Plan Document (Local Plan) on 30 May 2012. The Examining Inspector found the document to be sound. The Local Plan proposes a lower number of houses that allocated through the Regional Strategy, but the Inspector agreed with the Council that the new figure was sufficient to meet local needs.
MKSM1 Retention	++	++	++	The increased provision of housing is likely to lead to significantly positive effects on the population and human health. However, this will also depend on related factors such as the quality of the houses, their density, location relative to green spaces and ambient air quality.
MKSM1 Revocation	?	++	++	Revocation of the Regional Strategy will not remove the need for more houses within the Bedford, Kempston and northern Marston Vale localities. Indeed it is Government policy to boost significantly the supply of housing, for example through initiatives such as the Community Infrastructure Levy, New Homes Bonus and the local retention of business rates are intended to encourage a more positive attitude to growth and allow communities

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				to share the benefits and mitigate the negative effects of growth. Bedford Borough Council has a Core Strategy in place and Local Plan with saved policies, providing the development framework for the borough
MSKM2a Retention	++	++	++	The strategic planning approach set out within the policy would accommodate sustainable levels of housing growth and the necessary economic, environmental and social infrastructure required to support housing growth. As such significant population effects are identified.
MSKM Revocation	++	++	++	Revocation of the Regional Strategy will not remove the need for more houses and supporting economic, environmental and social infrastructure required to support housing growth in the areas identified in the policy. Indeed it is Government policy to boost significantly the supply of housing, for example through initiatives such as the Community Infrastructure Levy, New Homes Bonus and the local retention of business rates are intended to encourage a more positive attitude to growth and allow communities to share the benefits and mitigate the negative effects of growth.
MSKM2b Retention	++	++	++	Policy 2(b) sets out the numbers of houses which should be built between 2001-2021 in Luton/Dunstable/Houghton Regis and Leighton Linslade a total number of 26,300 housing units. Again, Policy H1: Regional Housing Provision 2001-2021 (pages 28-29) appears to replace Policy 2(b) of the MKSM sub regional strategy stating that the same figure of 26,300 houses need to be built, again in the same localities. The increased provision of housing is likely to lead to significantly positive effects on the population and human health.
MSKM2b Revocation	?	++	++	The two local authority areas in which these three areas are situated Luton Borough Council and Central Bedfordshire both have local plans in place. These should deliver levels of housing similar to those set out within the NPPF. The effects of revocation are uncertain, but are likely to be similar to retaining the Regional Strategy.

2.7.1 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or

- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

The likely significant effects on population associated with the revocation and retention of the quantitative and spatially specific policies are summarised in **Table 2.3** for policy E1, E2, E3, H1, H2, H3 and H4, M1, ETG1, HG1, CH1, GYL1, NR1, PB1, SV1, TH1, MKSM, MKSM 2a and MKSM 2b. However, in no instances were the population effects associated with either the revocation or retention of these policies considered to be negative. The combination of NPPF guidance, LEP activities, existing joint working and the purpose to increase to housing supply and create employment and contribute to sustainable, inclusive and mixed communities creates a framework where the effects of revocation are considered to deliver similar positive benefits to retention. However, the assessment did identify that revocation of some of the policies listed above would lead to less positive effects in the short to medium term compared with their retention (although the scores were still positive). These are policies E1, E2, E3, E4, H2, H3, H4, and SV1.

The assessment has found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

2.8 Mitigation Measures

Given that all likely significant effects identified would be positive, no mitigating measures are proposed for this topic.

A3. Human Health

3.1 Introduction

The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of the proposals to revoke the regional strategies on human health. Information is presented for both national and regional levels.

There are links between the human health and wellbeing topic and other topics in the SEA, specifically air, climate change and material assets.

3.2 Summary of Plans and Programmes

3.2.1 International

The World Health Organization (WHO)[46] states that *"health promotion goes beyond health care. It puts health on the agenda of policy makers in all sectors and at all levels*; consequently, healthy public policy has been a main goal of health development in many countries. The ***Canadian Lalonde Report (1974)*** identified four health fields independently responsible for individual health: environment, human biology, lifestyle and health care organisation.

The WHO ***Children's Environment and Health Action Plan for Europe (CEHAPE) (2004)*** was launched in June 2004 and signed by all 53 Member States of the WHO European Region, including the UK. The aim of the CEHAPE is to protect the health of children and young people from environmental hazards.

The European Union has a Programme for Community action in the field of Health (2008-2013) and, on the 23/4R[d] October 2007 the Commission adopted a new overarching Health Strategy ***'Together for Health - A Strategic Approach for the EU 2008-2013'***. Community Action focuses on tackling health determinants which are categorized as: personal behaviour and lifestyles; influences within communities which can sustain or damage health; living and working conditions and access to health services; and general socio-economic, cultural and environmental conditions.

The ***SEA Directive*** adopted in 2001 specifically requires the consideration of "*the likely significant*

[46] See the Ottawa Charter adopted at the First International Conference on Health Promotion in 1986.

effects on the environment, including on issues such as …, human health, …" (European Parliament and the Council of the European Union, 2001). The SEA Protocol (United Nations Economic Commission for Europe, 2003) implements the political commitments made at the Third European Conference on Environment and Health and uses the term 'environment and health' throughout. It indicates that health authorities should be consulted at the different stages of the process and so goes further than the SEA Directive. Once ratified, it will require changes to the SEA Directive to require that health authorities are statutory consultees.

The WHO publication ***Health Impact Assessment in Strategic Environmental Assessment (2001)*** provides a review of Health Impact Assessment concepts, methods and practice to support the development of a protocol on Strategic Environmental Assessment to the Espoo Convention, which adequately covers health impacts.

3.2.2 National

UK

Many of the national level policies and strategies regarding health are aimed at understanding the trends and nature of health issues within the country, understanding the links between health issues and other related factors (such as economic status, etc.), and, primarily, at reducing the inequalities in health outlooks that are evident between different parts of the country and different sections of the population. Whilst some applicable policies/strategies are contained within adopted strategies, many of the Government's objectives and intended actions are contained within White Papers and guidance papers.

The Health Protection Agency's ***Children's Environment and Health Action Plan, a summary of current activities which address children's environment and health issues in the UK (2007)*** applies the objectives of CEHAPE (2004) to the UK context and ***A Children's Environment and Health Strategy for the United Kingdom (2009)*** provides recommendations from the Health Protection Agency to the UK Government as to how it best can meet its commitment to the CEHAPE.

England

In England, the Department of Health is the government department responsible for public health issues. Its work includes setting national standards, shaping the direction of health and social care services and promoting healthier living.

The NHS White Paper, ***Equity and excellence: Liberating the NHS (2010)*** sets out the Government's long-term vision for the future of the NHS and consists of three mutually-reinforcing parts:

- putting patients at the heart of the NHS;

- focusing on improving outcomes; and
- empowering local organisations and professionals.

***Liberating the NHS: Legislative framework and next steps (*2010)** is the Government's response to the consultation on the implementation of the White Paper and three further consultations: ***Commissioning for patients (2010)*, *Local democratic legitimacy in health (2010)* and *Regulating healthcare providers (2010)*.** In this document the Government's commitment to the White Paper reforms are reaffirmed and described in detail how developments in light of the consultation will be put into practice across the three parts identified in the white paper above.

The ***Health and Social Care Act 2012*** enacts the proposals set out in the White paper and the subsequent rounds of consultation. The changes are designed to make the NHS more responsive, efficient and accountable, and capable of responding to future challenges. Key elements of the Act include: clinically led commissioning, service innovation, giving greater voice for patients, providing a new focus for public health, ensuring greater accountability and streamlining arms length bodies.

The Government's White Paper, ***Healthy Lives, Healthy People: Our strategy for public health in England (2010)*** recognises that the quality of the environment, including the availability of green space and the influence of poor air quality and noise, affects people's health and wellbeing. It details plans for a shift of power to local communities, including new duties and powers for local authorities to improve the health of local people. From April 2013, Directors of Public Health will be employed within upper tier and unitary local authorities. They will be able to influence local services, for example joining up activity on rights of way, countryside access and green space management to improve public health by connecting people with nature.

3.2.3 East of England

No relevant plans were identified within the region for this topic.

3.3 Overview of the Baseline

3.3.1 National

UK

In the UK, during 2006-2008, life expectancy at birth was 77.4 years for males and 81.6 years for

females.[47]

In 2006-2008, 37% of males and 38% of females in the UK rated their health as good; 44% of males and 41% of females rated their health as very good. Consequently, around 19% to 21% of males and females in the UK felt that their health was less than good.[47]

In 2007 the main causes of death in the UK were diseases of the circulatory system, and neoplasms (cancers)[47]. There are high levels of hypertension and overweight/obesity in the UK. Public health trends often correlate with deprivation and these figures for illness are invariably far less favourable in deprived areas. [48]

Deaths from respiratory diseases (including influenza, pneumonia, chronic lower respiratory disease, bronchitis, emphysema and other chronic obstructive pulmonary diseases and asthma) are higher in the UK than in any other EU Member State. In the UK there are 87.7 deaths per 100,000 males and 64.0 deaths per 100,000 females from respiratory diseases, compared to an EU average of 63.4 and 32.5[49] .

England

In England, during 2006-2008, life expectancy at birth was 77.93 years for males and 82.02 years for females.[50]

In 2006-2008, 38% of males and 39% of females in England rated their health as good; and 44% of males and 41% of females rated their health as very good[50] .

The Health Survey for England, published in 2010, includes the following key findings for 2009[51]:

- In 2009 men and women reported a similar prevalence of longstanding illness according to the Health Survey for England; 41% of men, 43% of women, and almost a quarter reported an illness limited their activity in some way; 22% of men and 23% of women.
- For adults aged 16 and over, self-reported cigarette smoking prevalence was 24% for men and 20% for women. Cigarette smoking prevalence varied by age, being higher among younger adults (32% for men and 26% for women aged 25-34) and lower among older adults (11% for men and 8% for women aged 75 and over).

[47] ONS, United Kingdom Health Statistics 2010, http://www.statistics.gov.uk/downloads/theme_health/ukhs4/ukhs4-2010.pdf

[48] Health Survey for England 2007 Healthy lifestyles: knowledge, attitudes and behaviour Summary of key findings, Office of National Statistics, http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=6637

[49] ONS, United Kingdom Health Statistics 2010, http://www.statistics.gov.uk/downloads/theme_health/ukhs4/ukhs4-2010.pdf

[50] ONS, United Kingdom Health Statistics 2010, http://www.statistics.gov.uk/downloads/theme_health/ukhs4/ukhs4-2010.pdf

[51] Health Survey for England 2010, http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles-related-surveys/health-survey-for-england/health-survey-for-england--2009-health-and-lifestyles

- High blood pressure was 32% in men and 27% in women. The prevalence significantly increased with age in both sexes.
- The percentage of adults who were obese has gradually increased over the period examined by the HSE, from 13% of men in 1993 to 22% in 2009 and from 16% of women in 1993 to 24% in 2009.

3.3.2 East of England

Over the past five years there has been a steady upward trend in life expectancy across English regions[52]. The East is no exception to this positive trend and at 79.6 years, male life expectancy at birth in the region is a year longer than the England average. Female life expectancy at birth is 83.2 years - also higher than the nationwide average[53].

The death rate in the region was 8.9 per 1,000 population in 2009, the same as across England as a whole[54]. However the age-standardised mortality rate, which takes into account the age structure of the population, was 5.8 per 1,000 people - lower than the England average of 5.5[55]. The infant mortality rate in the region is 13% lower than the national average at 4 per 1,000 live births.

The number of fatal casualties on the roads in the East of England fell 16% to 197 in 2010, broadly in line with a downward national trend. The region now has one of the lowest rates of road casualties per billion vehicle miles of any region.[56]

The East of England had the second lowest number of crimes recorded per 100,000 population of any region in England and the rate of crime committed against households was close to the national average[57]. Certain categories of crime are more prevalent in the region though. The East had the second highest rate of personal offences, including violent crimes and theft from a person, of any English region[58]. In all, 8.2% of the population were victimised at least once in 2010-11 in respect of personal offences.

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[52] Office for National Statistics (October 2011), *Life expectancy at birth and at age 65 by local areas in the United Kingdom 2004-06 to 2008-10*, http://www.ons.gov.uk/ons/rel/subnational-health4/life-expec-at-birth-age-65/2004-06-to-2008-10/statistical-bulletin.html#tab-Regional-life-expectancy

[53] Office for National Statistics (February 2012), *Region and Country Profiles: key statistics*, http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-227575

[54] Office for National Statistics (February 2012), *Region and Country Profiles: key statistics*, http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-227575

[55] Office for National Statistics (June 2011), *Regional Trends online tables; 06: health and social care*

[56] Department for Transport, *Reported road casualties in Great Britain: annual report 2010*, http://www.dft.gov.uk/statistics/releases/road-accidents-and-safety-annual-report-2010/

[57] Office for National Statistics (February 2012), *Region and Country Profiles: key statistics*, http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-227575

[58] Home Office, *Crime Survey for England and Wales*, http://www.homeoffice.gov.uk/science-research/research-statistics/crime/crime-statistics/british-crime-survey/

As in other areas of the country, public perception of crime is an ongoing issue. In the most recent Citizenship Survey, in 2009-10, 39% of respondents reported that they were worried about becoming a victim of crime. This suggests that people in the East were neither more nor less worried than across England and Wales as a whole[59].

Deprivation describes a broad range of economic and social issues: unmet needs caused by a lack of resources of all kinds, not just financial. A measure of overall deprivation experienced by people living in an area is provided by the Index of Multiple Deprivation 2010, which is calculated for every Lower layer Super Output Area (LSOA) in England[60].

Patterns of deprivation are complex: the East of England is home to both the most and least deprived of all areas in England[61]. The most deprived LSOA is to the east of the Jaywick area of Clacton on Sea in Tendring whereas the least deprived is to the north-west of Chorleywood in Three Rivers.

Along with the South East, the East of England contains the largest proportion of the least deprived LSOAs of any region. In all, 65% of LSOAs in the East of England are categorised as within the 50% least deprived areas across all England. The largest concentrations of deprived LSOAs in the region are within the larger urban areas of Luton, Norwich and Ipswich and some of the smaller urban areas, primarily located on or close to the coast, such as Kings Lynn, Great Yarmouth, Lowestoft, Clacton-on-Sea and Southend-on-Sea.

The East of England region has an extensive network of routes and trails, including 24,544 km of Public Rights of Way and 14,461 hectares of 'CROW' (Countryside and Rights of Way Act) access land. In addition, voluntary provision through agri-environment schemes managed by Natural England has provided 1,280km of footpaths and bridleways plus 1,276ha of permissive access countryside. This does not mean that all households have easy access to green space though. Designated landscapes and National Trails are concentrated in the north and east of the region and are remote from the bulk of the population who live in the south and the west .[62]

3.4 Environmental Characteristics of those Areas most likely to

[59] Department for Communities and Local Government, *2009-10 Citizenship Survey*, http://www.communities.gov.uk/publications/corporate/statistics/citizenshipsurvey200910spirit

[60] These geographical areas have an average population of around 1,500

[61] Department for Communities and Local Government (March 2011), *The English Indices of Deprivation: statistical release*, http://www.communities.gov.uk/documents/statistics/pdf/1871208.pdf

[62] Natural England, *State of the Natural Environment report*, http://publications.naturalengland.org.uk/publication/54001?category=118044

be Significantly Affected

3.4.1 UK

Health inequalities exist in many communities, often exacerbated by poor access to or use of health services. Any future funding constraints on health services are likely to affect this situation.

At present, respiratory illness places a significant burden on the health service which is partly attributable to existing air pollution. According to Occupational Health and Safety Information Service (2006), death rates from respiratory disease are higher in the UK than both the European and EU average. The report also suggests that respiratory disease costs the NHS and society £6.6 billion.

3.4.2 East of England

On most measures people in the East of England are slightly healthier than the national average. Coronary heart disease and cancer remain the big killers, in common with the rest of the country. Substantial gaps in life expectancy between the Local Authority Districts with the best and worst outcomes (Luton and South Cambridgeshire for females, and Fenland and South Cambridgeshire for male) indicate growing health inequality within the region.

Within the region, life expectancy for males was highest for East Cambridgeshire (81.5 years) and lowest in both Peterborough unitary authority (UA) and in Fenland (77.5 years). For females the highest life expectancy was in South Cambridgeshire (85.1 years) and lowest in Luton UA (80.9 years). The incidence of poor health is highest in large urban areas (Luton, Southend-on-Sea, Thurrock, Norwich, Ipswich, Peterborough and Great Yarmouth), some of the more remote rural areas (e.g. Fenland and Maldon), and some of the districts with new towns or post war settlements (e.g. Harlow, Basildon).

The East of England is home to both the most and least deprived of all areas in England[63]. The most deprived LSOA is to the east of the Jaywick area of Clacton on Sea in Tendring whereas the least deprived is to the north-west of Chorleywood in Three Rivers.

The largest concentrations of deprived LSOAs in the region are within the larger urban areas of Luton, Norwich and Ipswich and some of the smaller urban areas, primarily located on or close to the coast, such as Kings Lynn, Great Yarmouth, Lowestoft, Clacton-on-Sea and Southend-on-Sea.

[63] Department for Communities and Local Government (March 2011), *The English Indices of Deprivation: statistical release*, http://www.communities.gov.uk/documents/statistics/pdf/1871208.pdf

In the region 20 per cent of people (1.1 million) were in households with incomes below the poverty threshold. This is among the lowest proportions in the UK.

3.5 Likely Evolution of the Baseline

3.5.1 National

UK

Life expectancy at birth in the UK has reached its highest level on record for both males and females. A newborn baby boy could expect to live 77.7 years and a newborn baby girl 81.9 years if mortality rates remain the same as they were in 2007-2009. Females continue to live longer than males, but the gap has been closing.

Although both sexes have shown annual improvements in life expectancy at birth, over the past 27 years the gap has narrowed from 6.0 years to 4.2 years. Based on mortality rates in 1980-1982, 26% of newborn males would die before age 65, but this had reduced to 15% based on 2007-2009 rates. The equivalent figures for newborn females were 16% in 1980-1982 and 10% in 2007-2009. Life expectancy at age 65, the number of further years someone reaching 65 in 2007-2009 could expect to live, is also higher for women than for men. Based on 2007-2009 mortality rates, a man aged 65 could expect to live another 17.6 years, and a woman aged 65 another 20.2 years.

Within the UK, life expectancy varies by country, with the highest life expectancy at birth and at age 65 is higher for England than for the other countries of the UK. [64]

England

The current general trend in human health is generally towards improved health, greater life expectancy and reduced mortality from treatable conditions.[65]

For example, life expectancy for males in England increased from 76.9 years in 2003-05 to 78.3 years in 2007-09, an increase of 1.4 years. For females, life expectancy increased by 1.2 years from 81.1 to 82.3 years over the same period[66]. Trends in respiratory illness are downwards and are expected to continue like this, although a significant factor to be considered is that measured pollution is also affected by the

[64] Office for National Statistics, http://www.statistics.gov.uk/cci/nugget.asp?id=168
[65] Health Survey for England 2007 Healthy lifestyles: knowledge, attitudes and behaviour Summary of key findings, Office of National Statistics, http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=6637
[66] ONS (2009) http://www.statistics.gov.uk/pdfdir/liex0611.pdf

weather, and hot summers in 2003 and 2006 significantly increased these levels[67].

3.5.2 East of England

The Region's population has grown at a rate that is close to double the average for England and a whole and this trend is set to continue. This is partly due to net in-migration and partly by population ageing.

Older people comprise a growing proportion of the population. Projections indicate that between 2008 and 2013, the number of people aged 65 or more will overtake the number aged 16 or less.

Across the East of England, average life expectancy is about two years better than the national average.

3.6 Assessing Significance

Table 3.1 sets out guidance utilised during the assessment to help determine the relative significance of potential effects on health. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

Table 3.1 Approach to determining the significance of effects on health

Effect	*Description*	*Illustrative Guidance*
++	Significant positive	• Alternative has a significant positive effect on the likely determinants of good health in the region (including housing provision, employment opportunity, level of deprivation, physical activity, access to open space and recreational activities, improvements to environmental quality and community safety) • Alternative has a strong and sustained positive effect on health and wellbeing and acknowledges the health needs of specific groups in society (children, mums to be and the elderly). • Alternative supports the provision of healthcare facilities (i.e. as a result of an increase in the local population linked with employment provision).
+	Positive	• Alternative has a positive effect on the likely determinants of good health in the region (including housing provision, employment opportunity, level of deprivation, physical activity, access to open space and recreational activities, improvements to environmental quality and community safety) • Alternative has a positive effect on health and wellbeing and acknowledges the health needs of specific groups in society (children, mums to be and the elderly). • Alternative may support the provision of healthcare facilities (i.e. as a result of an increase in the local population linked with employment provision).

[67] Defra 2008

Effect	Description	Illustrative Guidance
0	No (neutral effects)	• Alternative has no observable effects on health and wellbeing of regional communities.
-	Negative	• Alternative has a negative effect on the likely determinants of good health in the region (including housing provision, employment opportunity, level of deprivation, physical activity, access to open space and recreational activities, improvements to environmental quality and community safety) • Alternative has a negative effect on health and wellbeing and acknowledges the health needs of specific groups in society (children, mums to be and the elderly). • Alternative results in some nuisance and/or disruption to communities, such that some complaints could be expected
--	Significant negative	• Alternative has a significant negative effect on the likely determinants of good health in the region (including housing provision, employment opportunity, level of deprivation, physical activity, access to open space and recreational activities, improvements to environmental quality and community safety) • Alternative has a significantly negative effect on health and wellbeing and acknowledges the health needs of specific groups in society (children, mums to be and the elderly). • Alternative causes statutory nuisance or a sustained and significant nuisance and/or disruption to communities.
?	Uncertain	• From the level of information available the impact that the alternative would have on this objective is uncertain.

3.7 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 3.2 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the health topic.

Table 3.2 Significant effects against the Health topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
T4 Retention	++	++	++	This policy seeks to improve the scope for efficient public transport and more use of walking and cycling in urban areas. In addition it seeks improvements to increase the safety of the public realm. The policy would result in significant benefits to human health as a result of improved opportunities for exercise and improved air quality.
T4 Revocation	++	++	++	The policy is reflected in the NPPF which promotes sustainable transport measures including greater emphasis on public transport and alternatives to the car through improved facilities for walking and cycling and improved road safety. It is therefore expected that the

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				significant benefits to human health through increased activity and improvements in air quality will continued if the policy is revoked.
T6 Retention	++	++	++	This policy seeks to bring about the improved management and maintenance of the strategic and regional road networks while mitigating environmental effects. If successful it should significantly improve human health and result in improvements in air quality.
T6 Revocation	++	++	++	This policy sets aspirations out that fit well with the broad thrust of the NPPF and it is expected that similar significant benefits to the population and human health will occur if the policy is revoked.
T7 Retention	++	++	++	This policy gives priority to sustainable access from villages and other rural settlements to market towns and urban areas and encourages improved public transport and measures for walking and cycling. The improved opportunities for exercise and improved environmental quality in rural areas would bring significant health benefits.
T7 Revocation	++	++	++	The NPPF supports sustainable transport measures including the needs of rural areas. It is therefore expected that the significant benefits to human health through increased activity and improvements in air quality will continued if the policy is revoked.
T8 Retention	++	++	++	Policy T8 concerns the management of the local road network consistent with Local Authority local transport plans. The policy aims to result in more walking and cycling and to improve local road safety which could all have health benefits.
T8 Revocation	++	++	++	This policy like Policy T4 Urban Transport does not set out local planning requirements or targets and identifies no specific schemes. Local transport plans will still be developed in a form that will address these aims and as such revocation is unlikely to have any different effects from retention.
T9 Retention	++	++	++	The policy seeks to tackle congestion and its environmental impacts, improve safety and facilitate the provision of safe and efficient public transport, walking and cycling. This will have significant benefits to the population and human health, and potentially benefits to air quality.
T9 Revocation	++	++	++	Paragraph 29 of the NPPF recognises the important role that transport can play in contributing to wider sustainability and health objectives. However it also recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas. Paragraph 30 states that encouragement should be given to solutions which support reductions in congestion. In preparing Local Plans, local planning authorities should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport. It is therefore expected that the significant benefits to human health through increased activity and improvements in air quality will continue if the policy is revoked.
ENV2 Retention	++	++	++	The policy sets out to protect and enhance landscape character across the region and particularly the nationally designated landscapes - the Norfolk and Suffolk Broads and the four Areas of Outstanding Natural Beauty will have significant benefits for the landscape, and through better recreational opportunities should have significant benefits to human health. This policy is reflected in the RES which seeks to minimise environmental and resource impacts. The RES states that the region's special and vulnerable landscapes should be conserved and improved.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
ENV2 Revocation	++	++	++	It is expected that there will be similar significant benefits to the population and human and the landscape, and benefits to cultural heritage if the policy is revoked. The first part of the policy effectively sets out the statutory requirements to afford the highest level of protection to nationally designated landscapes. Paragraph 115 of the NPPF maintains the policy basis for the legislation. The NPPF also maintains the policy previously contained in PPS7 that local planning authorities should set criteria based policies against which proposals for any development on or affecting protected landscape areas will be judged (paragraph 113), while landscape character assessments should be prepared where appropriate (paragraph 170).

3.7.1 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

There were no likely significant effects on health associated with the revocation or retention of the quantitative and spatially specific policies as no quantitative policies were identified in the assessment as having likely significant effects on this topic.

The assessment has also found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

3.8 Mitigation Measures

Given that all likely significant effects identified would be positive, no mitigating measures are proposed

for this topic.

A4. Soil and Geology

4.1 Introduction

The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of revoking the regional strategy on soil, geology and land use. Information is presented for both national and sub-regional levels.

Soil and geology within this context is concerned with important geological sites, and the contamination of soils. Land use in this context is concerned with the effective use of land i.e. by encouraging the reuse of land that has been previously developed (brownfield land) as well promoting sustainable patterns of land use e.g. in relation to the protection of open spaces and green infrastructure.

There are links between the soil and geology topic and other topics in the SEA, including material assets.

4.2 Summary of Plans and Programmes

4.2.1 International

The ***European Thematic Strategy on Soil Protection (2006)*** sets out the European Commission's strategy on soils and includes a proposal for an EU wide ***Soils Directive***. The overall objective of the strategy is the protection and sustainable use of soil, based on the following guiding principles:

- preventing further soil degradation and preserving its functions;
- when soil is used and its functions are exploited, action has to be taken on soil use and management patterns;
- when soil acts as a sink/receptor of the effects of human activities or environmental phenomena, action has to be taken at source; and
- restoring degraded soils to a level of functionality consistent at least with current and intended use, thus also considering the cost implications of the restoration of soil.

The ***EU Waste Incineration Directive 2000/76/EC*** aims to introduce measures to prevent or reduce as far as possible air, water and soil pollution caused by the incineration of waste, as well as the resulting risk to human health. The measures set out under the Directive include a prior authorisation requirement for incineration and co-incineration plants, and emission limits for certain pollutants released to air or to

water. The requirements of the Directive have been developed to reflect the ability of modern incineration plants to achieve high standards of emissions control.

The ***EU Integrated Pollution, Prevention and Control (IPPC) Directive 2008/1/EC*** defines the obligations to which industrial (including waste management) and agricultural activities with a high pollution potential must comply, through a single permitting process. It sets minimum requirements to be included in all permits, particularly in terms of pollutants released. The aim of the Directive is to prevent or reduce pollution being released to the atmosphere, water and soil, as well as reducing the quantities of waste arising from industry and agriculture. In order to gain an IPPC permit, operators must demonstrate that they have systematically developed proposals to apply the 'Best Available Techniques' (BAT) to pollution prevention and control and that they address other requirements relevant to local factors.

The European Commission reviewed European legislation on industrial emissions in order to ensure clearer environmental benefits, remove ambiguities, promote cost-effectiveness and to encourage technological innovation. The review led to the commission proposing and adopting a recast ***Directive on Industrial Emissions (IED) 2010/75/EU*** which came into force on 6 January 2011.

A number of other European Directives contribute indirectly to soil protection including on ***Habitats 92/43/EEC***, ***Air 2008/50/EC***, ***Water 2000/60/EC*** and ***Nitrates 91/676/EEC***.

The ***World Summit on Sustainable Development (2002)*** in Johannesburg proposed broad-scale principles which should underlie sustainable development and growth including an objective on greater resource efficiency. Reusing previously developed land is a good example of resource efficiency of land.

The conservation of resources is one of the underlying objectives of the ***European Spatial Development Perspective (ESDP) (1999)*** the framework for policy guidance to improve cooperation among community sectoral policies. There also exists a range of legislation in relation to resources.

UK

The ***Environmental Protection Act 1990*** defines within England, Scotland and Wales the legal framework for duty of care for waste, contaminated land and statutory nuisance.

The ***Environment Act 1995*** seeks to protect and preserve the environment and guard against pollution to air, land or water. The Act adopts an integrated approach to environmental protection and outlines where authorisation is required from relevant authorities to carry out certain procedures as well as outlining the responsibilities of the relevant authorities. The Act also amends the Environmental Protection Act 1990 with regard compulsory remediation of contaminated land. The Environmental Protection Act 1990 was also modified in 2006 to cover radioactivity, and then a further modification was made in 2007 to cover land contaminated with radioactivity originating from nuclear installations.

The ***Wildlife and Countryside Act 1981*** allows the designation of SSSIs for sites with geological importance.

England

The ***Contaminated Land (England) Regulations 2006*** sets out provisions relating to the identification and remediation of contaminated land. It identifies sites requiring regulation as 'special sites' and adds land contaminated by radioactive substances to this classification.

In June 2011, the Government outlined its vision for England's soils in the ***Natural Environment White Paper (NEWP)***. This set a clear target that by 2030 all of England's soils will be managed sustainably and degradation threats tackled successfully, in order to improve the quality of soil and to safeguard its ability to provide essential ecosystem services and functions for future generations. As part of this vision, the Government committed to undertaking further research to explore how soil degradation can affect the soil's ability to support vital ecosystem services; and how best to manage lowland peatlands in a way that supports efforts to tackle climate change. This will inform our future policies and the direction of future action towards 2030.

The Government has recently reviewed the contaminated land regime in England for the first time since its introduction in 2000. Following the review of the contaminated land regime including public consultation, revised ***Statutory Guidance has now been issued under Part 2A of the Environmental Protection Act 1990***. This revised Statutory Guidance while still taking a precautionary approach, allows regulators to make quicker decisions about whether or not land is contaminated under Part 2A preventing costly remediation operations being undertaken unnecessarily. It also offers better protection against potential health impacts by concentrating on the sites where action is actually needed.

The ***National Planning Policy Framework*** (NPPF) states that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interests and soils; preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil pollution or land instability; and remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate (paragraph 109). Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality (paragraph 112). The NPPF also states that planning policies should encourage the effective use of land by reusing land that has been previously developed, provided that it is not of high environmental value (paragraph 111). The NPPF also reaffirmed the Government's commitment to maintaining Green Belts. It states that local planning authorities with Green Belts in their area should establish Green Belt boundaries in their Local Plans which set out the framework for Green Belt and settlement policy. Once established, Green Belt

boundaries should only be altered in exceptional circumstances.

4.2.2 East of England

No relevant plans were identified within the region for this topic.

4.3 Overview of the Baseline

4.3.1 National

UK - Soils and Geology

The geology of the UK is diverse and has over 800 soil types. As a broad overview the following rock types exist in a progression from North West to South East (predominant rock types): Tertiary Volcanic Rocks; Crystalline Rock of Pre-Cambrian and later age; Lower Carboniferous to Cambrian; Triassic and Permian; Early Precambrian and Devonian; Jurassic; Cretaceous; Tertiary and Marine Pleistocene; and finally a return to Cretaceous.[68]

The quality of the land across the UK varies, with the best and most versatile agricultural land generally situated in the lowland and valley areas of England. Due to the topography and terrain, much of Scotland and Wales is classified as lower grade land. An estimated 21% of all farmland in England is classified as Grade 1 and 2 land, with a similar percentage graded as subgrade 3a land. These grades are the best and most versatile land grades as classified under the Agricultural Land Classification System.[69]

The UK has a diversity of mountain ranges and flood plains. In England, the southern part of the country is predominantly lowland, with mountainous terrain north-west of the Tees-Exe line (the Lowland-Upland divide across England), which includes the Cumbrian Mountains of the Lake District, the Pennines and limestone hills of the Peak District, Exmoor and Dartmoor. [70]

There are an estimated 2,050 geological SSSIs in UK.[71, 72, 73]

Across the UK there are also a number of non-statutory geological and geomorphological sites designated at a local level, i.e. often known as Local Geological Sites (formerly Regionally Important

[68] Agricultural Land Classification, protecting the best and most versatile agricultural land, Natural England, January 2009
[69] England's geology, Natural England, http://www.naturalengland.org.uk/ourwork/conservation/geodiversity/englands/default.aspx
[70] State of the Environment Report 2008, Natural England, 2008, http://naturalengland.etraderstores.com/NaturalEnglandShop/NE85
[71] Geoconservation Sites, http://www.geoconservation.com/sites/sssi.htm
[72] Natural England RIGS, http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/lgs/default.aspx
[73] The Scottish Soil Framework, Scottish Government, May 2009, http://www.scotland.gov.uk/Publications/2009/05/20145602/13

Geological and Geomorphological Sites (RIGS)). There are over 50 Local Sites groups in the UK[74].

In 2005 there was estimated to be around 413,906 hectares of land affected by industrial activity in England and Wales which may be contaminated, (around 2% of the land area in England and Wales)[75].

UK - Land Use

The UK covers an area of 2,472,900 hectares (242,514km^2). England comprises the largest land area in the UK, covering an area of 13,028,100 hectares (130,281km^2). The smallest land area in the UK is Northern Ireland, which covers an area of 1,357,600 hectares (13,576km^2).

Average population density of UK is 247 people per km^2.

Table 4.1 shows land cover in the UK as it stood in 2007 and shows that arable and horticulture and improved grassland are the most common land cover types in the UK, constituting 20.4% and 19.9% of total land area in the UK respectively.

Table 4.1 Estimated Areas of Broad Habitats in the UK in 2007[76]

Land Type	'000 hectares	% land area
Broadleaved, mixed and yew woodland	1406	6.2
Coniferous woodland	1319	5.8
Linear features	496	2.2
Arable and horticulture	4608	20.4
Improved grassland	4494	19.9
Neutral grassland	2176	9.6
Calcareous grassland	57	0.3
Acid grassland	1589	7.0

[74] Geoconservation Sites, http://www.geoconservation.com/sites/sssi.htm
[75] Indicators for Land Contamination, Science Report SC030039/SR, Environment Agency, August 2005
[76] ONS (2009) http://www.statistics.gov.uk/STATBASE/Expodata/Spreadsheets/D5325.xls (accessed 22.10.2009)

Land Type	'000 hectares	% land area
Bracken	260	1.1
Dwarf shrub heath	1343	5.9
Fen, Marsh, Swamp	392	1.7
Bog	2232	9.9
Standing open waters[1]	204	0.9
Rivers and streams[1]	58	0.3
Montane	42	0,2
Inland rock	84	0.4
Built-up areas and gardens	1323	5.8
Other land	113	0.5
Unsurveyed land[2]	522	2.3
Total[3]	**22627**	

England - Soils and Geology

In England there was estimated to be 307,672ha of land that may be contaminated. A total of 659 sites had been determined as 'contaminated land' in England by the end of March 2007. At the time of reporting, no site has been determined as contaminated land due to radioactivity [77].

Natural England (2008) report that there are 1,214 SSSIs designated for their geodiversity features covering 1,704 Geological Conservation Review (GCR) sites (which identified nationally important features of geological interest). Many SSSIs have more than one GCR feature and some GCR features extend over more than one SSSI, giving a total of 1,735 SSSI-GCR combinations, or 'geo-features'. The proportion of GCRs in favourable/recovering status varied between 76-94% depending on its category of GCR (each category is reported separately).

[77] Dealing with contaminated land in England and Wales A review of progress from 2000-2007 with Part 2A of the Environmental Protection Act, Environment Agency, January 2009

Within England, 87.7% of the land area is classed as agricultural land[78]. Of the remainder, 5% is non agricultural and 7.3% is urban. Of the 87.7% of land classed as agricultural, 65.1% is classed as moderate or better.

There are no formal international designations for geodiversity sites equivalent to the SPA and SAC designations for biological features, although the geodiversity of the Dorset and East Devon Coast is recognised through designation as a World Heritage site.

England contains two Geoparks: the English Riviera in Devon and the North Pennines AONB. These are areas considered by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) to be of international importance for geological heritage that should be safeguarded and sustainably managed and include strong local involvement. Two further areas in England (Abberley and Malvern Hills and the Cotswold Hills) identify themselves as Geoparks.

England – Land Use

The average population density of England is 385 people per km^2 [79].

Table 4.2 shows land cover in England as it stood in 2007 and highlights arable and horticulture and improved grassland as the most common land use covers (covering 30.4% and 21.7% of total land in England respectively).

Table 4.2 Land Cover in England in 2007[80]

England Land Cover 2007	'000 ha	% area
Broadleaved, Mixed and Yew Woodland	981	7.4
Coniferous Woodland	257	1.9
Boundary and Linear Features	353	2.7
Arable and Horticulture	4,002	30.4
Improved Grassland	2,856	21.7

[78] Agricultural land classification (ALC) Statistics from the digital 1:250,000 scale Provisional ALC map (www.magic.gov.uk)
[79] Office of National Statistics, http://www.statistics.gov.uk/geography/uk_countries.asp
[80] ONS (2009) http://www.statistics.gov.uk/STATBASE/Expodata/Spreadsheets/D5325.xls (accessed 22.10.2009)

England Land Cover 2007	'000 ha	% area
Neutral Grassland	1,453	11.0
Calcareous Grassland	30	0.2
Acid Grassland	396	3.0
Bracken	91	0.7
Dwarf Shrub Heath	331	2.5
Fen, Marsh and Swamp	117	0.9
Bog	140	1.1
Standing Open Water and Canals	97	0.7
Rivers and Streams	29	0.2
Built-up Areas and Gardens	1,038	7.9
Other land	580	4.4
Unsurveyed Urban Land	428	3.5
TOTAL	13,180	100

The majority of land in England (around 72%) is in agricultural use. A further 8.6% is used for woodland and forestry. Whilst developed land accounts for around 10% of the total area, only a very small proportion of the land (1.14%) is occupied by domestic buildings (e.g. houses), with domestic gardens accounting for almost half of the 'developed area' (over 4% of the national land area). Roads account for around 2% and rail 0.14% of the total.

4.3.2 East of England

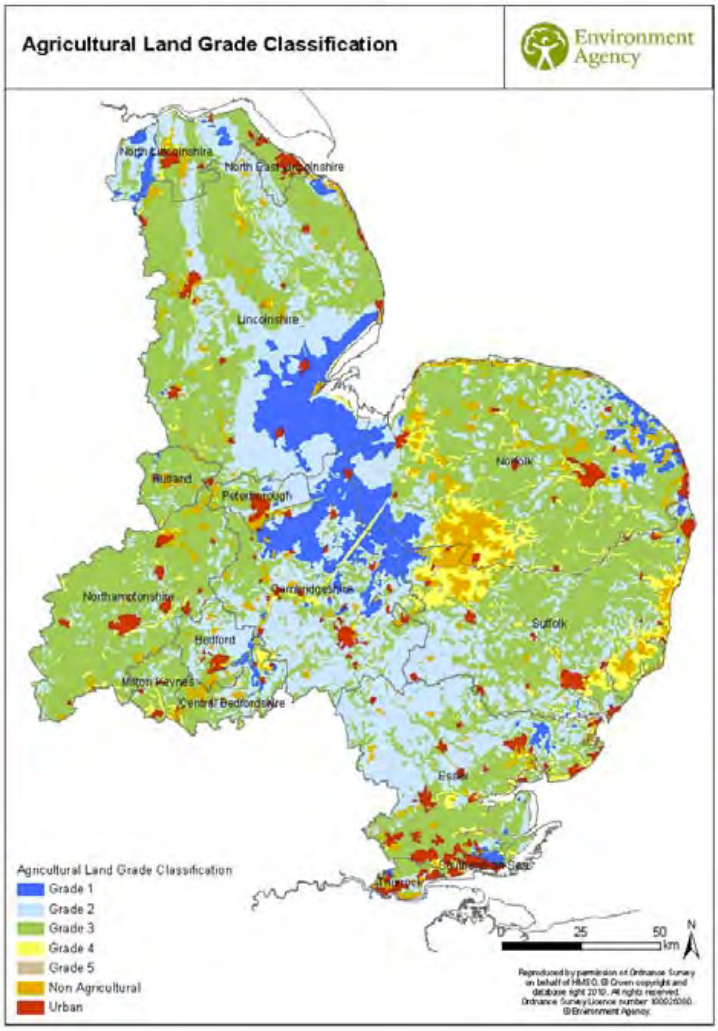
Soils and Geology

The East of England has the highest proportion of high quality agricultural land in the country, as nearly the entire region is covered by Grade 1, 2 or 3a land, including an area of Grade 1 land stretching from east of Peterborough to King's Lynn and down to Cambridge, approximately 98,000ha in size. Most of the central section of the region, i.e. the area from Huntingdon to Chelmsford and from Bedford to

Colchester, an area spanning approximately 450,000ha, is Grade 2 agricultural land, as well as a significant proportion of land immediately northeast of Colchester.

Areas of Grade 4 or lower agricultural land are mainly concentrated around Thetford/north of Bury St Edmunds and a relatively small area of land north-east of Ipswich. However, this poor quality agricultural land forms part of, or is adjacent to, areas of heathland and forest of very high habitat value (with SSSI, SPA and SAC designations).

Figure 4.1 Agricultural Land Classifications for the East of England



Over 70% of the land in the Anglian region[81] (2.1 million ha) was farmed in 2009, with 1.6 million hectares used for crops and horticulture. Agriculture dominates the local landscape and brings huge economic benefits. In 2009, agriculture in the East of England generated £2500 million, the highest of all English regions. Crops and horticultural products contributed nearly 60% of this total. There have been increasing numbers of smaller farms due partly to the trend of householders moving from urban areas to the countryside and buying property with a small acreage for keeping animals such as horses. The number of farms in the region increased by 30% between 1990 and 2009, and 3.2% between 2008 and 2009. Although these farms operate at a smaller scale than commercial farms they can still impact the environment.

In 2009 60% of agricultural land in the region was under entry level stewardship, and Natural England had defined target areas for the higher level scheme, which will cover about 20% of agricultural land.

There are about 140,000 hectares of woodland in the East of England, or 7.3% of the total land area[82]. The area of woodland in the region has increased steadily and significantly over the last 100 years, with the most obvious examples being the mainly coniferous woodlands established from the middle of the 20th century.

Land Use

The amount of contaminated land in the region recorded in the 2004 sustainability report was estimated to be about 300,000 hectares. In contrast, the Environment Agency's state of the environment report published in 2011 estimated that 5,700ha of brownfield/contaminated land in the region is either derelict, vacant or is in use with the potential for development. Between 2006-2009, on average 62% of new properties were built on previously developed land, compared to the average for England over the same period of 76%. The 2004 sustainability appraisal recorded 51% of housing built on brownfield sites between 1989-1993, and 59% between 1999-2002.

81 This includes parts of the Yorkshire and Humber region

[82] Natural England (2009). Investing in the East of England's natural assets: state, value and vision

4.4 Environmental Characteristics of those Areas most likely to be Significantly Affected

4.4.1 National

UK - Soil and Geology

Human activity has left a legacy of soil contamination and pollution that pose a risk to water quality, ecosystems and human health as well as to land and property value.

Significant areas across the UK carry a burden of contamination from industrial activity, although this is progressively being cleaned up as sites are redeveloped. Whilst contamination is remediated during redevelopment, the process can be expensive.

Disturbance of contaminated sites carries the risk of pollution pathways being created or re-opened for any existing ground contamination.

There is currently increasing pressure on rural and agricultural land from developers as urban areas expand. Future population growth leading to an increase in the need for housing and related urban development infrastructure will put more pressure on protected land including important geological sites.

Soils in England continue to be degraded by human actions including intensive agriculture, historic levels of industrial pollution and urban development, making them vulnerable to erosion (by wind and water), compaction and loss of organic matter[83]. Effects include:

- Soil erosion by wind and rain: erosion affects both the productivity of soils but also water quality and aquatic ecosystems.
- Compaction of soil reduces agricultural productivity and water infiltration, and increases flood risk through higher levels of run-off.
- Organic matter decline: the loss of soil organic matter reduces soil quality, affecting the supply of nutrients and making it more difficult for plants to grow, and increases emissions to the atmosphere.

As the climate (including temperature and rainfall patterns) changes in the future, it is likely that soils have the potential to be further degraded, both as a result of the direct and indirect impacts of climate

[83] http://www.defra.gov.uk/food-farm/land-manage/soil/

change, for example as land managers adapt their practices and the crops that they grow. Climate change and loss of organic matter are the most significant threats to Scottish soils[84]. The effect of industry, agricultural practices, forestry and climate change upon soils, particularly carbon rich peat soils, is also a key issue. Key pollutants include chemicals, oil or waste. Organic waste, including sewage sludge, is one of the main sources of heavy metal contamination of soils from human activities[Error! Bookmark not defined.].

In Wales the small proportion of land that is classified as 'best and most versatile' agricultural land needs to be conserved. There is also a need to protect soils in uplands and wetlands which contain high amounts of carbon and are vulnerable to acidification[85].

The main pressures in Northern Ireland are development, infrastructure, mineral extraction industries, and tourism. A major problem in farmland is the over-accumulation of phosphorus in the soil, due to agricultural fertilisers. The intensification and expansion of agriculture is a key pressure on soil quality and erosion[86].

UK - Land Use

Of UK land 5.6% is currently classed as 'built up.' Development pressure remains a constant factor in parts of the country, and it is not expected that previously-developed land will be able to fully deliver the UK's future needs. This will continue to place development pressures in rural areas and the urban fringe.

When greenfield land is used for development, it is likely to result in the permanent loss of that land from other uses such as agriculture. There are similar pressures to build across each of the UK administrations, however the details differ slightly between each.

The 2008 State of the Natural Environment report[87] noted that within rural England, the area of developed land had increased by about 4% since 1990, largely by using agricultural land and that between 1998 and 2003 substantial greenfield development has occurred near many urban areas, notably at key growth points, but also in former coalfield belts. It said the pace of development within England was increasing, particularly for housing in response to demand and a historic shortfall in housing provision and that this was expected to have a dramatic effect on a large part of central and southern England though the series of the then identified Growth Areas and Growth Points.

[84] State of the environment and trends – Scotland, http://www.seaguidance.org.uk/11/State-of-the-Environment.aspx
[85] Environment Strategy for Wales, Welsh Assembly Government, 2006, http://wales.gov.uk/topics/environmentcountryside/epq/envstratforwales/strategy/?lang=en
[86] Planning and Land Contamination, Northern Ireland Environment Agency, http://www.ni-environment.gov.uk/land-home/land-quality.htm
[87] Natural England (2008) http://www.naturalengland.org.uk/publications/sone/default.aspx

4.4.2 East of England

A very large amount of growth is targeted to Thurrock, where there are significant areas of brownfield land (although it is important to note that development of this land may be constrained by its biodiversity value in some instances).

Other areas in the south of the region have seen much of their available previously developed land already returned to use. Colchester and St. Albans are two such locations. The 2010 ISA had noted that the 2010 review of the Plan proposed to reduce the scale of expansion of Harlow set out in the adopted Plan - possibly in response to comments received from Hertfordshire County Council that, should Harlow be expanded predominantly to the north, this would represent the largest commitment to any single greenfield development in the region, if not the country.

According to the 2010 Integrated Sustainability Appraisal, the key soil and land related issue for the Region was maximising the use of the brownfield resource, and accommodating residual growth in sustainable greenfield locations. It identified that while 61% of previously developed land was suitable for housing, only 117,720 dwellings could be provided on PDL in the East of England. This was considered likely to represent the fact that much PDL (e.g. MoD land) is not in locations that are suitable for large scale housing development. Taking account of growth targets, they considered it to be clear that considerable greenfield development would be required in the region. It stated that greenfield development must avoid the most sensitive areas, including best and most versatile agricultural land.

4.5 Likely Evolution of the Baseline

4.5.1 National

UK - Soils and Geology

There is little data on the long term trends associated with soil. In 2010, the Foresight Project completed the Land Use Futures Project to take a long-term view of all types of land use to analyse future land use challenges through looking at pressures and trends and developing scenarios and models, including the consideration of soil issues[88]. The Natural Environment White Paper commits the Government to undertake a significant research programme over the next four years to explore how soil degradation can affect the soil's ability to support vital ecosystem services such as flood mitigation, carbon storage and nutrient cycling; and how best to manage lowland peatlands.

[88] http://www.bis.gov.uk/assets/foresight/docs/land-use/luf_report/8614-bis-land_use_futures_exec_summ-web.pdf

There is a steady loss of soils to development, contaminated sites, damage by muddy floods and water pollution by silt and fertilisers. Continued pressure of development will result in the loss of productive soil, although it is also likely to lead to the remediation of contaminated soils. As more brownfield land is developed there may be more pressure for development on greenfield land which is likely to increase loss of soil resources. Climate change means that the UK is likely to see an increase in rainfall intensity which could lead to increased soil loss due to erosion.

However, the increase in public and policy awareness regarding geological SSSI sites and Geoparks may lead to an increase in the number of sites protected and managed. As quarries come to the end of their working lives there is potential for their identification and conservation as geologically important sites.

As there are now more stringent statutory controls on land contamination and remediation, increased areas of historic contamination are being remediated and fewer areas are being left in a contaminated state following decommissioning of commercial and industrial sites. Major remediation, regeneration and development projects, such as the Olympic Park and Thames Gateway developments in London are likely to further decrease the total area of contaminated land within the UK.

There are a number of European directives that are either currently being implemented or are under discussion that may influence the way in which land contamination is managed in the future (i.e. the Environmental Liabilities, Soil, Water, Groundwater and the Waste Framework Directives). The implementation of these regimes into UK legislation is likely to affect how contaminated land is dealt with[89].

UK – Land Use

The estimated broad habitat type in the UK and how it has changed from 1984 to 2007 was calculated by the Office of National Statistics[90] and is shown in **Table 4.3**. It shows that the area of land cover under arable and horticulture has decreased by 9.1% between 1998 and 2007. The area of grassland land cover has generally increased with improved grassland increasing by 5.7%. Built-up areas and gardens have increased by 3.4% between 1998 and 2007.

[89] Dealing with contaminated land in England and Wales A review of progress from 2000-2007 with Part 2A of the Environmental Protection Act, Environment Agency, January 2009
[90] http://www.statistics.gov.uk/STATBASE/Expodata/Spreadsheets/D5325.xls (accessed 22.10.2009)

Table 4.3 Estimated Area ('000 ha) of Broad Habitats in the UK in 1984, 1990, 1998 and 2007

Land Type	1984	1990	1998	2007	% change between 1998 and 2007
Broadleaved, mixed and yew woodland	1317	1343	1328	1406	5.9
Coniferous woodland	1243	1239	1386	1319	-4.8
Linear features	491	581	511	496	-2.9
Arable and horticulture	5283	5024	5067	4608	-9.1
Improved grassland	5903	4619	4251	4494	5.7
Neutral grassland	467	1669	2007	2176	8.4
Calcareous grassland	75	78	61	57	-6.6
Acid grassland	1476	1821	1503	1589	5.7
Bracken	439	272	315	260	-17.5
Dwarf shrub heath	1388	1436	1299	1343	3.4
Fen, Marsh, Swamp	428	427	426	392	-8.0
Bog	2303	2050	2222	2232	0.5
Standing open waters[1]	284	200	196	204	4.1
Rivers and streams[1]	70	70	65	58	-10.8
Montane	41	n/a	41	42	2.4
Inland rock	38	76	111	84	-24.3
Built-up areas and gardens	1268	1266	1279	1323	3.4
Other land	n/a	57	107	113	n/a
Unsurveyed land[2]	n/a	522	522	522	n/a
Total[3]	**22514**	**22632**	**22601**	**22627**	

It is not known whether the decrease in arable and increase in improved grassland is likely to continue at the same rate in the future although it does seem likely that the extent of built up areas will continue to increase as some development will inevitably take place on greenfield land.

The area land occupied by agricultural holdings and the area in actual use for agriculture has changed very little across the UK in the past 25 years. The total area of land in agricultural holdings in the UK fell on average by about 15,400ha per annum between 1983 and 2008. This was equivalent to a rate of

0.09% per annum, or about 1% per decade, although over the latter 10 years of that period the reduction in land area was minimal[91].

The clearest trend in land use change in the UK over the past quarter of a century has been the conversion of land from agriculture to forestry and woodland. Forestry Commission estimates of the area of forest and woodland cover in the UK imply an average annual net increase of 25,000ha since 1980, equivalent to 1.05% per year. There seems to have been some reduction in the rate of growth from 2000 to 2008 with the net increase in tree cover in this period being about 7,000ha per annum (or 0.24%). These recent patterns of woodland expansion continue a very clear upwards trend, which has led to a doubling of the area of UK woodland since World War II.

New planting has predominantly responded to subsidy and has involved the expansion of small broadleaved woodlands within agricultural holdings. The average annual increase in woodland on farms (14,500ha per annum) accounts for more than half of the net increase in the wooded area as a whole. The area of woodland within agricultural holdings has thus more than doubled since the early 1980s.

In 2008, there was an estimated 63,750ha of previously-developed land in England, up from 2.6% from 62,130ha in 2007. An estimated 32,400ha of previously-developed land was vacant or derelict, 51% of the total. The remaining 31,350ha was in use but with potential for redevelopment[92]. The conversion of previously undeveloped land accounted for about 5,000ha per annum between 2000 and 2006. This is equivalent to 0.04% of England's land area, and about one-third of the average annual flow of 15,700ha estimated for the period 1945-1975. Of all greenfield land developed between 2000 and 2006, roughly 57% was for residential uses, with 20% being for industrial, commercial and related activities, and the remaining 23% for other developed uses, predominantly transport.

England - Soils and Geology

The Natural Environment White Paper (2011) established an ambition that by 2030 all of England's soils will be managed sustainably and degradation threats tackled successfully, in order to improve the quality of soils and to safeguard their ability to provide essential ecosystem services and functions for future generations.

England - Land Use

In 2008, there was an estimated 63,750ha of previously-developed land in England, up from 2.6% from

[91] Foresight Land Use Futures Project (2010). Final Report.

[92] Previously Developed Land that may be Available for Development: Results from the 2008 National Land Use Database of Previously-Developed Land in England, Homes and Communities Agency, February 2010, http://www.homesandcommunities.co.uk/nlud-pdl-results-and-analysis.htm

62,130ha in 2007. This reversed a trend that occurred in the previous five years, where the total amount of previously-developed land in England declined by 6%. Between 2002 and 2007, the amount of vacant and derelict land declined by 17.5% while land currently in use with potential for redevelopment increased by 12%[93].

There have also been changes in the changes to land use related to broad habitat types. Between 1998 and 2007 in England there was a significant increase in the area of Broadleaved Woodland (5.8%), Neutral Grassland (12.6%), Dwarf Shrub Heath (15.1%) and Standing Open Water and Canals (5.3%). The increase in the area of Dwarf Shrub Heath between 1998 and 2007 followed a decrease in area between 1990 and 1998. The increase in the area of Standing Open Water and Canals6 recorded in England between 1998 and 2007 continued the increases recorded by Countryside Survey since 1990[94].

On the other hand, there was a significant decrease in the area of Arable and Horticulture Broad Habitat (8.8%) in England across the same period. No statistical change in extent was detected in the Coniferous Woodland, Improved Grassland, Bracken, Bog, Fen, Marsh and Swamp and Calcareous Grassland Broad Habitats in England between 1998 and 2007.

4.5.2 East of England

The Region has the highest proportion of high quality agricultural land in the country, as nearly the entire region is Grade 1, 2 or 3a land. Much of this is managed under agri-environmental schemes. Uptake of such schemes is likely to increase (although this is outside the scope of the planning system or the influence of the Regional Strategy).

The Region is also subject to significant development pressure, particularly in the areas designated as key centres for development and change. The 2004 sustainability appraisal highlighted the pressures on land and soil of achieving the housing allocations in what became the 2008 Plan, but these were considered to be too low to meet future demand and were being revised upwards. The process stopped in 2010 before the revised Plan was adopted.

The Plan contains a number of policies which seek to mitigate the adverse effects of the housing allocations. Policy SS2 in particular directs most of the strategically significant growth to the region's major urban areas and prioritises the re-use of previously developed land in and around urban areas. It also sets a target for 60% of development to be on previously developed land.

On average, the region has exceeded the 60% target in recent years. However, as the 2010 ISA

[93] Communities and Local Government 2008
[94] Countryside Survey for England (2007)
http://www.countrysidesurvey.org.uk/sites/default/files/pdfs/reports2007/england2007/CS-England-Results2007-Chapter02.pdf

identified, going forward, the amount of unconstrained previously developed land in locations suitable for large scale housing development is finite, and it is clear that in some areas the target will get progressively harder and less sustainable to meet and there will be considerable greenfield development in the region.

For example, it noted that a very large degree of growth is targeted to Thurrock, where there is a significant brownfield resource (although it is important to note that development of the brownfield resource in Thurrock may be constrained by its biodiversity value in some instances). Other areas in the south of the region, including Colchester and St. Albans have seen much of their available previously developed land already returned to use.

While the focus of Policy ENV4 is largely on agricultural impacts and the promotion and expansion of agri-environment schemes, it also seeks to promote the sustainable use of soil and where soil has been degraded to maximise opportunities for restoration to beneficial after-uses (such as agriculture, woodland and habitat creation schemes), and to encourage more sustainable use of water resources through winter storage schemes and new woodland creation.

Policy SS7 states that the broad extent of green belts in the East of England is appropriate, and should be maintained. However, it identifies that strategic reviews of Green Belt boundaries are needed in a number of identified areas to meet regional development needs at the most sustainable locations. The effects of this policy would depend on the outcome of the reviews, but it is probably likely that they would result in some greenfield development in these locations

4.6 Assessing significance

Table 4.4 sets out guidance utilised during the assessment to help determine the relative significance of potential effects on the soil and geology. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

Table 4.4 Approach to determining the significance of effects on geology and soils

Effect	*Description*	*Illustrative Guidance*

Effect	Description	Illustrative Guidance
++	Significant positive	• Alternative would restore and significantly improve soil quality and land stability to conditions beyond current levels and remove all soil contamination so that soil functions and processes would be significantly improved in the long term. • Alternative would minimise, and protect from irreversible damage high quality agricultural land (i.e. best and most versatile, grades 1, 2, and 3a of the Agricultural Land Classification). • Alternative would have a significant and sustained positive impact on a national designated geological site. • Alternative would seek to minimise use of any undeveloped land, and look to preferentially reclaim and redevelop significant areas of previously-developed or derelict land.
+	Positive	• Alternative would cause minor improvements in soil quality and land stability so that soil functions and processes would be improved in the long term. • Alternative would reduce any potential damage to high quality agricultural land (i.e. best and most versatile, grades 1, 2, and 3a of the Agricultural Land Classification). • Alternative will reduce any potential hazard associated with existing soil contamination. • Alternative would have a minor and temporary positive impact on a national designated geological site. • Alternative would seek to preferentially make use of previously developed land; however, would allow for development of undeveloped.
0	No (neutral effects)	• Alternative would not cause damage or loss to soil such that soil function and processes will not be affected. • Alternative would not affect land stability. • Alternative would not involve significant loss of any undeveloped or developed land.
-	Negative	• Alternative would lead to an increase in pollutant discharges to soil, however these would be less than permitted limits, such that there will be minor short term increases in land contamination. • Alternative would cause minor increases in potential hazards associated with existing soil contamination. • Alternative would cause a temporary loss of soil so that soil function and processes would be negatively affected in the short/medium term. • Alternative would cause minor short term negative effects on geological conservation sites/important geological features or soils of high importance. • Alternative would lead to the majority of development using undeveloped land or land that has reverted to a 'wild' state.

Effect	Description	Illustrative Guidance
--	Significant negative	• Alternative would lead to a statutory limit being reached or exceeded in relation to land contamination, such that there would be a major and sustained increase in land contamination. • Alternative would cause major and sustained increases in potential hazards associated with existing soil contamination. • Alternative would cause considerable loss of soil quality, such that soil function and processes will be irreversibly and significantly affected. • Alternative would cause a substantial and permanent loss of or damage to soil of high importance and/or designated geological conservation sites/important geological features. • Alternative would not develop derelict or previously-developed land, but would lead to development of significant areas of undeveloped land/ land that has reverted to a 'wild' state.
?	Uncertain	• From the level of information available the impact that the alternative would have on this objective is uncertain.

4.7 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 4.5 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the soil and geology topic.

Table 4.5 Significant Effects against the Soil and Geology Topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
ENV 3 Retention	++	++	++	The policy seeks to ensure that the region's earth heritage and natural resources are protected and enriched through their conservation, restoration and re-establishment. This is to be achieved by local authorities ensuring new development minimises damage to earth heritage resources; identifying, safeguarding, conserving, and restoring regionally important geological and/or geomorphological sites and promoting their good management.
ENV3 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated geological sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites would be unchanged by revocation. Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				of the natural and local environment. This includes recognising the wider benefits of ecosystem services. Paragraph 109 in the NPPF states that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interests and soils and preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil (and other types) of pollution. Paragraph 117 states that planning policies should aim to prevent harm to geological conservation interests. The plan policies are supported by the development management requirements set out in paragraph 118. In consequence, revocation has been assessed as having the same positive benefits as retention.
ENV 4 Retention	++	++	++	The policy promotes and encourages the expansion of agri-environment schemes to: maintain and enhance the resilience and quality of soils; encourage the sustainable use of soil resources and, where soil and land have been degraded, maximise opportunities for restoration to beneficial after-uses
ENV4 Revocation	++	++	++	Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement of the natural and local environment. This includes recognising the wider benefits of ecosystem services. Paragraph 109 in the NPPF states that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interests and soils and preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil (and other types) of pollution. The NPPF requires local planning authorities to take into account the economic and other benefits of the best and most versatile agricultural land (paragraph 112). Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality. In consequence, revocation has been assessed as having the same positive benefits as retention. The effects of this policy are more likely to materialise in the medium to long term.
M1 Retention	++	++	++	The one minerals policy in the Plan recognises that while extraction can have significant environmental impacts, there will usually be opportunities as part of site restoration to return it to beneficial use. This would normally include the careful management of the soil resource before, during and after the minerals have been extracted.
M1 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated geological sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites would be unchanged by revocation. Paragraphs 143 and 144 provide strong protections for the natural and historic environment and important landscapes. It also provides for the restoration and aftercare of worked sites at the earliest opportunity and for it to be carried out to the highest standards. In consequence, revocation has been assessed as having the same positive benefits as retention.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
CH1 Retention	0	-	--	The sub-regional policy provides for substantial growth in the District, and while seeking to maximise the use of brownfield land the need for urban extensions is recognised. This is likely to result in the loss of greenfield land in the longer term and there effects on soil.
CH1 Revocation	0	-	--	Chelmsford Borough Council adopted its core strategy in February 2008 just before adoption of the regional strategy. The core strategy identifies (paragraph 1.22) that "the Borough Council is continuing to use the key components and proposals of the Draft East of England Plan, as set out below, as the baseline for the Spatial Strategy. However, the overall Borough-wide Spatial Strategy was designed from the outset to be capable of accommodating a higher housing allocation and is considered able to meet these potential increased growth requirements. Revocation of policy CH1 will leave the 2008 core strategy in place. As this is in conformity with the regional strategy it is considered reasonable to conclude that the same environmental effects are likely following revocation as for retention.
HA1 Retention	0	-	--	The policy promotes Harlow as a major regional housing growth point, major town centre and strategic employment location to 2021 and beyond, with the focus on regeneration and redevelopment of the existing town but also urban extensions to the north, east, and on a smaller scale the south and west. The Green Belt will be reviewed to accommodate the urban extensions. The review to the north should provide for an eventual development of at least 10,000 dwellings and possibly significantly more. This could have significant adverse effects on the soil resource in the longer term.
HA1 Revocation	0	-	--	The NPPF requires local planning authorities to take into account the economic and other benefits of the best and most versatile agricultural land (paragraph 112). Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality. The Adopted Replacement Harlow Local Plan was adopted by Harlow Council on 13 July 2006 however only some of the policies are still current ('saved'). Policies include the provision of 15.7 ha of employment land (on greenfield land) and a designated Strategic Housing Site (Newhall), also on greenfield land. Harlow is situated in the Green Belt. The Adopted Plan of 1995 and subsequent Alterations in 1998 defined for the first time the areas of Green Belt within the district's boundary. The policy on Green Belt states within the Metropolitan Green Belt there is a general presumption against inappropriate development. Except in very special circumstances, planning permission will not be granted. Revocation of the policy may affect of the quantum of development subsequently identified in the (post NPPF) revised Local Plan; however, as the saved policies in the current Local Plan were already acknowledging the importance of protecting the Green Belt and making provision for some future development that would include greenfield sites, the effects are considered to be similar as retention.
SV1 Retention	0	-	--	The 2004 Sustainability Appraisal identified that Policy SV1 in the medium to long term would help generate substantial employment growth in the area, providing jobs for people in the region and encourage inward investment (significant benefits to population over that period). The policy seeks to enhance the urban environment through the re-development of previously developed land and an urban renaissance re-launch which will also have benefits for population and human health and to the townscape (landscape benefits). It will increase the area's sustainability by ensuring that the proposals can deliver sustainable transport, social and environmental infrastructure development with benefits to air quality and climatic factors.
SV1 Revocation	0	0	?	

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				However, the policy will lead to the development of large areas of greenfield land through proposed urban extensions (significant negative for soil), while both the construction and use of the housing provision for the area will lead to significant use of natural resources and energy (adverse for material assets). No significant impacts are anticipated under revocation.

4.7.1 Effects of Revocation

The main adverse impacts on soil are a result of development. Assuming the level of growth in the region is the same as if the regional strategy is revoked it is possible in some areas that there will be less development on brownfield land and more on greenfield sites. Policies in the NPPF seek to protect best and most versatile land (i.e. ALC Grades 1-3a), but given the very high percentage of agricultural land which is classified as best and most versatile in the region it is likely that some will be affected.

Revocation will lead to the removal of a policy requirement to complete Green Belt reviews. In some authorities (such as Cambridge) the removal will enable communities to revert back to the adopted Local Plan which may make clear provision for a presumption against development in the Green Belt. In other cases, the current position is less clear. Some local authorities in the region have little additional capacity for develop without building in the Green Belt, and there is the balance between concentrating in the urban centres and the availability of green space/green infrastructure which may have greater overall benefits. The effect of revocation in these areas is less certain in the short to medium term.

Three policies were identified to have significant benefits to soil, ENV3 (Biodiversity and Earth Heritage), ENV4 (Agriculture, Land and Soils) and M1 (Land Won Aggregates and Rock). The requirements of these policies are replicated in the NPPF and it is therefore considered that their revocation would not remove the mitigating measures they provide.

4.7.2 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or

- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or

- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

The likely significant effects on soil, geology and land use associated with the revocation and retention of the quantitative policies are summarised in **Table 4.5** for policy M1, CH1, HA1 and SV1. For retention, the identified significant adverse effects in the long term result from the potential loss of land required to meet employment and housing need. However, the same effect is also identified for retention of the East of England Plan with the exception of SV1, where a significant effect is identified for retention only. For the other policies, this reflects specific sub-regional policies that acknowledge local circumstances and pressures.

The assessment has found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

A5. Water Quality and Resources

5.1 Introduction

The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of the proposals to revoke the regional strategy on water quality and resources. Information is presented for both national and regional levels.

Water quality and resources within this context are defined as inland surface freshwater and groundwater resources, and inland surface freshwater, groundwater, estuarine, coastal and marine water quality.

There are links between the water quality and resources topic and a number of other SEA topics, in particular the effects and interactions of water quality and resources on biodiversity, population and human health.

5.2 Summary of Plans and Programmes

5.2.1 International

The ***Water Framework Directive*** (WFD) is the most substantial piece of EC water legislation to date and replaces a number of existing Directives including the Surface Water Abstraction Directive. It establishes a framework for the protection of inland surface waters, transitional waters, coastal water and groundwater and is designed to improve and integrate the way water bodies are managed, including encouraging the sustainable use of water resources. The key objectives at European level are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water.

In accordance with Article 4(1), the Directive objectives for surface water, groundwater, transitional and coastal water bodies are to:

- prevent deterioration;
- reduce pollution;
- protect, enhance and restore condition;
- achieve ‘good status’ by 2015, or an alternative objective where allowed; and

- comply with requirements for protected areas .

The WFD adopts the 'polluters pays principle' in seeking to ensure that the costs and benefits of discharging pollutants to the water environment are appropriately valued, and that implementation of the Directive is achieved in a fair and proportionate way across all sectors.

The aim of the ***Marine Strategy Framework Directive 2008)*** is to protect more effectively the marine environment across Europe. It aims to achieve good environmental status of the EU's marine waters by 2021 and to protect the resource base upon which marine-related economic and social activities depend.

With specific regard to coastal water quality, the ***Bathing Waters Directive 2006/7/EC*** sets standards for the quality of bathing waters in terms of:

- the physical, chemical and microbiological parameters;
- the mandatory limit values and indicative values for such parameters; and
- the minimum sampling frequency and method of analysis or inspection of such water.

The ***Floods Directive 2007/60/EC*** aims to provide a consistent approach to managing flood risk across Europe. The approach is based on a 6 year cycle of planning which includes the publication of Preliminary Flood Risk Assessments, hazard and risk maps and flood risk management plans. The Directive is transposed into English law by the Flood Risk Regulations 2009.

The ***Urban Waste Water Treatment Directive 91/271/EEC*** has the objective of protecting the environment from the adverse effects of untreated 'urban waste water' ('sewage'). The directive establishes minimum requirements for the treatment of significant sewage discharges. An important aspect of the directive is the protection of the water environment from nutrients, (specifically compounds of nitrogen and phosphorus), and/or nitrates present in waste water where these substances have adverse impacts on the ecology of the water environment or abstraction source waters. It was transposed into English law through the Urban Waste Water Treatment (England and Wales) Regulations 1994 (as amended).

In addition, the following European Directives have relevance to the protection of the water environment and resources:

- Dangerous Substances Directive 76/464/EEC;
- Quality of Shellfish Waters Directive 79/923/EEC;
- Directive on Priority Substances 2008/105/EC;

- Groundwater Directive 80 /68/EEC;
- Waste Framework Directive 2008/98/EC;
- Industrial Emissions Directive 2010/75/EU; and
- Drinking Water Directive 98/83/EC.

5.2.2 National

UK

The ***Flood and Water Management Act 2010*** makes provisions about water, including those related to water resources, including;

- To widen the list of uses of water that water companies can control during periods of water shortage, and enable Government to add to and remove uses from the list.
- To encourage the uptake of sustainable drainage systems by removing the automatic right to connect to sewers and providing for unitary and county councils to adopt SUDS for new developments and redevelopments.
- To reduce 'bad debt' in the water industry by amending the Water Industry Act 1991 to provide a named customer and clarify who is responsible for paying the water bill.
- To make it easier for water and sewerage companies to develop and implement social tariffs where companies consider there is a good cause to do so, and in light of guidance that will be issued by the Secretary of State following a full public consultation.

The ***Marine and Coastal Access Act 2009*** sets out a number of measures including the establishment of Marine Conservation Zones (MCZs) and Marine Spatial Plans. The main objectives of the ***Marine Policy Statement (2011)*** are to enable an appropriate and consistent approach to marine planning across UK waters, and to ensure the sustainable use of marine resources and strategic management of marine activities from renewable energy to nature conservation, fishing, recreation and tourism.

England

In England, the implementation work related to the Water Framework Directive is undertaken by the Environment Agency, working in partnership with key partners. For these reason the majority of data and programmes regarding Water Quality and Resources cover both administrations and therefore England and Wales are considered collectively in this chapter.

There are 11 River Basin Districts in England and Wales which each require (under the Water Framework Directive) a ***River Basin Management Plan (RBMP)*** including objectives for surface water, groundwater, transitional and coastal water bodies.

The Government's 2011 White Paper '***Water for Life'*** sets out the Government's vision for future water management in which the water sector is resilient and which water is valued as a precious resource. The key reforms set out in the White Paper are:

- the introduction of a reformed water abstraction regime, as signaled in the Natural Environment White Paper changes to deal with the legacy of over-abstraction of our rivers;
- a new catchment approach to dealing with water quality and wider environmental issues;
- with the Environment Agency and Ofwat provide clearer guidance to water companies on planning for the long-term, and keeping demand down;
- consultation on the introduction of national standards and a new planning approval system for sustainable drainage; and
- collaboration with water companies, regulators and customers to raise awareness of the connection between how we use water and the quality of our rivers.

Water for people and the environment - Water resources strategy for England and Wales (2009) published by Environment Agency, includes the following objectives:

- enable habitats and species to adapt better to climate change;
- allow protection for the water environment to adjust flexibly to a changing climate;
- reduce pressure on the environment caused by water taken for human use;
- encourage options resilient to climate change to be chosen in the face of uncertainty;
- better protect vital water supply infrastructure;
- reduce greenhouse gas emissions from people using water, considering the whole life-cycle of use; and
- improve understanding of the risks and uncertainties of climate change.

Other relevant strategies include the Environment Agency's ***Catchment Abstraction Management Strategies*** (CAMS) which have identified a number of catchments in England and Wales which are

designated as Over-Licensed or Over-Abstracted. That is, the current level of licensed abstraction could result in an unacceptable stress on the catchment's ecology (designated over-licensed) or possibly is resulting in an unacceptable effect (designated over-abstracted).

National Policy Statements (2011 and 2012) brings together national government policy for nationally significant infrastructure projects (NSIPs) for energy, wastewater and ports infrastructure. The National Policy Statements set out the policy framework for decisions on major infrastructure projects that meet the NSIPs thresholds established in the Planning Act 2008.

The ***National Planning Policy Framework (NPPF) (2012)*** expects the planning system to contribute to conserving and enhancing the natural environment and reducing pollution, and take full account of flood risk. In particular, the planning system is expected to prevent new development from contributing to unacceptable levels of water pollution.

Local planning authorities are expected to set out the strategic priorities for their area in the Local Plan including strategic policies to deliver the provision of infrastructure for water supply, wastewater, flood risk and coastal change management. In preparing the evidence base for their Local Plans, they are expected to work with other authorities and providers to assess the quality and capacity of the existing infrastructure and its ability to meet forecast demands. Public bodies have a duty to co-operate on planning issues that cross administrative boundaries particularly those which relate to strategic priorities.

The Framework expects inappropriate development in areas of flood risk to be avoided and sets out how this should be achieved through the preparation of Local Plans and in determining planning applications. Supporting technical guidance has been provided to ensure the effective implementation of the policy.

Local plans are expected to take account of climate change over the longer term including factors such as flood risk, coastal change and water supply. New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change.

5.2.3 East of England

The Environment Agency is developing **Catchment Abstraction Management Strategies (CAMS)** which consider how much water can be abstracted from watercourses and groundwater without damaging the environment within a catchment - the most appropriate scale for planning for water. They recognise the needs of abstractors whilst also reflecting the requirements of the Water Framework Directive.

The water companies are required by provisions in the Water Resources Management Plan Regulations

2007 to prepare **Water Resources Management Plans**[95] to address the challenges to water supplies from growth, climate change and environmental legislation. They are also required to prepare **Drought Management Plans**. These set out how they will maintain the water supply during periods of low rainfall when supply becomes depleted. Anglian Water is consulting on an updated Drought Management Plan[96] to replace the existing 2008 Plan[97].

The Environment Agency also produces and monitors the delivery of action arising from **Catchment Flood Management Plans** (CFMPs) which give an overview of the flood risk across each river catchment. They recommend ways of managing those risks now and over the next 50-100 years. There are 11 CFMPs covering the Anglian Region[98] of which eight are most relevant to the East of England Plan (River Welland, River Nene, Great Ouse, North Norfolk, Broadland Rivers, East Suffolk, North Essex and South Essex). In addition, there is a CFMP for the Thames Catchment[99]. They consider all types of inland flooding, from rivers, ground water, surface water and tidal flooding, but not flooding directly from the sea, (coastal flooding), which is covered in Shoreline Management Plans.

Shoreline Management Plans (SMPs) are produced by a partnership of organisations (including relevant local authorities, Natural England, English Heritage and Internal Drainage Boards) led by the Environment Agency. They are large-scale assessments of the risks associated with coastal processes. They seek to reduce these risks to people and the developed, historic and natural environments. Relevant plans for the East of England are for the Wash, North Norfolk, Kelling Hard to Lowestoft, Lowestoft Ness to Felixstowe and Essex and South Suffolk.

5.3 Overview of the Baseline

5.3.1 National

UK

The UK has a diversity of inland and coastal waters (such as reservoirs, lakes, rivers, canals, estuaries, transitional waters, and coastal waters). Protected water features include waters designated for human consumption (including those abstracted from groundwater); areas designated for the protection of economically significant aquatic species (e.g. shellfish or freshwater fish); bathing waters (under the Bathing Waters Directive); nutrient-sensitive areas; and areas with waters important to protected habitats or species under the Habitats Directive or the Birds Directive.

[95] http://www.anglianwater.co.uk/_assets/media/AW_WRMP_2010_main_Report.pdf
[96] http://www.anglianwater.co.uk/_assets/media/DP_9_MARCH_2012_web_B.pdf
[97] http://www.anglianwater.co.uk/_assets/media/Drought_Plan_2008Final_July08.pdf
[98] http://www.environment-agency.gov.uk/research/planning/114303.aspx
[99] http://publications.environment-agency.gov.uk/PDF/GETH1209BQYL-E-E.pdf

There are 182 protected areas in UK inshore waters with a marine element, which includes 81 Special Protection Areas (SPAs) with marine habitats for birds, 98 Special Areas of Conservation (SACs) with marine habitats or species and three Marine Nature Reserves. In total the area coverage of these sites exceeds 1.8 million hectares, or 2.2% of UK waters.[100]

The principal aquifers of the UK are located in the lowlands of England. The most important are the Chalk, Permo-Triassic sandstones, the Jurassic limestones and the Lower Greensand. Around 81% of groundwater bodies in England are at risk of failing Water Framework Directive objectives because of diffuse pollution.

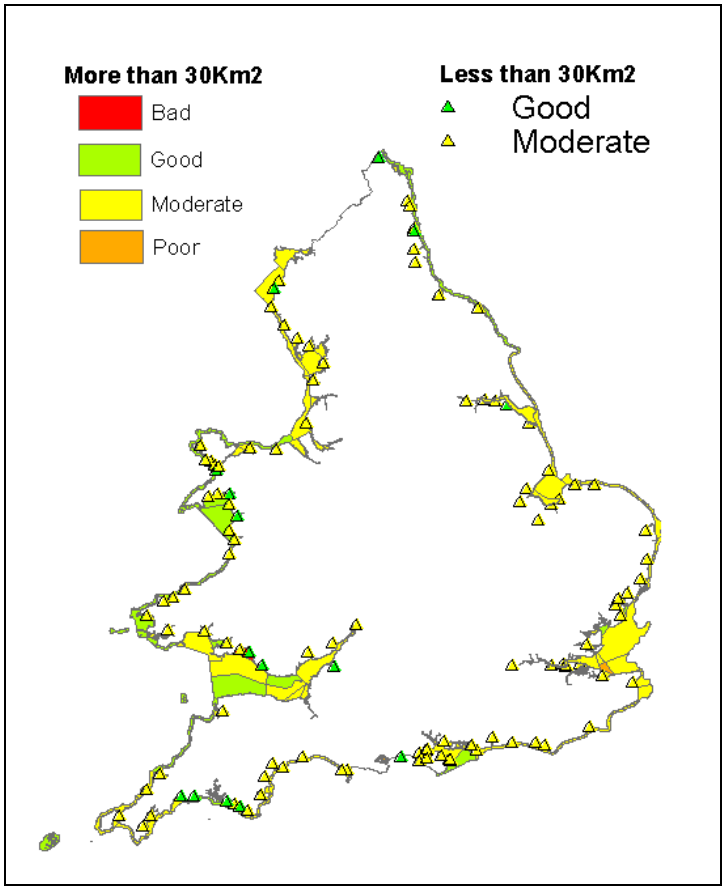
As the majority of data regarding water resources and quality is collected by the Environment Agency (covering both England and Wales), Scottish Environment Protection Agency and Northern Ireland's Department of Ireland, there is little available data on a UK level and therefore for this chapter the remainder of the baseline is considered by these divisions of administrations.

England

Coastal water quality has improved over the last two decades, however current WFD draft classification results and maps produced by the Environment Agency indicate that there are still a large proportion of coastal waters in England (and Wales) that are classified as being of Moderate Ecological Status (see Figure 5.1) i.e. are failing to meet 'Good Ecological Status' (GES) on the basis of a number of physio-chemical and biological standards and are therefore in need of measures to achieve GES.

[100] http://www.defra.gov.uk/foodfarm/fisheries/documents/mpp2009-10info.pdf

Figure 5.1 Ecological Status/Potential of Estuaries and Coasts in England and Wales



Source: *Framework Directive results and maps* available at http://www.environment-agency.gov.uk/research/library/data/97343.aspx (accessed 21/10/2009)

River water quality in England has been steadily increasing since 1990 and in 2009, 73% of rivers were of good biological quality. Between 2006 and 2007, the percentage of rivers of 'good' chemical quality rose from 74% to 76% (based on the General Quality Assessment system[101] which is based on 3 determinands - dissolved oxygen, biochemical oxygen demand and ammoniacal nitrogen). In 2009 this rose to 80 per cent. High levels of phosphorus can result in increased algal growth in freshwater and high levels of nitrate are of concern in relation to drinking water abstractions. Rivers with the highest concentrations of phosphate and nitrate are mainly in central and eastern England reflecting geology, agricultural inputs and higher population density.

The consumption of water abstracted from non-tidal surface and groundwater in England and Wales has

[101] The GQA system is being superseded by the Water Framework Directive regime, however the transition is on-going.

fallen from an estimated 41.2 thousand megalitres/day in 2000 to 33.6 thousand megalitres/day in 2009.

5.3.2 East of England

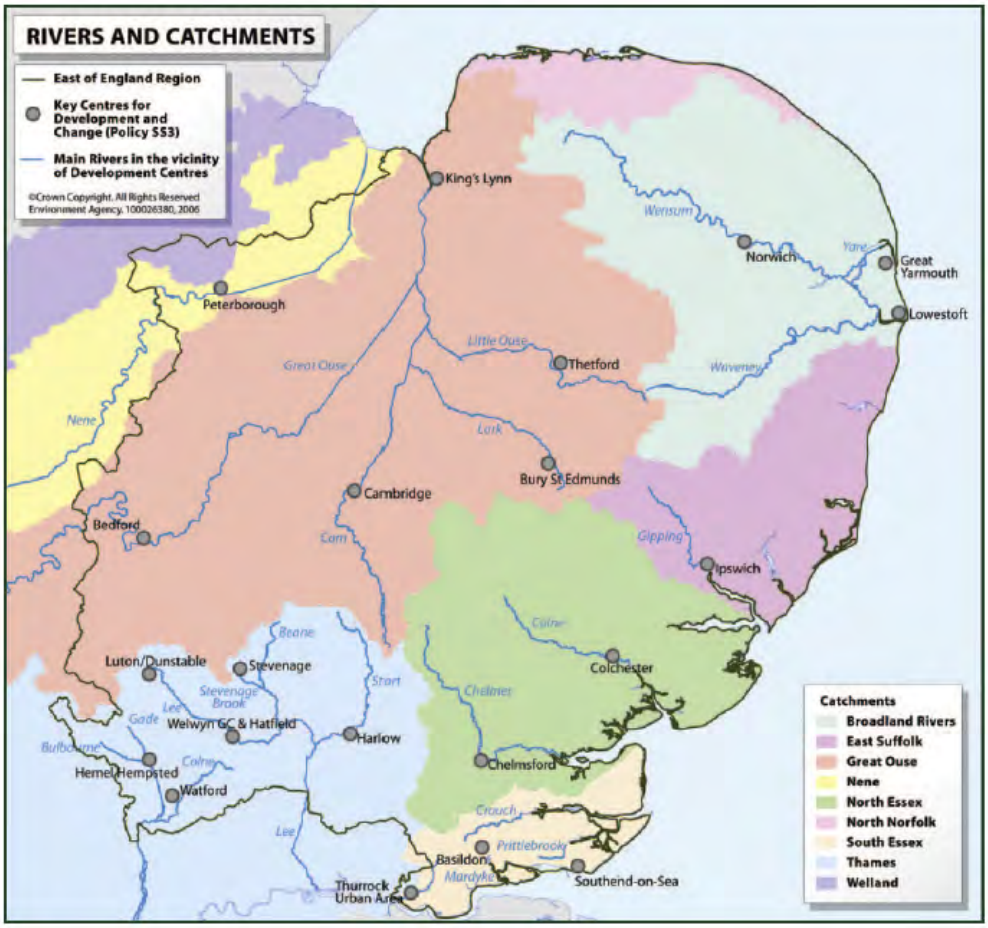
Rivers

The East of England region is predominantly located within the Environment Agency's Anglian River Basin District, with the more southern parts within the Thames River Basin District. The Anglian river basin district covers 27,890km^2 from Lincolnshire in the north to Essex in the south, and Northamptonshire in the west to the East Anglian coast. The Thames River Basin District covers an area of 16,133km^2 from the source of the River Thames in Gloucestershire through London to the North Sea.

Within these two River Basin Districts, there 14 river catchment areas[102] (10 in the Anglian District and 4 in the Thames District) located within the East of England. The Groundwater resource is also important within the regions as are its estuaries and the coast. The following short description of the characteristics of each catchment, of the groundwater resource and the estuaries and the coast, taken from the relevant River Basin Management Plans, highlights the three key issues for this environmental assessment: (i) an imbalance between water demand and supply; (ii) the chemical and biological quality of surface and ground waters; and (iii) the risk of flooding.

[102] The Nene and Welland catchments are mainly within the East Midlands Region but as they are both influenced by Peterborough they have been included in the analysis below. Parts of the 'London' catchment (Thames District) are also located in the East of England region but have been excluded from the analysis because of the relatively limited significance of these areas given the far greater impacts of London.

Figure 5.2 Rivers and Catchments in East of England



Estuaries and Coastal Water Bodies

The Anglian coasts and estuaries stretch for over 1,800km from Mablethorpe, on the Lincolnshire coastline, to Canvey Island in the Outer Thames. Several large estuaries including the Wash Embayment, Orwell, Colne and Blackwater discharge to this coastal zone, which also extends inland to include the tidal waters of the Broadland Rivers - Waveney, Bure and Yare.

Much of the coastline is afforded national and international protection for the important habitats and species present, or the landscape and heritage value. The estuaries support internationally important numbers of birds visiting the wetland habitats such as saltmarsh and intertidal mudflats.

Large numbers of people visit the coast for the natural attractions navigable waterways, and the 38

recognised bathing beaches. The 'Blue Flag' status of several of these beaches highlights the good water quality alongside beach amenities. The estuaries in particular are also very popular areas for recreational sailing and other water sports.

Ports at Felixstowe and Harwich provide nationally significant facilities for container and general cargo handling other ports include Great Yarmouth and Lowestoft which also provide support for the North Sea offshore oil and gas industries. There are also major port developments at Harwich, Ipswich and the redevelopment of Shellhaven.

Large areas of hinterland lie below sea level, currently being defended by a combination of natural defences, old sea walls and newer sea defences. There are several areas becoming susceptible to flooding, and long-term strategies to manage the flood defences are currently being developed in conjunction with Shoreline Management Plans. Flood alleviation schemes offer opportunities to create new coastal habitat, as exemplified by the creation of salt marsh in the Blackwater Estuary through managed realignment of coastal flood defences.

Urban and agricultural diffuse inputs are increasingly being highlighted as possible sources of contamination, particularly nutrients and faecal indicator organisms.

There are 18 estuarine water bodies in the river basin district. 33% of estuaries currently achieve at least good biological status. The river basin district also includes 11 coastal water bodies. 86% of coastal waters currently achieve at least good biological status.

Groundwater

The main aquifers in the Anglian Basin are the Chalk and Lincolnshire Limestones. The Chalk which is most relevant to the East of England region runs from the north Norfolk coast towards London and the limestone runs down the spine of Lincolnshire. Significant groundwater is also obtained locally from some sandy aquifers such as the Crag in Norfolk and Suffolk, the Woburn Sands in Bedfordshire and Sandringham Sands in north-west Norfolk.

Groundwater is used for public water supply, industry and agriculture across the river basin and is under significant pressure from diffuse pollution. This is manifest principally as nitrate, phosphates, herbicides and pesticides.

The potential impact of diffuse pollution on groundwater is dependent on whether the aquifers are protected by overlying rocks such as boulder clay, and whether the water table is close to the surface. The manner in which groundwater flows is also a factor and where cracks and fissures contribute to flow, the impacts of diffuse pollution can be spread widely.

The aquifers in the Cambridgeshire Bedfordshire Ouse Chalk are exposed at the surface and rising nitrate trends in the groundwater are generally evident.

This has significant implications for public water supply as it increases the need for blending and, over time, the cost of water treatment for supply is likely to increase.

Key centres of urban growth are planned throughout the river basin district by 2021. These will place cumulative pressures on groundwater abstraction in areas where resources are fully committed and result in greater discharge and treatment of effluents.

There are a total of 31 groundwater bodies in the river basin district. 65%are currently at good quantitative status and 65%at good for chemical status. These are not expected to change by 2015.

Water Resources

The East of England is one of the most water-stressed regions in England with the lowest rainfall in the UK (at 845mm - only 71% of the national average).

In 2009-10, an average of 147 litres of water/day/person was consumed, compared to the industry average of 146 litres/person/day. On average less water is now used than in 2007-08 (150 litres/person/day) and 2008-09 (149 litres/person/day). However, there are large differences in the amount of water used by households with water metres and those without.

In 2008, 800,000 million litres of freshwater were abstracted in the Anglian region, with about 60% abstracted from surface water and 40% from ground water sources. 90% of abstraction was for public water supply. 30% of the surface and ground water resource catchments are already classed as having 'no water available', while over 50% are over-abstracted or over-licensed at low flows.

Agriculture is also an important user of water in the region, with many crops requiring irrigation to ensure high quality and good yields - albeit using significantly less than the population as a whole. In 2008, 4% of the freshwater abstracted from surface and ground water was used for agriculture, over 35,000 million litres. Although agricultural use of water for irrigation makes up a small proportion of total water abstraction it can be much more significant during dry weather - making up 20% of all abstractions. 60% of freshwater is currently sourced from surface waters that are ‘over-abstracted’ or ‘over-licensed’. Agriculture uses the most water in the summer months when water availability is already low. Further water abstraction can cause unacceptable damage to water environments.

Water Quality

The Anglian River Basin District River Basin Management Plan published in December 2009 identified that around 18% of surface waters in the District are at good or better (i.e. high) ecological status. However, this suggests that 82% of the water bodies in the region are failing to meet the 2015 target of 'good' ecological status. A third of lakes and 17% of rivers are at 'Good Ecological Status', while there are no estuaries that meet the target condition. 85% of surface waters are at 'Good Chemical status' with the rest being 'poor'.

An assessment of the individual catchments is presented in the table below. This illustrates the variability across catchments.

Table 5.1 Catchments in the East of England Region and their Ecological and Chemical Status[103]

Catchment	% good or high biological status	% good chemical status	% good status overall (ecological and chemical)
Anglian Region			
Broadland Rivers	27	29	8
Cam and Ely Ouse	27	94	17
North Essex and South Essex	33	67	7
East Suffolk	15	100	17
Nene	47	82	21
North Norfolk	17	0	0
North West Norfolk	27	0	15
Old Bedford and Middle Level	64	100	25
Upper Ouse and Bedford Ouse	39	100	26
Welland	24	100	24

[103] Based on data from the Environment Agency River Basin Management Plans for the Anglian and Thames Districts

Catchment	% good or high biological status	% good chemical status	% good status overall (ecological and chemical)
Thames Region			
Colne	10	67	16
Roding, Beam and Ingrebourne	0	50	0
South West Essex	0	100	9
Upper Lee	20	71	18

The two most common reasons for surface waters failing to meet 'good' status are diffuse pollution from agricultural and point source pollution from water industry sewage works both contribute to high nutrient levels in surface waters. Other key reasons are physical modification associated with flood protection, land drainage and urbanisation. Agriculture is the single reason why ground waters do not meet 'good' chemical status in the region. In the region, over 40% of ground waters are 'at risk' of failing their environmental objectives as a results of nitrates, including ground waters in Norfolk, Suffolk and Essex.

The key pressure comes from the use of potentially polluting fertilisers, slurries and manures that contain high concentrations of nitrogen and phosphate, as well as chemicals such as pesticides. Agriculture is recognised as a source of diffuse pollution and a potential barrier to achieving the Water Framework Directive (WFD) objectives. Nitrate Vulnerable Zones (NVZs) are designated where agricultural nitrate pollution of surface and ground waters is high or rising.

The increase in intensive agriculture and the use of nitrogen-based fertilisers has contributed to the increased levels of nitrates in surface and ground waters. Arable farming practices in particular require high nitrogen input. For example, in 2009 90% of cropped land in the East of England received nitrogen fertilisers.

Anglian Water is also encouraging local planning authorities to incorporate water cycle strategies into their Local Plans. These identify tensions between growth proposals and environmental requirements, and identify potential solutions to addressing them. Environment Agency guidance on water cycle strategies[104] advises that one of the most important benefits of a water cycle strategy is that it allows all the key organisations to work together in the planning process.

[104] http://publications.environment-agency.gov.uk/PDF/GEHO0109BPFF-E-E.pdf

Fish are one of the biological quality elements used to assess water bodies under the Water Framework Directive (WFD). Their populations are measured and classified into one of the five ecological status classes (high, good, moderate, poor or bad). Over 40% of the rivers assessed in Anglian River Basin District are currently meeting or surpassing the 2015 target of 'Good' status for fish.

The WFD requires continued improvement in fish stocks by reducing the pressures they face. For example, low water quality caused by diffuse pollution problems, physical habitat damage, and reduced water quantity and flow caused by unsustainable abstractions. The Environment Agency are committed to undertaking habitat and water quality improvement projects to ensure all local rivers meet the WFD 2015 target for fish status.

In 2010, 85% of the beaches[105] in the region met the water quality standards required for Blue Flag designation in 2011. In 2011, 20 of the 47 beaches were awarded Blue Flag status based on 29010 water quality data. The Environment Agency monitor the quality of bathing waters and report this to local authorities, and work with water companies, local authorities and agricultural land owners to improve the quality of bathing waters.

5.4 Environmental Characteristics of those Areas most likely to be Significantly Affected

5.4.1 National

In some urban areas in England there is relatively little water available per rata, and abstraction is above its sustainable level. The Environment Agency have derived assessments on availability of water resources for new abstraction based on Catchment Abstraction Management Strategy (CAMS) assessments and large areas of England, most notably in the South East, have been identified as areas where water for new abstractions will be limited to winter months when flows are high.[106]

This issue is likely to continue in the future based on projections on the future rainfall and demand has lead to the classification of all south-eastern areas as seriously water stressed. The remainder of the UK is classified as either having low or moderate water stress.

Recently published River Basin Management Plans (which have been established in accordance with the Water Framework Directive) have designated a number of freshwater (surface and groundwater),

[105] Not all beaches meeting the Blue Flag water quality criteria apply for a Blue Flag, as the designation also requires that beaches have customer facilities and safety protocols in place.

[106] http://sd.defra.gov.uk/2010/07/measuring-progress-sustainable-development-indicators-2010/

transitional (estuaries) and coastal water bodies in England as failing to meet "*Good Ecological Status*" (GES) on the basis of a number of physio-chemical and biological standards. Flows in rivers and freshwater inputs to transitional waters are considered to be a 'supporting element' in the achievement of GES.

In Southern and Eastern regions of England, where rainfall is comparatively low, per capita water consumption tends to be higher than elsewhere. In some areas, abstraction is above its sustainable level and this combined with projections for rainfall and demand has lead to the classification of all south-eastern areas as seriously water stressed.

5.4.2 East of England

The key issue relating to water resources is the ability to continue to supply existing developments and deal with forecast growth without having an adverse effect of the environment. The areas most likely to be effected in terms of the ability to supply water will be the growth centres as identified above.

A number sensitive locations are potentially vulnerable to the over abstraction of water, included protected habitats. The 2010 HRA identified a number of the international sites located in the East of England which were potentially vulnerable to over extraction of ground and surface water - although the assessment concluded that adverse effects were unlikely. These sites are listed in the box overleaf. A number of other protected sites were identified as being potentially vulnerable to further development within the floodplain, excessive land drainage and low rainfall.

European and Ramsar sites

According to the 2010 HRA of the review of the East of England Plan, the following European designated sites were identified as being susceptible to over extraction of local ground water or surface water or other water resource related issues or water quality (although the HRA concluded that the Plan would not adversely affect the sites):

- Abberton Reservoir SPA and Ramsar
- Alde, Ore and Butley Estuaries SAC
- Benacre to Easton Bavents SPA
- Benfleet and Southend Marshes SPA and Ramsar
- Blackwater Estuary SPA and Ramsar
- Breckland SAC
- Breydon Water SPA and Ramsar
- Broadland SPA and Ramsar
- Colne Estuary SPA and Ramsar
- Crouch and Roach Estuaries SPA and Ramsar
- Deben Estuary SAC and Ramsar
- Essex Estuaries SAC
- Fenland SAC (Chippenham Fen) and Ramsar
- Hamford Water SAC
- Lee Valley SAC, SPA and Ramsar
- Minsmere-Walberswick SAC
- Nene washes SAC and Ramsar
- Norfolk Valley Fens SAC
- North Norfolk Coast SAC and Ramsar
- Ouse Washes SAC and Ramsar
- Portholme SAC
- Redgrave and Lopham Fen Ramsar
- River Wensum SAC

5.5 Likely Evolution of the Baseline

5.5.1 National

UK

The current trend in water condition is generally towards increased water quality across natural environments, drinking water and bathing waters[107]. Current climate change predictions indicate that rainfall patterns will become increasingly seasonal, with lower amounts of flow in the summer. This will lead to lower summer river flows, especially in those catchments with a low groundwater component. This could lead to increased abstraction pressure, increased stress on sensitive hydrological systems and a decrease in dilution potential leading to a failure against water quality targets. Increased flooding

[107] Defra, Sustainable Development Indicators, 2009, http://www.defra.gov.uk/sustainable/government/progress/documents/SDIYP2009_a9.pdf

and storm events also have the potential to increase runoff of pollutants into controlled waters, thus reducing water quality. Population pressures are predicted to increase in certain parts of Great Britain, for example in the south-east. Increased population density will result in an increased pressure on natural resources and could exacerbate current problems or cause new ones.

The Marine and Coastal Access Act (2009) allows for the creation of Marine Conservation Zones (MCZs) in Great Britain (Northern Ireland MCZs will be introduced through separate legislation). MCZs will protect nationally important marine wildlife, habitats, geology and geomorphology. Sites will be selected to protect the range of marine wildlife[108]. This should lead to greater protection and improvement of marine habitats in the future.

In 2011, all but 14 of the 597 coastal bathing waters in the UK met the mandatory (basic) standards of the European Bathing Water Directive[109]. Under the revised Bathing Water Directive all bathing waters will be required to achieve at least 'sufficient' quality by 2015, which is twice as stringent as the current mandatory standard. The overall quality of bathing waters is therefore likely to increase as water quality is improved to meet the increased standards.[110]

England

The Environment Agency's Catchment Abstraction Management Strategies (CAMS) have identified a number of catchments in England which are designated as Over-Licensed or Over-Abstracted. Climate change is likely to result in lower summer rainfalls and more frequent/sever winter flood events. Such changes are likely to increase pressure on summer freshwater water availability and increase pollutant runoff into controlled waters during flood events. Unsustainable groundwater and surface water abstraction may contribute to environmental damage of rivers and wetlands at 500 sites in England and Wales, important conservation sites, including sites of national and international conservation importance.

The Environment Agency aims that by 2030 water use per person in England should fall by 130 litres/ day.[111]

The Water Framework Directive (Directive 2000/60/EEC) requires that river basin management plans are prepared by December 2009. The objectives of the river basin management plans are required to be achieved by 2015.[111] Those objectives are to:

[108] Natural England. http://www.naturalengland.org.uk/ourwork/marine/protectandmanage/mpa/mcz/default.aspx
[109] Defra, Environmental Statistics – Key Facts Dec 2011
[110] Environment Agency http://www.environment-agency.gov.uk/research/library/data/112170.aspx
[111] EU http://europa.eu/legislation_summaries/agriculture/environment/l28002b_en.htm

- prevent deterioration, enhance and restore bodies of surface water, achieve good chemical and ecological status of such water and reduce pollution from discharges and emissions of hazardous substances;

- protect, enhance and restore all bodies of groundwater, prevent the pollution and deterioration of groundwater, and ensure a balance between groundwater abstraction and replenishment; and

- preserve protected areas.

Defra aims that by 2030 at the latest, England has improved the quality of our water environment and the ecology which it supports, and continued to provide high levels of drinking water quality from its taps; sustainably manage risks from flooding and coastal erosion, with greater understanding and more effective management of surface water; ensure a sustainable use of water resources, and implement fair, affordable and cost reflective water charges; cut greenhouse gas emissions; and embed continuous adaptation to climate change and other pressures across the water industry and water users.[112]

Environment Agency aims to enhance water supply by up to 1,100Ml/d above present levels by the improvement of existing schemes and the development of some new resources. [113.]

There is a trend of improving quality of rivers within England; between 1990 and 2008 the percentage of rivers of good biological quality in England rose from 63 to 72%. Over the same time period the percentage of rivers of good chemical quality rose from 55 to 79%[114].

5.5.2 East of England

The Water Resource Management Plan published by Anglian Water in 2010 provides forecasts of the supply-demand balance to enable them to plan to maintain secure water supplies for their domestic and commercial customers. Demand is forecast by combining population and housing growth data with expected water consumption, enabling them to predict where demand is likely to increase and by how much. Their assessment identifies areas where growth in demand for water is expected to be greatest, namely Lincoln, the Lincolnshire and Cambridge Fens, the Milton Keynes and South Midlands Sub Region, Huntingdon, Norwich and Ipswich. The Plan also sets out demand management measures to reduce demand including targeted 'enhanced metering' and leakage control. However, their analysis shows that, although they have historically developed sufficient water resources to provide supplies to

[112] Future Water, the Government's Water Strategy for England

[113] EA, Water Resources for the Future: A Strategy for England and Wales

[114] Defra, Sustainable Development Indicators (2010) http://sd.defra.gov.uk/2010/07/measuring-progress-sustainable-development-indicators-2010/

meet the demand for water today, they will need to invest to maintain secure supplies in the future. The Strategic Direction Statement 2010-2035[115] indicated that they will have to develop new supplies of up to 200 megalitres per day (Ml/d) by 2025 and 300 Ml/d by 2035 compared with the current maximum resources available of 1,800Ml/d. They have already commenced studies to determine suitable locations for a new winter storage reservoir and have confirmed the availability of resources from the River Witham with and without support from the River Trent.

The demand for consistently high quality crops, combined with climate change means that levels of abstraction are likely to continue rising, with a predicted 25% increase in the use of water for irrigation by 2020.

The Environment Agency predict that in the future, the conflicting demands for water resources between agriculture, an increasing population, and the environment will increase as climate change makes the region even drier, increasing demand on reducing supplies.

According to the 2010 ISA, the Environment Agency modelled the impact of the four regional Growth Scenarios proposed at that time on the supply/demand balance within each of the water company areas across the region. They concluded that if the highest water efficiency levels (average per capita consumption reduced to 120 l/h/d by 2030) were applied there would be little potential for deficits across the region up to 2035. However, this changes when the analysis is extrapolated to 2041. The modelling work shows that the avoidance of water deficits is highly dependent on the efficiency measures that are implemented. This emphasises the importance of measures that limit water use in new developments and (more importantly) that reduce water consumption in existing properties (including retrofitting).

The 2010 integrated sustainability appraisal assessed the effects of maintaining the housing provisions in the Plan. It referred to research undertaken for the Regional Economic Strategy (RES) which found that the trend towards water efficiency in manufacturing is already strong but the planned growth in housing and population and the services sector will put additional pressure on this scarce resource. In terms of the future baseline, the Climate Change Impacts and Response Study (RegIS) found that river flows will tend to be higher in winter and lower in summer, causing potential problems for water storage. Overall impacts of climate change are small under a conservative scenario, but more serious under a more severe climate scenario, where water shortages are likely to constrain development by the 2050s. Specific problems include a shorter groundwater recharge period in winter resulting in a significant decline in the resource.

With increased economic activity, pollution from point sources is likely to increase over the Plan period, particularly in terms of household growth increasing the level of sewage discharge.

[115] http://www.anglianwater.co.uk/_assets/media/strategic-direction-statement.pdf

However, a more detailed assessment of the effects of proposed changes to the Plan (which were not adopted) which is set out below is also relevant.

The current status of waters and their capacity to accommodate additional pollutant loads is an extremely important consideration when assessing the potential for growth. Approximately, 50% of riverine and canal water bodies within the region fail to meet Water Framework Directive (WFD) good status at present for phosphate, with discharges of sewage effluent being the main pollutant source. To a lesser degree there are problems with ammonia, biological oxygen demand (BOD) and dissolved Oxygen. The proposed high levels of growth within the region are likely to present many challenges with respect to water quality and further development in some locations will only be possible alongside delivery of very expensive wastewater infrastructure.

Constraining growth in all parts of the East of England where phosphate targets are currently not being achieved would result in constraining growth across the region as a whole. Thus, there is a need to focus on where growth would make a material change to WFD status - either through causing deterioration, or by making good status significantly more difficult to achieve.

A study by the Environment Agency identified the catchments of the Wensum, Bure and Ant and the North Norfolk coast, Yare and the Great Ouse (Ely Ouse and headwaters) as being of particular concern. This highlights the serious constraints to growth at Great Norwich in particular. Breckland and Forest Heath are two other areas where there is the potential for problems of water quality.

In general, water cycle studies that have been undertaken across the region indicate that for planned growth to meet existing housing targets, it will drive the application of best available technology at a number of Sewage Treatment Works (STWs). The implication of this is that additional growth may drive treatment beyond what is technically feasible or economically deliverable by the water companies. The Greater Norwich water cycle study identifies an even more constrained situation. It indicates that to accommodate currently proposed growth and meet the requirements of the WFD, the discharge quality for most of the wastewater treatment works in the area in respect of phosphorus levels would need to be beyond best available technology. The same would also be true for ammonia in a number of cases.

Rye Meads, Uttlesford, Luton and South Bedfordshire are highlighted as areas where water cycle studies have not yet been able to conclude where growth is constrained on water quality grounds. At Rye Meads, the current situation is that capacity has been identified up to 2021, but whether or not capacity exists for growth beyond this date is uncertain. Further to this, comments from Hertfordshire County Council reported in the 2010 ISA that predictions of capacity can never be certain as there is always the risk that a stricter discharge consent may be imposed by the Environment Agency to achieve water quality and ecological standards required by the WFD. There are particular implications for growth at Stevenage.

The issue of groundwater protection in the East of England is important as a significant proportion of public water supply for this region comes from groundwater sources. Groundwater bodies are also important for providing baseflow to surface water bodies and sustaining wildlife.

5.6 Assessing Significance

Table 5.2 sets out guidance utilised during the assessment to help determine the relative significance of potential effects on the water quality and resources. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

Table 5.2 Approach to Determining the Significance of Effects on Water Quality and Resources

Effect	*Description*	*Illustrative Guidance*
++	Significant positive	• Alternative would lead to a major reduction in water use such that the risk of water shortages in the region is significantly decreased and abstraction is at least at a sustainable level in the long term. • Alternative would significantly decrease the amount of waste water, surface runoff and pollutant discharges so that the quality of that water receptors (including groundwater, surface water, sea water or drinking receptors) will be significantly improved and sustained and that all water targets (including those relevant to chemical and ecological condition) are reached and exceeded.
+	Positive	• Alternative would lead to a minor reduction in water use such that the risk of water shortages in the area is decreased in the short term and abstraction is closer to sustainable levels than prior to development. • Alternative would lead to minor decreases in the amount of waste water, surface runoff and/or pollutant discharges so that the quality of water receptors (including groundwater, surface water, sea water or drinking receptors) may be improved to some level temporarily and that some water targets (including those relevant to chemical and ecological condition) will be reached/exceeded.
0	No (neutral effects)	• Alternative would not significantly affect water demand and abstraction levels will not be altered. • Alternative would not change amount of waste water, surface runoff and/or pollutant discharges so that the quality of water receptors will not be affected.
-	Negative	• Alternative would lead to a minor increase in water use such that the risk of water shortages in the area is increased to some level in the short term and abstraction is further removed from sustainable levels. • Alternative would lead to minor increases in the amount of waste water, surface runoff and/or pollutant discharges so that the quality of water receptors (including groundwater, surface water, sea water or drinking receptors) may be decreased to some level temporarily and it may prevent some water targets (including those relevant to chemical and ecological condition) from being achieved.

Effect	Description	Illustrative Guidance
--	Significant negative	• Alternative would lead to major increases in water use such that the risk of water shortages in the area is significantly increased and abstraction is beyond sustainable levels. • Alternative would lead to an exceedance of an abstraction license limit. • Alternative would lead to major increases in the amount of waste water, surface runoff and/or pollutant discharges so that the quality of water receptors (including groundwater, surface water, sea water or drinking receptors) will be considerably increased and will prevent some or all water targets (including those relevant to chemical and ecological condition) from being achieved.
?	Uncertain	• From the level of information available the impact that the alternative would have on this objective is uncertain.

5.7 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 5.3 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the water topic.

Table 5.3 Significant Effects against the Water Topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
ENV1 Retention	++	++	++	The policy directs LPAs to identify, create, protect and enhance areas and networks of green to ensure an improved and healthy environment is available for present and future communities. It identified specific assets of regional significance for the retention, provision and enhancement of green infrastructure which include the Norfolk and Suffolk Broads; the Norfolk Coast, Suffolk Coast. In consequence, retention has been assessed as having significant benefits on the water topic.
ENV1 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation would be unchanged by revocation. Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement of the natural and local environment. This includes recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity and providing net gains in biodiversity where possible In addition, the introduction of Local Nature Partnerships announced in the Natural Environment White Paper which will complement existing local partnerships which deal with matters such as provision of green infrastructure will improve the chances of the delivery of the policy. Such partnerships will be able to work across administrative

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				boundaries enable planning of networks at the scale that has the most impact. In consequence, revocation has been assessed as having the same positive benefits as retention.
WAT1 Retention	++	++	++	The policy links development in the spatial strategy with improvements in water efficiency delivered through a progressive, year on year, reduction in per capita consumption rates. This will be one of the main measures to mitigate the adverse effects of development in the region. In consequence, retention has been assessed as having significant benefits on the water topic.
WAT1 Revocation	++	++	++	The Government's 2011 White Paper "Water for Life" maintains the commitment for Government to work with the Environment Agency and Ofwat to provide clearer guidance to water companies on planning for the long-term and keeping demand down. The Water Resource Management Plan published by Anglian Water in 2010 provides forecasts of the supply-demand balance to enable them to plan to maintain secure water supplies for their domestic and commercial customers. The building regulations will continue to apply. The Code for Sustainable Homes encourages higher levels of water efficiency. Local Authorities can require housing developments in their area to meet specified Code levels. It is therefore expected that similar benefits to water would occur if the policy was revoked.
WAT2 Retention	0	++	++	The policy states that the Environment Agency and water companies should work with OFWAT, the East of England Regional Assembly and the neighbouring regional assemblies, local authorities, delivery agencies and others to ensure timely provision of the appropriate additional infrastructure for water supply and waste water treatment to cater for the levels of development provided through the plan. It refers to a co-ordinated approach to plan making being developed a programme of water cycle and river cycle studies to address the issues of water supply, water quality, wastewater treatment and flood risk in receiving water courses relating to development proposed, while Local Development Documents should plan to site new development so as to maximise the potential of existing water/waste water treatment infrastructure and minimise the need for new/improved infrastructure. In consequence, retention has been assessed as having significant benefits on the water topic.
WAT2 Revocation	0	++	++	It is expected that local authorities collaborating under the duty to cooperate together with the Environment Agency and water companies, informed by the water companies Water Resource Management Plan and the policy in the NPPF would continue to ensure that adequate provision and efficient use is made of water infrastructure if the regional strategy was revoked.
WAT3 Retention	++	++	++	The policy states that local planning authorities should work with partners to ensure their plans, policies, programmes and proposals take account of the environmental consequences of river basin management plans, catchment abstraction management strategies, groundwater vulnerability maps, groundwater source protection zone maps, proposals for water abstraction and storage and the need to avoid adverse impacts on sites of European importance for wildlife. It adds that the Environment Agency and water industry should work with local authorities and other partners to develop an integrated approach to the management of the water environment.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				In consequence, retention has been assessed as having significant benefits on the water topic.
WAT3 Revocation	++	++	++	Much of this work is led by the Environment Agency and the water companies, with local authority involvement mainly under the requirements of the Water Framework Directive. As river catchments can cross regional boundaries, for integrated water management, catchment level planning is more appropriate scale to operate and this would continue in the absence of the regional strategy.
H1 Retention	--	--	--	The policy sets out the number of net additional dwellings that should be delivered over the period 2001 to 2021 allocated to individual districts. The East of England is the driest region in England and there are already problems with water supply. The Environment Agency's Catchment Abstraction Management Strategies (CAMS) have identified a number of catchments which are designated as Over-Licensed or Over-Abstracted, and some licences are being reviewed. While demand management (e.g. compulsory water metering in new buildings and hose pipe bans in droughts) and water efficiency measures mean that there are sufficient resources now, Anglian Water has identified that further capacity will be required in the longer term. The significant negative scoring reflecting the existing problems of over abstraction and the potential effects this has on the environment. The Plan seeks to mitigate adverse environmental effects of delivering this number of additional dwelling, including on the availability of water) through the need to take account of the spatial strategy policies SS1-SS9, and Policy WAT2 on the provision for adequate water supply and waste water treatment. In consequence, whilst acknowledging the mitigation measures, the increase in population and the provision of housing and employment in the region which is water stressed has been assessed as having significant negative effects on the water topic.
H1 Revocation	?	--	--	The revocation of the plan would not remove the pressure on water supply given the policy to significantly boost the supply of housing. There may be a short term reduction in effect due to uncertainty caused by some local authorities not having an up to date plan affecting the pace of development; however, this remains unlikely to reduce the significant negative effect down to a minor negative effect. Through the River Basin Management Plans and Catchment Abstraction Management Strategies, the Environment Agency has implemented a number of management arrangements (under the Water Framework Directive) to aid co-ordinated management of water and water resources. Concerning the potentially significant effect on scarce water resources of a growing population, measures in the NPPF as well as the requirement to meet legally binding standards for air and water pollution should provide at least the same level environmental protection as is the case with the retention of the East of England Plan. In addition, water companies, through the completion of the Water Resource Management Plans have a duty to assess water supply and demand in their region on a rolling 5 year basis up to 25 years hence. While the overall assessment at the regional level is significantly negative, the 2004 sustainability appraisal only identified significant water issues in some of the sub-regions. These are identified and considered below.
E1, E2 and E3 Retention	--	--	--	The policy sets out indicative targets for a net growth in jobs in the region over the plan period. It requires local development documents to provide an enabling context to achieve the targets. The East of England is the driest region in England and there are already

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				problems with water supply. The Environment Agency's Catchment Abstraction Management Strategies (CAMS) have identified a number of catchments which are designated as Over-Licensed or Over-Abstracted, and some licences are being reviewed. While demand management (e.g. compulsory water metering in new buildings and hose pipe bans in droughts) and water efficiency measures mean that there are sufficient resources now, Anglian Water has identified that further capacity will be required in the longer term. The significant negative scoring reflecting the existing problems of over abstraction and the potential effects this has on the environment. The Plan seeks to mitigate adverse environmental effects of delivering this employment land through the need to take account of the spatial strategy policies SS1-SS9, and Policy WAT2 on the provision for adequate water supply and waste water treatment. In consequence, whilst acknowledging the mitigation measures, the increase in employment in the region which is water stressed has been assessed as having significant negative effects on the water topic.
E1, E2 and E3 Revocation	--	--	--	The revocation of the plan would not remove the pressure on water supply given the policy to significantly boost the supply of employment opportunity. There may be a short term reduction in effect due to uncertainty caused by some local authorities not having an up to date plan affecting the pace of development; however, this remains unlikely to reduce the significant negative effect down to a minor negative effect. Through the River Basin Management Plans and Catchment Abstraction Management Strategies, the Environment Agency has implemented a number of management arrangements (under the Water Framework Directive) to aid co-ordinated management of water and water resources. Concerning the potentially significant effect on scarce water resources of a growing population, measures in the NPPF as well as the requirement to meet legally binding standards for air and water pollution should provide at least the same level environmental protection as is the case with the retention of the East of England Plan. In addition, water companies, through the completion of the Water Resource Management Plans have a duty to assess water supply and demand in their region on a rolling 5 year basis up to 25 years hence. While the overall assessment at the regional level is significantly negative, the 2004 sustainability appraisal only identified significant water issues in some of the sub-regions. These are identified and considered below.
ETG1 Retention	-	--	--	Potential effects most likely in the medium to longer term given the level of growth the sub-region and existing water supply issues. These are linked to new development (housing and employment) and are likely to continue (subject to appropriate mitigation) with or without the regional strategy.
ETG1 Revocation	-	--	--	
HG1 Retention	-	--	--	Potential effects most likely in the medium to longer term given the level of growth the sub-region and existing water supply issues. These are linked to new development (housing and employment) and are likely to continue (subject to appropriate mitigation) with or without the regional strategy.
HG1 Revocation	-	--	--	
CH1 Retention	0	-	--	Potential effects most likely in the longer term given the level of growth the sub-region and existing water supply issues. These are linked to new development (housing and

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
CH1 Revocation	0	-	--	employment) and are likely to continue (subject to appropriate mitigation) with or without the regional strategy.
HA1 Retention	0	-	--	Potential effects most likely in the longer term given the level of growth the sub-region and existing water supply issues. These are linked to new development (housing and employment) and are likely to continue (subject to appropriate mitigation) with or without the regional strategy.
HA1 Revocation	0	-	--	
TH1 Retention	-	--	--	Potential effects most likely in the medium to longer term given the level of growth the sub-region and existing water supply issues. These are linked to new development (housing and employment) and are likely to continue (subject to appropriate mitigation) with or without the regional strategy.
TH1 Revocation	-	--	--	
SV1 Retention	-	--	--	In an area already suffering from over abstraction of water, the scale of housing selected for the area will have a severe impact on the water resources should development go ahead without a sustainable water resource management scheme.
SV1 Revocation	+-	+ -	?	Provision of appropriate infrastructure should help to prevent overloading of water and waste water systems. However, development will increase demand in absolute terms and could reduce overall permeability (score +/- but predominantly minor negative). No significant impacts on soil identified.
MKSM 1 Retention	--	--	--	Policy 2(b) sets out the numbers of houses which should be built between 2001-2021 in Luton/Dunstable/Houghton Regis and Leighton Linslade a total number of 26,300 housing units. Again, Policy H1: Regional Housing Provision 2001-2021 (pages 28-29) appears to replace Policy 2(b) of the MKSM sub regional strategy stating that the same figure of 26,300 houses need to be built, again in the same localities. The policy is likely to have significant negative effects on the water resources of the region, particularly in the southern areas where water availability is lowest and the housing allocation highest. Following revocation, the potential effects on the water resource are most likely in the medium to longer term given the level of growth the sub-region and existing water supply issues. These are linked to new development (housing and employment) and are likely to continue (subject to appropriate mitigation) with or without the regional strategy.
MKSM 1Revocation	?	--	--	
MKSM2 Retention	--	--	--	Policy sets out a requirement for 26,300 houses. The policy is likely to have significant negative effects on the water resources of the region, particularly in the southern areas where water availability is lowest and the housing allocation highest. Overall, the effects of revocation are uncertain, but are likely to be similar to retaining the Regional Strategy.
MKSM2 Revocation	?	--	--	

5.7.1 Effects of Revocation

Water availability is already a significant issue in the region, and the planned scale of development of homes and employment areas which is likely to continue irrespective of whether the regional strategy is

revoked will exacerbate matters. This is reflected in the negative scoring for policy H1 (Regional Housing Provision 2001 to 2021) and the eight sub-regions identified above. Two sub-regional policies identify the need to plan for and deliver additional waste water treatment capacity: HA1 (Harlow); and SV1 (Stevenage). The supporting text recognises that any necessary waste water infrastructure will need to be programmed into the water companies' business plans. Given the legal requirements for water companies to work with local planning authorities to plan for water supply and waste water treatment, underpinned by the policies in the NPPF explained above, it is concluded that removal of these policies will not have any effects in so far as they relate to water.

A number of policies which would be removed with revocation of the plan seek to mitigate these adverse effects.

Revocation of Policy WAT1 is considered unlikely to have any significant effects on the environment. Its main intention is to make it clear that Government will work with the Environment Agency, water companies, OFWAT and other stakeholders to ensure that development in the spatial strategy is matched with improvements in water efficiency delivered through a progressive reduction in per capita consumption rates.

The River Basin Management Plan (RBMP) for the Anglian Region and Anglian Water's Water Resource management Plan and Drought Plan explain that this process is ongoing, and that the periodic review of water industry investment includes carrying out investigations, and specific improvement schemes to address water resources (and water quality). Cited examples include water companies reducing leakage through active leakage control and customer pipe repair policies and improvements to water company assets under the next round of company investment to deliver water quality improvements and continue to reduce the impact of abstraction under a range of environmental Directives.

Revocation of Policy WAT2 is also unlikely to have any environmental effects. Strategic planning for new infrastructure for water supply and waste treatment is the statutory responsibility of the water companies, in association with the Environment Agency, local authorities and other organisations. The River Basin Management Plan for the Anglian Region explains that the Environment Agency is already working with Anglian Water to identify any potential constraints to growth associated with the environmental capacity of receiving watercourses at Waste Water Treatment Works throughout the region. The RBMP looks at the environmental capacity from two perspectives; from a water quality point of view, and in terms of flood risk. In addition, the policy at paragraph 156 of the NPPF states that local planning authorities should set out the strategic priorities for their area in their Local Plan which should include strategic policies to deliver the provision of infrastructure for water supply, waste water, flood risk and coastal change management.

Policy WAT3 (Integrated Water Management) is a high level generic policy that reflects the legal requirements of the Water Framework Directive as well as the Habitats Directive and recognises the

need for the water industry, the Environment Agency and local authorities to work together to achieve closer alignment between their respective strategies. Paragraph 94 in the NPPF states that local planning authorities should adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change and water supply and demand considerations. It is therefore concluded that removal of this policy will have no effects.

Policy WAT4 (Flood Risk Management) which is not assessed as significant repeats the national planning policy on flooding current at the time (PPS 25 - Development and Flood Risk) and the approach set out in the Practice Guide - including the sequential approach and tests that must be applied.

The Flood and Water Management Act 2010 contains provisions for regional working and co-operation such as the establishment of regional flood and coastal committees and the bringing together of lead local flood authorities, who will have a duty to cooperate, to develop local strategies for managing local flood risk. In addition, the Flood Risk Regulations 2009 impose a duty on the Environment Agency and lead local flood authorities to take steps to identify and prepare for significant flood risk.

The NPPF (paragraph 100) seeks to avoid inappropriate development in areas at risk of flooding by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. Technical guidance on flood risk published alongside the NPPF sets out how this policy should be implemented. Local Plans should be supported by Strategic Flood Risk Assessment and develop policies to manage flood risk from all sources, taking account of advice from the Environment Agency and other relevant flood risk management bodies, such as lead local flood authorities and internal drainage boards. Local Plans should apply a sequential, risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account of the impacts of climate change. This includes applying a sequential test to steer new development to areas with the lowest probability of flooding.

When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site-specific flood risk assessment (NPPF paragraph 103). A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.

It is therefore concluded that removal of this policy will have no effects.

Policy ENV4 (Agriculture, Land and Soils) encourages more sustainable use of water resources through

winter storage schemes and new wetland creation to help address, in part to address increased demand for irrigation in light of climate change which would put added pressure on water supplies. However, this provision is outside the scope of the planning system, and on its own is unlikely to have a significant effect of water resources in the region.

5.7.2 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

The likely significant effects on water associated with the revocation and retention of the quantitative policies are summarised in **Table 5.3** for policy E1, E2, E3, H1, ETG1, HG1, CH1, HA1, TH1, MKSM Policy 1 and MKSM Policy 2b. The identified effect concerns the substantial increase in consumer demand for water in an already water scarce region. However, the effect is generally also identified for retention East of England Plan and the quantified policies. The revocation of policies H1, MKSM Policy 1 and MKSM Policy 2b were assessed as not leading to significantly negative effects in the short term, although the effects would still be negative.

The assessment has found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

5.7.3 Effects of Retention

Pressures on water supplies and water quality will continue in the absence of the Plan as the region already suffers a water deficit and water quality in many river catchments. While improving, water quality falls short of the standards required by the Water Framework Directive. Ultimately the effect will depend on the quantum of growth in the region, its broad location and actions required (mainly through the Water

Framework and other Directives) to achieve greater water efficiency and improved water quality.

5.8 Mitigation Measures

Assuming that the level of growth in the region will be more or less the same irrespective of whether the Plan is revoked, the main mitigation measures to address limited water availability will continue in the short to medium term to be linked to demand management, for example, water metering in all new developments and retrofitting of existing buildings and continued improvements in the amount of water lost to leakage. Through the management of abstraction licences Environment Agency will be able to avoid over extraction and the environmental effects of this.

Improvements in water quality will continue to be driven by the requirements of the Water Framework Directive and other related Directives, for example, on Nitrates and Urban Waste Water.

A6. Air Quality

6.1 Introduction

The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of the proposals to revoke the regional strategies on air quality. Information is presented for both national and regional levels.

Air quality within this context concerns the levels of pollutants emitted into the air and their significance, in terms of the risk of adverse effects on the environment and/or human health. Carbon dioxide and other greenhouse gas emissions are excluded from the air quality topic and are reported under the climate change and adaptation topic.

There are links between the air quality topic and other topics in the SEA, specifically population, human health, climate change and material assets.

6.2 Summary of Plans and Programmes

6.2.1 International

The ***Air Quality Framework Directive*** 96/62/EC and its Daughter Directives set a framework for monitoring and reporting levels of air pollutants across EU member states, setting limits or reductions for certain air pollutants.

The ***Ambient Air Quality and Cleaner Air for Europe Directive*** 2008/50/EC consolidated earlier air quality directives and also defines and establishes objectives and targets for ambient air quality to avoid, prevent or reduce harmful effects on human health and the environment as a whole. It sets legally binding limits for concentrations in outdoor air of major air pollutants that impact on public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO2). The 2008 directive replaced nearly all the previous EU air quality legislation and was made law in England through the ***Air Quality Standards Regulations 2010***, which also incorporates the 4th air quality daughter directive 2004/107/EC that sets targets for levels in outdoor air of certain toxic heavy metals and polycyclic aromatic hydrocarbons. Equivalent regulations exist in Scotland, Wales and Northern Ireland.

The UK monitors and models air quality to assess compliance with the air quality limit and target values set out in the EU legislation above. The results of the assessment are reported to the commission on an annual basis. Air quality monitoring is also carried out by local authorities to meet local air quality management objectives.

In early 2011, the European Commission began a review of EU air quality policy which will culminate with the publication of new proposals on ambient air quality and emissions ceilings in 2013. On 30 June 2011, the Commission launched a public consultation inviting views on the best way to improve the EU's air quality legislation. The consultation closed in October 2011.

The ***EU Thematic Strategy on Air Quality (2005)*** identifies that despite significant improvements in air quality across the EU, a number of serious air quality issues still persist. The strategy promotes an approach, which focuses upon the most serious pollutants, and that more is done to integrate environmental concerns into other policies and programmes. The objective of the strategy is to attain levels of air quality that do not give rise to significant negative impacts on and risks to human health and the environment. The strategy emphasises the need for a shift towards less polluting modes of transport and the better use of natural resources to help reduce harmful emissions.

The ***Industrial Emissions Directive (IED) 2010/75/EU*** combines seven existing air pollution directives, including the Large Combustion Plant Directive and the Integrated Pollution Prevention and Control (IPPC) Directive. As with previous directives aimed at minimising emission release, part of the benefit of the Industrial Emissions Directive is that it includes several new industrial processes, sets new minimum emission limit values (ELVs) for large combustion plant and addresses some of the implementation issues of the IPPC.

The ***National Emissions Ceilings Directive 2001/81/EC*** came into force in 2001, and Member States were required to transpose it into their national legislation by November 2002. This Directive sets 'ceilings' (maximum values to be achieved by 2010) for total national emissions of four pollutants: sulphur dioxide; oxides of nitrogen; volatile organic compounds; and ammonia. These four pollutants contribute to acidification, eutrophication, and formation of ground level ozone.

6.2.2 National

UK

The ***Air Quality Standards Regulations 2010*** transpose into UK law Directive 2008/50/EC on ambient air quality and cleaner air for Europe and Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclicaromatic hydrocarbons in ambient air. The objective of the Regulations is to improve air quality by reducing the impact of air pollution on human health and ecosystems. The standards set out air quality objectives, limit values and target values for pollutants, namely benzene, 1,3 butadiene, carbon monoxide, lead, nitrogen dioxide, PM_{10}, sulphur dioxide and PM_{25}.

The ***Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007)*** sets out a way forward for work and planning on air quality issues.

The ***Environment Act 1995*** was enacted to protect and preserve the environment and guard against pollution to air, land or water. It requires local authorities to undertake local air quality management (LAQM) assessments against the standards and objectives prescribed in regulations. Where any of these objectives are not being achieved, local authorities must designate air quality management areas and prepare and implement remedial action plans to tackle the problem.

The ***Ozone-Depleting Substances (Qualifications) Regulations 2009*** introduces controls on the production, use and emissions from equipment of a large number of "controlled substances" that deplete the ozone layer.

England

The ***National Planning Policy Framework (NPPF) (2012)*** expects the planning system to prevent new development from contributing to unacceptable levels of air pollution. Planning policies and decisions are therefore expected to ensure that new development is appropriate for its location and take into account "*The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution*". (paragraph 120).

The Framework expects planning policies to "*sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan*."(paragraph 124). In doing so, local planning authorities are expected to focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to approval under pollution control regimes.

6.2.3 East of England

29 of the 52 local authorities in the Anglian region have declared Air Quality Management Areas (AQMAs), with the majority targeting nitrogen dioxide, with particulate matter also being an issue in several areas. Each Local Authority has then developed an Air Quality Action Plan for the designated AQMAs. The majority of the action plans focus on measures dealing with road traffic in and include setting up Clean Air or Low Emissions zones.

6.3 Overview of the Baseline

6.3.1 National

UK

Air quality in the UK is generally good. In 2008 urban background particulate levels averaged 20 micrograms per cubic metre (µg m-3) (Air Quality Strategy Objective and EU Limit Value is 40µg m-3); roadside particulate levels averaged 28µg m-3; urban background ozone levels averaged 59µg m-3; and rural ozone levels averaged 71µg m-3.[116] The long-term decrease in urban background particulate concentrations has levelled off in the last two years, remaining at 19 micrograms per cubic metre (µg m-3) since 2008. Roadside levels increased slightly in 2010 to 23µg m-3, although this followed a relatively large decrease in 2009, and there is an overall decreasing trend.

In 2010, 234 Local Authorities in the UK (58% of all UK authorities) had declared Air Quality Management Areas (AQMAs), a designation made by a Local Authority where an assessment of air quality results in the need to devise an action plan to improve the quality of air.[117] AQMAs are predominantly in urban areas along busy and congested road networks and are generally related to nitrogen dioxide (NO_2) (in 93% of cases) and particulates (PM_{10}) (in 33% of cases). Transport is identified as the main source of pollution in 92% of all AQMAs.[117]

In the UK 26 days of moderate or high air pollution were recorded in urban areas, and 45 days of moderate or high air pollution were recorded in rural areas respectively in 2008.

England

Within England, in December 2009, there were 203 local authorities with AQMAs, 33 of which were within London. In 83.7% of cases the AQMA is required for NO_2 pollution and 31.5% they were required for PM_{10} pollution. In 94% of cases the source of pollution was from transport and 4.4% the source was from industry.[117]

Overall, trends in PM_{10} concentrations for all metrics in all parts of England appear to have levelled out in recent years. However, four sites in England (London Marylebone Road, London Camden roadside, Brighton roadside and Bradford Centre) were over the 24 hour objective for PM_{10} meaning that more

[116] Defra, Environment in your Pocket Statistics, 2009, http://www.defra.gov.uk/evidence/statistics/environment/eiyp/

[117] Defra, Review of local air quality management, 2009, http://archive.defra.gov.uk/environment/quality/air/airquality/local/documents/laqm-report.pdf

than the 35 days were recorded as being in exceedance of a 24 hour average value of 50µg.m^{-3}.[118]

In 2003 it was estimated that 2161.7 km of road exceeded an annual mean value of 31.5 µg.m^{-3} (closely equivalent to the objective value), 935.9 km of which was within London making up 43.2% of the total length of road exceedance.[118]

In 2003 the population mean weighted $PM_{2.5}$ concentration for England (excluding London) was 14.4µg.m-^{3}, 17.4µg.m^{-3} in Inner London and 16.9µg.m^{-3} in Outer London.[118]

Four sites in England (London Marylebone Road; London A3 roadside; Camden roadside and Bristol Old Market roadside) exceeded the AQS 1 hour objective for NO_2 meaning there were more than 18 exceedences of the 200µg/m3 target in 2005.[118]

6.3.2 East of England

Air quality in the East of England is relatively good with an average air quality index score of less than 3 (1-3 is good; 4-6 is moderate; 6-9 is poor; and 10 is bad) but it is slowly deteriorating. There are growing pressures on air quality in particular locations, most notably due to the increasing traffic across the region.

Areas where pollution levels exceed standards are targeted by local authorities through the implementation of Air Quality Management Areas (AQMAs). Most of the Air Quality Management Areas that have been declared in the UK are in urban areas and result from traffic emissions of nitrogen dioxide or PM_{10}. Road traffic emissions are the main source in almost 91% of the AQMAs; only a few have been designated as a result of other sources, such as industrial or domestic emissions. The Environment Agency's state of the environment report for the Anglian region indicates that 29 of the 52 local authorities in the Anglian region have declared AQMAs, with the majority targeting nitrogen dioxide, with particulate matter also being an issue in several areas.

The 2010 Annual Monitoring Report for the East of England Plan[119] commented on the difficulty of providing an overall regional estimate of air quality given the nature of air pollution (it is transboundary) and the fact there are only a few monitoring sites within each region. **Figure 6.1** is taken from the 2010 Monitoring Report for the East of England shows the declared air quality management areas in the region. It should be noted that many of these are small in area, sometimes encompassing only two or three properties.

[118] Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Vol 2 (2007) http://archive.defra.gov.uk/environment/quality/air/airquality/strategy/documents/air-qualitystrategy-vol2.pdf

[119] http://www.eelga.gov.uk/documents/Policy%20and%20Priorities/EvidenceBase/AMR/FinalAMR.pdf

Figure 6.1 Declared Air Quality Management Areas in the East of England

County/unitary area	Air quality management areas (AQMAs)
Bedford	Three AQMAs, because of nitrogen dioxide levels, have been declared in Bedford town centre and Great Barford. Designation of the whole of the town centre is being considered. A further AQMA has been declared near the Stewartby brickworks.
Central Bedfordshire	One AQMA, incorporating Dunstable town centre - declared pollutant nitrogen dioxide.
Luton	Two AQMAs - both in the vicinity of the M1 and affecting about 450 premises - due to nitrogen dioxide
Peterborough	One AQMA affecting a rural area between Peterborough and Whittlesey - due to emissions from a brickworks at Whittlesey - sulphur dioxide
Southend-on-Sea	No AQMAs
Thurrock	One AQMA comprising 15 separate areas close to the busiest roads in Thurrock. All declared in relation to nitrogen dioxide, four in relation to Particulate Matter.
Cambridgeshire	Ten AQMAs have been declared: • Cambridge City - area within the inner ring road of the city of Cambridge - nitrogen dioxide; • Fenland - three at Wisbech (declared for nitrogen dioxide, sulphur dioxide and particulate matter respectively) and one at Whittlesey (emissions from brickworks - sulphur dioxide); • Huntingdonshire - St Neots, Huntingdon town centre (part), Brampton and Hemingford to Fenstanton. The latter three are associated with the A14 and all four are due to nitrogen dioxide; and • South Cambridgeshire - A14 Bar Hill to Milton (nitrogen dioxide).
Essex	14 AQMAs have been declared, all related to nitrogen dioxide: • Brentwood - seven AQMAs many in close proximity to the A12; • Colchester - two within the town; • Chelmsford - one within the town; • Epping Forest - one at Epping High Street; and • Uttlesford - three in Saffron Walden.
Hertfordshire	24 AQMAs have been declared: • Broxbourne - three close to the M25 - all nitrogen dioxide and one also Particulate Matter; • East Hertfordshire - one in Hertford - nitrogen dioxide; • Hertsmere - six AQMAs - all nitrogen dioxide; • St Albans - three AQMAs - all nitrogen dioxide; • Three Rivers - two at Chorleywood, two at Chandlers Cross and one at King's Langley - all close to the M25 (nitrogen dioxide and particulate matter); and • Watford - six AQMAs all nitrogen dioxide.
Norfolk	Six AQMAs declared: • Breckland - one encompassing Stonebridge Army Camp - particulate matter; • Broadland - one at Upper Hellesdon, Norwich - nitrogen dioxide; • King's Lynn and West Norfolk - one in King's Lynn - nitrogen dioxide; • Norwich - three within the city - all nitrogen dioxide;
Suffolk	Six AQMAs declared, all due to nitrogen dioxide: • Forest Heath - one in Newmarket town centre - nitrogen dioxide; • Ipswich - three in centre of the town - all nitrogen dioxide; • Suffolk Coastal - two areas, one near the Port of Felixstowe and one at Woodbridge.

The majority of the action plans focus on measures dealing with road traffic, such as:

- local traffic management schemes;
- Low Emissions Strategies;
- setting up Clean Air or Low Emissions zones; and
- working with the Highways Agency to tackle pollution on the motorways/trunk roads.

A recent review of local air quality management for Defra [120] concluded that national policy interventions have resulted in substantial reductions in emissions over recent years, with PM10 emissions in the UK down by 17.4% and NO_x emissions down by 16.3% over the period 2000 to 2006. The largest single source of pollution in both cases continues to be road transport, accounting for 33% of emissions in the case of NOx (down from 43% in 2000) and 21% of PM_{10}. Gas sources (i.e., domestic, industrial-commercial gas consumption and gas leakage) are, however, predicted to overtake road transport as the main source of NO_x emissions in London by 2010.

However, ambient air quality has not been improving at the same rate as emissions. There was no marked downward UK-wide trend over the period 2000 to 2008 for either NO_2 or PM_{10}. Across the UK, levels of roadside pollution are predictably worse than at other sites, with the average level for NO_2 concentrations across central Government's monitoring network exceeding objective levels and the EU limit value of 40µg m^{-3}.

The relationship between emitted and ambient pollution is not straightforward. An increase in the emission of primary NO_2 from diesel engines (as opposed to NO which subsequently oxidises in the atmosphere) is part of the reason why ambient NO_2 has not declined at the rate expected. PM_{10} ambient concentrations include significant contributions either formed by chemical reactions in the atmosphere or from emissions not characterised within emission inventories.

6.4 Environmental Characteristics of those Areas most likely to be Significantly Affected

6.4.1 National

UK

Air quality has improved in the UK over the last sixty years as a result of the switch from coal to gas and electricity for heating of domestic and industrial premises, stricter controls on industrial emissions, higher standards for the composition of fuel and tighter regulations on emissions from motor vehicles. However, poor air quality - particularly from vehicles - remains a significant issue for community health and for biodiversity, especially in/downwind of urban areas and major transport networks.

In 2005, 29% of monitoring sites within the UK exceeded the annual mean NO_2 objective of 40µg.m^{-3} and

[120] Michael Faulkner and Priscilla Russell (2010) Review of Local Air Quality Management (http://archive.defra.gov.uk/environment/quality/air/airquality/local/documents/laqm-report.pdf)

4% of monitoring sites exceeded the 1 hour objective of 200µg.m^{-3} more than 18 times a year.[121]

In 2005, roughly 40% of the 85 monitoring network sites exceeded the Air Quality's Strategy objective for O_3.[121]

Air pollution is a significant cause of decline in the condition of 55 of UK SSSIs.[122] However, it is often very difficult to determine the effects of air pollution on SSSIs, given the complex interactions between pollution impacts, management and abiotic influences. As a result, the impacts of air pollution, and the identification of air pollution as an adverse activity affecting condition, are considered to be substantially under-reported.[122]

Research by the Government has found that in a number of urban areas, the least affluent members of society tend to be exposed to the highest levels of air pollution[123]. This is particularly the case in England, where AQMAs declared for NO_2 are often in the most socially deprived areas people in deprived communities exposed to 41% higher concentrations of NO_2 than those people living in average communities[124], although this is less marked in Wales and Scotland. The report concluded that measures to improve air quality can have a more pronounced effect in deprived areas and could help to reduce this social inequality[125].

6.4.2 East of England

In terms of the spatial pattern of growth allocated in the draft Review, the ISA noted that:

- The housing allocated to Bedfordshire will result in an annual growth in housing stock of about 2.3%, which is more than any other County, with the exception of Suffolk. Furthermore, fewer jobs are allocated to Bedfordshire than homes (0.8 new jobs for every new home), which could potentially lead to greater traffic travelling south on the M1 (an important cause of poor air quality around Luton). The draft Review allocates 9.1% more housing to Bedfordshire than the adopted Plan.

[121] UK Air Quality Archive, www.airquality.co.uk/archive

[122] Joint Nature Conservation Committee (2006) Common Standards Monitoring for Designated Sites: First Six Year Report, http://www.jncc.gov.uk/pdf/CSM_06summary.pdf

[123] Dept. for Communities and Local Government (2006) Air Quality and Social Deprivation in the UK: an environmental inequalities analysis, www.airquality.co.uk/reports/cat09/0701110944_AQinequalitiesFNL_AEAT_0506.pdf

[124] UK Air Quality Archive, www.airquality.co.uk/archive

[125] Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007) http://www.official-documents.gov.uk/document/cm71/7169/7169_i.asp

- Cambridge City Centre is within an extensive AQMA and there have been recent declines in air quality.
- Hertfordshire is a County with serious problems of congestion on road and rail.
- Thurrock - a district with severe transport-related air quality issues.
- Breckland is notable for having extensive areas of important lowland heathland and grassland habitat. Like ancient woodlands such as Epping Forest and Hatfield Forest, these are nutrient poor habitats that are very sensitive to nutrient inputs from air pollution (particularly nitrogen, which is associated with traffic fumes). It is also the case that important areas of habitat are in some instances particularly sensitive to pollution from traffic because they are located in close proximity to main roads.
- Growth allocated to Uttlesford District could act in combination with traffic growth associated with the proposed expansion of Stansted Airport to reduce air quality in some sensitive areas. In terms of ecosystem health, Hatfield Forest is one nearby sensitive receptor.

The spatial strategy has generally avoided allocating growth to the most rural districts, where it would undoubtedly lead to increased traffic and congestion in rural centres. The 2010 HRA identified 17 SACs and 10 SPAs which were identified as being susceptible to poor air quality (both local and diffuse) - largely on the basis that they were located within 200 metres of a major road or were particularly vulnerable to exceedance of air quality thresholds (see Appendix G). However, the HRA concluded that the policies in the plan were unlikely to lead to adverse effects on these sites.

European and Ramsar sites

According to the 2010 HRA of the review of the East of England Plan, the following European designated sites were identified as being susceptible to deterioration in air quality or are located within 200m of a major road (although the HRA concluded that the Plan would not adversely affect the sites):

- Alde, Ore and Butley Estuaries SAC
- Breckland SAC and SPA
- Broadland SPA and Ramsar
- Chippenham Fen Ramsar
- Deben Estuary SPA and Ramsar
- Devil's Dyke SAC
- Epping Forest SAC
- Fenland SAC
- Lee Valley SPA and Ramsar
- Minsmere to Walberswick Heaths and Marshes SAC and SPA
- Nene Washes SPA and Ramsar
- Norfolk Valley Fens SAC
- North Norfolk Coast SAC, SPA and Ramsar
- Orton Pit SAC
- Ouse Washes SAC and Ramsar
- Overstrand Cliffs SAC
- Portholme SAC
- Rex Graham Reserve SAC
- River Wensum SAC
- Roydon Common and Dersingham Bog SAC and Ramsar
- Sandlings SPA
- Staverton Park and the Thicks, Wantisden SAC
- Stour and Orwell Estuary SPA and Ramsar
- The Broads SAC
- The Wash SPA and Ramsar
- Wicken Fen Ramsar
- Wormley Hoddesdonpark Woods SAC

6.5 Likely Evolution of the Baseline

6.5.1 National

The current trend in air condition is generally towards improved air quality, both in rural and urban settings[126].

Between 1990 and 2008 there was no clear long-term trend in ozone levels with increases in urban background ozone levels of 40.5%, however between 1980 and 2007 nitrogen oxides (NOx) fell by 42%,

[126] http://www.defra.gov.uk/sustainable/government/progress/documents/SDIYP2009_a9.pdf

particulates (PM_{10}) fell by 59% and sulphur dioxide (SO2) by 84% (between 1990 and 2007).[127]

Reductions are a product of: improved technology; changes in energy generation; targeted air quality management policies; and reductions in specific greenhouse gases, CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

Projections of UK total emissions:[128]

Best case scenario (full air quality target compliance):

- NOx: 2010 = 1136.4 ktonnes/yr; 2015 = 963.1 ktonnes/yr; 2020 = 799.1 ktonnes/yr.
- PM10: 2010 = 133.5 ktonnes/yr; 2015 = 129.4 ktonnes/yr; 2020 = 134.4 ktonnes/yr.

Worst case scenario (extension of 2003 baseline):

- NOx: 2010 = 1151.0 ktonnes/yr; 2015 = 1030.3 ktonnes/yr; 2020 = 910.7ktonnes/yr.

Measurements and modelling show that, without further measures, objectives for particles such as particulate matter (PM10), nitrogen dioxide (NO2), ozone (03) and polycyclic aromatic hydrocarbons (PAHS) are unlikely to be achieved in some parts of urban areas within the UK[129].

England

PM_{10} pollution overall has been decreasing in recent years and this is predicted to continue in the future. By 2015 71.7km of main urban road is predicted to be in exceedance of 31.5µg/m^3 (roughly equivalent to the Stage 1 PM10 24 hour limit value and objective), this is a 96.7% decrease compared to the 2003 baseline.[130]

Concentrations of NO_2 have been declining on average, although London Marylebone Road (the site with the highest NO_2 levels in England) and several other sites, are showing increasing concentrations in the most recent years. By 2015, 1,331 km of main urban road is predicted to be in exceedance of the annual mean objective of 40µg.m^{-3}, this is an 80.2% decrease compared to the 2003 baseline.

[127] http://www.defra.gov.uk/evidence/statistics/environment/eiyp/

[128] http://www.airquality.co.uk/reports/reports.php?action=category&section_id=17

[129] Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, http://www.official-documents.gov.uk/document/cm71/7169/7169_i.asp

[130] Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, /www.official-documents.gov.uk/document/cm71/7169/7169_i.asp

6.5.2 East of England

The 2010 ISA concluded that with the policies in the East of England Plan it is likely that increasing levels of traffic will lead to additional pressure on the road network and decreasing levels of air quality, particularly within urban areas and around strategic transport corridors. Higher temperatures experienced during the summer as a result of a changing climate can be expected to amplify the negative effects of poor air quality. However, the ISA cited research which suggested that background air quality across the UK can be expected to improve over the next 10-15 years, primarily as a result of tightening EU emission standards for cars and lorries and cleaner energy generation.

However, the assessment also considered it likely that a strategy of targeting further growth at existing centres will reduce the net distance that people in the region need to travel (e.g. to access work, services and facilities), and thus have benefits in terms of potentially reducing air pollution along the trunk road network. This is unlikely to lead to benefits in terms of health (as sensitive receptors will not be in close proximity), but there could potentially be benefits to ecosystems. However, the significance of such benefits remains uncertain, and it is appropriate to consider effects on human health first and foremost.

Rural air pollution from ozone is also considered likely to worsen as an additional impact of climate change. However, the underlying cause of this effect is trans-boundary in nature so its consideration was outside the scope of influence of the 2010 assessment.

6.6 Assessing significance

Table 6.1 sets out guidance utilised during the assessment to help determine the relative significance of potential effects on the air quality objective. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

Table 6.1 Approach to determining the significance of effects on air quality

Effect	Description	Illustrative Guidance
++	Significant positive	• Alternative would significantly improve local air quality through a sustained reduction in concentrations of pollutants identified in the national air quality objectives. • Alternative has a strong and sustained positive effect on local communities and biodiversity due to a significant reduction in air and odour pollution and particulate deposition.
+	Positive	• Alternative would lead to a minor improvement in local air quality from a reduction in concentrations of pollutants identified in the national air quality objectives. • Alternative has a positive effect on local communities and biodiversity due to a reduction in air and odour pollution and particulate deposition.
0	No (neutral effects)	• Alternative would not affect local air quality. • Alternative has no observable effects on local communities and biodiversity within the region.
-	Negative	• Alternative would result in a minor decrease in local air quality. • Alternative has a negative effect on local communities and biodiversity due to an increase in air and odour pollution and particulate deposition.
--	Significant negative	• Alternative would cause a significant decrease in local air quality (e.g. leading to an exceedence of air Quality Objectives for designated pollutants and the designation of a new Air Quality Management Area). • Alternative has a strong and sustained negative effect on local communities and biodiversity due to significant increase in air and odour pollution and particulate deposition.
?	Uncertain	• From the level of information available the effects the impact that the alternative would have on this objective is uncertain.

6.7 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 6.2 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the air quality topic.

Table 6.2 Significant effects against the air quality topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
T1 Retention	++	++	++	The policy gives clear priority to increase passenger and freight movement by more sustainable modes leading to improved air quality. It includes managing travel behaviour and the demand for transport to reduce the rate of road traffic growth, tackling congestion; increasing the proportion of the region's movements by public transport, walking and cycling; increasing the proportion of freight movement by rail; and achieving economic growth without a concomitant growth in travel. In consequence retention is assessed as having a significant positive effect on the air quality topic.
T1 Revocation	++	++	++	Paragraph 17 of the NPPF identifies as a core principle of planning the actively management of patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable. Section 4 (paragraphs 29-41) then deals with promoting sustainable transport. Revocation will not affect the existing Local Transport Plans adopted across the region which all seek to promote more sustainable forms of transport. There would be similar significant benefits to air quality following revocation of this policy.
T2 Retention	++	++	++	The policy seeks to bring about a significant change in travel behaviour, a reduction in distances travelled and a shift towards greater use of sustainable modes through awareness raising. If successful this could reduce private car use, reducing congestion and improving air quality.
T2 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF addresses the promotion of sustainable transport. This includes ensuring developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. Paragraph 35 of the NPPF outlines that developments should be located and designed where practical to… • give priority to pedestrian and cycle movements, and have access to high quality public transport facilities; and • incorporate facilities for charging plug-in and other ultra-low emission vehicles. Due to the provisions of the NPPF and the ongoing presence of the Local Transport Plans, there would be similar significant benefits to air quality following revocation of this policy.
T3 Retention	++	++	++	The policy seeks the use of demand management measures (such as road pricing) for highway use to tackle congestion. While its main intention is to provide more reliable journeys by tackling congestion it would contribute to improvements in air quality in localised areas.
T3 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF addresses the promotion of sustainable transport. This includes ensuring developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				modes can be maximised. Paragraph 30 of the NPPF states that encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion. Due to the provisions of the NPPF and the ongoing presence of the Local Transport Plans, there would be similar significant benefits to air quality following revocation of this policy.
T4 Retention	++	++	++	The policy objective is to bring about a shift away from car use to public transport, walking and cycling in urban areas. The main implications for the planning system is to ensure that urban extensions and other major developments are linked into the existing urban structure through safe, well designed pedestrian and cycling routes and a high standard of public transport and making improvements to local networks for walking and cycling, including increasing the attractiveness and safety of the public realm.
T4 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF addresses the promotion of sustainable transport. This includes ensuring developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. Paragraph 35 of the NPPF outlines that developments should be located and designed where practical to… • give priority to pedestrian and cycle movements, and have access to high quality public transport facilities; and • create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones; • incorporate facilities for charging plug-in and other ultra-low emission vehicles. Due to the provisions of the NPPF and the ongoing presence of the Local transport Plans, there would be similar significant benefits to air quality following revocation of this policy.
T7 Retention	++	++	++	Priority is given to providing sustainable access from villages and other rural settlements to market towns and urban areas optimising the use of non-car transport modes. This should minimise air quality issues in rural settlements.
T7 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF addresses the promotion of sustainable transport. This includes ensuring developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. Paragraph 34 of the NPPF seeks to ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. However that this needs to take account of policies set out elsewhere in this Framework, particularly in rural areas. Due to the provisions of the NPPF and the ongoing presence of the Local Transport Plan, there would be similar significant benefits to air quality following revocation of this policy.
T9 Retention	++	++	++	Provision for walking, cycling and other non-motorised transport should be improved and developed as part of an integrated strategy which would reduce dependence on the private car, thereby contributing to air quality improvements.
T9 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF addresses the promotion of sustainable transport. This includes ensuring developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. Paragraph 35 of the NPPF outlines that developments should be located and designed where practical to…

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				• give priority to pedestrian and cycle movements, and have access to high quality public transport facilities; and • create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones. Due to the provisions of the NPPF and the ongoing presence of the Local Transport Plan, there would be similar significant benefits to air quality following revocation of this policy.
T13 Retention	++	++	++	Improving public transport provision, including demand responsive services, should be developed as part of a package of measures to improve accessibility. This should encourage increased use of public transport and less use of the car with related benefits in urban areas for air quality.
T13 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF addresses the promotion of sustainable transport. Paragraph 35 of the NPPF outlines that developments should be located and designed where practical to…give priority to pedestrian and cycle movements, and have access to high quality public transport facilities Due to the provisions of the NPPF and the ongoing presence of the Local Transport Plans, there would be similar significant benefits to air quality following revocation of this policy.
ENV1 Retention	++	++	++	The provision of green infrastructure should encourage more walking and cycling with less use of the private car - reducing pollution.
ENV1 Revocation	++	++	++	Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement of the natural and local environment. This includes recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity and providing net gains in biodiversity where possible In addition, the introduction of Local Nature Partnerships announced in the Natural Environment White Paper which will complement existing local partnerships which deal with matters such as provision of green infrastructure will improve the chances of the delivery of the policy. Such partnerships will be able to work across administrative boundaries enable planning of networks at the scale that has the most impact. In consequence, revocation has been assessed as having the same positive benefits as retention.
WM6 Retention	++	++	++	The policy promotes integrating waste management as part of new development, and considering the impact of waste arising as part of construction of new development, in line with Planning Policy Statement 10. The application of the proximity principle aims to ensure that waste is managed as close to the place where it is created as is practical and as such should contribute towards a reduction in distances travelled which will benefit air quality.
WM6 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF addresses the promotion of sustainable transport. This includes ensuring developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. Paragraph 34 of the NPPF seeks to ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				The location of proposed waste management facilities will be set out in the respective mineral and waste development frameworks prepared by authorities in the region which also consider the proximity principle and self sufficiency in the provision of waste treatment facilities. For example, in Hertfordshire's Minerals and Development Framework Core Strategy, the vision for 2026 includes the statement that 'sufficient waste management facilities (to reduce, reuse, recycle) will be located as close as practicable to its source, making use of sustainable transport links to ensure existing and new communities deal with their own waste.' Due to the provisions of the NPPF, the policies in existing minerals and development frameworks and the ongoing presence of the Local Transport Plan, there would be similar significant benefits to air quality following revocation of this policy.
CSR4 Retention	++	++	++	New transport infrastructure requirements arising from development in the Cambridge sub-region should build upon the existing high quality public transport systems, high levels of cycling and demand management measures. The aim is to reduce the need to travel, especially by car and secure the fullest possible use of public transport, cycling and walking. This is important given the existing air quality problems in Cambridge.
CSR4 Revocation	++	++	++	Section 4 (paragraphs 29-41) of the NPPF addresses the promotion of sustainable transport. This includes ensuring developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. Paragraph 35 of the NPPF outlines that developments should be located and designed where practical to… • give priority to pedestrian and cycle movements, and have access to high quality public transport facilities; and • create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones. Due to the provisions of the NPPF and the ongoing presence of the Local Transport Plan, there would be similar significant benefits to air quality following revocation of this policy.

6.7.1 Effects of Revocation

A significant concern for the region is the level of growth of transport linked to the anticipated level of growth in homes and employment. This could contribute significantly to air pollution particularly in those areas which are already subject to the Action Plans for Air Quality Management.

The regional strategy therefore contains a range of policies which seek to address transport growth and to achieve more sustainable transport modes such as increased use of public transport, walking and cycling. Taken together the transport policies have the potential, if implemented, to limit the effects of traffic growth and contribute to improving air quality with the related benefits to human health and biodiversity. However, much will depend on a number of factors including whether the population does change its behaviour, pricing policy on public transport, technological advances in engine efficiency and emission standards.

It is difficult to predict the impact of revocation of these policies. However, the legal requirement to achieve the air quality standards set by European Directives, underpinned by national and locally derived solutions (for example, the Action Plans for Air Quality Management Areas) is likely to have a greater effect on air quality than the policies in the regional strategy.

This is reflected in paragraph 124 of the NPPF which states that "planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan.

The revocation of other policies in the plan could also have implications for air quality. The removal of the focus on development within existing urban areas, required by Policy SS2 could increase the dispersal of new development, which, depending on the specific decisions could result in more private car use, but could result in a better air quality in urban areas compared to the situation with the plan. Other policies which may encourage walking and cycling, such as the policy ENV1 (Green Infrastructure) and ENV5 (Woodlands) which seeks to increase the area of woodland (an important absorber of pollutants) can also play a beneficial role. However, these benefits would be maintained if these policies were revoked through the NPPF.

Policies T2 (Changing Travel Behaviour) and T3 (Managing Traffic Demand) are aspirational and it is difficult to see direct environmental effects on air quality if they were revoked. It was also noted in the explanatory text that Policy T3 cannot be implemented by the region working independently but requires partners within the region working closely with Government in considering any local initiatives.

6.7.2 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

The likely significant effects on air quality associated with the revocation and retention of the only identified quantitative or spatially specific policy (CSR4) are summarised in **Table 6.2**. However, the effect concerns a significantly positive effect on local air quality from a variety of measures and is the same with both revocation and retention.

The assessment has found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

6.7.3 Effects of Retention

Retaining the regional strategy is likely to result in the environmental baseline continuing to evolve as identified in section 6.5.2 above. Many of the policies seek to change behaviour or are outside the direct control of the planning system. Those policies that can be controlled through the planning system are effectively repeated in the NPPF, so as the regional strategy became more out of date, the related policies in the NPPF would bite more.

6.8 Mitigation Measures

As revocation is not considered to have any adverse effects on air quality no specific mitigation measures (beyond adoption of relevant policies in the NPPF) have been identified.

A7. Climate Change

7.1 Introduction

The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of the proposals for revoking the regional strategies on climate change. Information is presented for both national and regional levels.

Climate change within this context in concerned with increasing the likelihood of climate change effects through greenhouse gas emissions and the ability to adapt to predicted climate change effects.

There are links between the climate change and other topics in the SEA, specifically biodiversity and nature conservation, air, climate change and material assets.

7.2 Summary of Plans and Programmes

7.2.1 International

The ***United Nations Framework Convention on Climate Change*** (UNFCCC) sets an overall framework for international action to tackle the challenges posed by climate change. The Convention sets an ultimate objective of stabilising greenhouse gas concentrations *"at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system."* The Convention requires the development and regular update of greenhouse gas emissions inventories from industrialised countries, with developing countries also being encouraged to carry out inventories. The countries who have ratified the Treaty, known as the Parties to the Convention, agree to take climate change into account in such matters as agriculture, industry, energy, natural resources and where activities involve coastal regions. The Parties also agree to develop national programmes to slow climate change.

The ***Kyoto Protocol***, adopted in 1997, is the key international mechanism agreed to reduce emissions of greenhouse gases. The Kyoto Protocol sets binding targets for 37 industrialised countries and the European Community for reducing greenhouse gas emissions. These targets equate to an average of 5% reductions relative to 1990 levels over the five-year period 2008-2012. The key distinction between this and the UNFCCC is that the Convention encourages nations to stabilise greenhouse gases while the Kyoto Protocol commits them to doing so through greenhouse gas reductions. Countries must meet their targets primarily through national measures however, the Kyoto Protocol offers them an additional means of meeting their targets by way of three market-based mechanisms: emissions trading, the clean

development mechanism (CDM) and Joint Implementation (JI).

The Protocol's first commitment period started in 2008 and ends in 2012. At the Durban conference in December 2011, governments decided that the Kyoto Protocol would move into a second commitment period in 2013, in a seamless transition from the end of the second commitment period in 2012. Governments of Parties to the Kyoto Protocol also made a few amendments to the Protocol, among others, the range of greenhouse gases covered. A major outcome of was the establishment of the Durban Platform for Enhanced Action, which spelt out a path to negotiate a new legal and universal emission reduction agreement by 2015, to be adopted by 2020.

In March 2007 the EU's leaders endorsed an integrated approach to climate and energy policy that aims to combat climate change and increase the EU's energy security while strengthening its competitiveness. They committed Europe to transforming itself into a highly energy-efficient, low carbon economy. It set a series of demanding climate and energy targets to be met by 2020, known as the "20-20-20" targets. These are:

- a reduction in EU greenhouse gas emissions of at least 20% below 1990 levels;
- 20% of EU energy consumption to come from renewable resources; and
- a 20% reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency.

To secure a reduction in EU greenhouse gases, the ***EU Emissions Trading Scheme (EU ETS),*** a Europe wide scheme had been introduced in 2005. EU ETS puts a price on carbon that businesses use and creates a market for carbon. It allows countries that have emission units to spare (emissions permitted to them but not "used") to sell this excess capacity to countries which are likely to exceed their own targets. Since carbon dioxide (CO_2) is the principal greenhouse gas, this is often described as a carbon market or trading in carbon; the total amount of carbon emissions within the trading scheme being limited, and reduced over time. The ***Integrated Climate and Energy Package*** included a revision and strengthening of the Emissions Trading System (ETS). A single EU-wide cap on emission allowances will apply from 2013 and will be cut annually, reducing the number of allowances available to businesses to 21% below the 2005 level in 2020. The free allocation of allowances will be progressively replaced by auctioning, and the sectors and gases covered by the system will be somewhat expanded.

The **Renewable Energy Directive** 2009/28/EC mandates levels of renewable energy use within the European Union. The directive requires EU member states to produce a pre-agreed proportion of energy consumption from renewable sources such that the EU as a whole shall obtain at least 20% of total energy consumption from renewables by 2020. This is then apportioned across member states. The UK's target is for 15% of energy consumption in 2020 to be from renewable sources. Under Article

4 of the directive each Member State is also required to complete a National Renewable Energy Action Plan that will set out the trajectory and measures that will enable the target to be met.

The ***EU Sixth Environmental Action Plan (EAP) (2002-2012)*** reviews the significant environmental challenges and provides a framework for European environmental policy up to 2012. The four priority areas are Climate Change; Nature and Biodiversity; Environment and Health; Natural Resources and Waste. The European Commission has recently consulted on the EU environment policy priorities for 2020: Towards a 7th EU Environment Action Programme. This looks to further integrating climate and environment into other policies and instruments.

7.2.2 National

UK

In the UK, the ***Climate Change Act 2008*** introduces legislative targets for reducing the UK's impacts on climate change and the need to prepare for its now inevitable impacts. The Act sets binding targets for a reduction in CO_2 emissions of 80% by 2050, compared to a 1990 baseline. Interim targets and five-year carbon budget periods will be used to ensure progress towards the 2050 target. The Climate Change Act 2008 also requires the Government, on a regular basis, to assess the risks to the UK from the impact of climate change and report to Parliament. The first ***Climate Change Risk Assessment*** was published in 2012. Government will be required to publish and regularly update a programme setting out how the UK will address these likely impacts, based on the principles of sustainable development, thereby ensuring that environmental, economic and social issues are all fully considered. The Climate Change Act 2008 also introduced powers for Government to require public bodies and statutory undertakers (in this context these are utilities companies which provide a public service) to carry out their own risk assessments and make plans to address those risks.

The ***Carbon Plan: Delivering our low carbon future (2011)*** sets out how the UK will achieve decarbonisation within the framework of energy policy: to make the transition to a low carbon economy while maintaining energy security, and minimising costs to consumers, particularly those in poorer households. It includes proposals for energy efficiency, heating, transport and industry.

The ***Energy Act 2011*** provides for some of the key elements of the Government's energy programme and including a step change in the provision of energy efficiency measures to homes and businesses. It also makes improvements to the framework for enabling and securing low carbon energy supplies and fair competition in the energy markets.

England

The **National Planning Policy Framework** (2012) provides a set of core land-use planning principles that should underpin both plan-making and decision-taking. These include supporting "*the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy)*". The Framework underlines that planning's role in tackling climate change is central to the economic, social and environmental dimensions of sustainable development. Local planning authorities are therefore expected to adopt proactive strategies to mitigate and adapt to climate change (in line with the objectives and provisions of the Climate Change Act 2008), taking full account of flood risk, coastal change and water supply and demand considerations.

To support the move to a low carbon future, local planning authorities are expected to plan for new development in locations and ways which reduce greenhouse gas emissions; actively support energy efficiency improvements to existing buildings and have a positive strategy to promote energy from renewable and low carbon sources. Local Plans are also expected to take account of climate change over the longer term, including factors such as flood risk, coastal change, water supply and changes to biodiversity and landscape. New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change.

7.2.3 East of England

Sustainability East are part of Climate UK and fulfil the role of the Climate Change Partnership for the East of England. Sustainability East publications on adaptation to climate change include A Summary of Climate Change, to coincide with the publication of the UK Climate Change Risk Assessment (CCRA) 2012 which highlighted the possible risks for the East of England.

7.3 Overview of the Baseline

7.3.1 National

UK

In 2010, UK emissions of the 'basket' of six greenhouse gases covered by the Kyoto Protocol were estimated to be 590.4 million tonnes carbon dioxide equivalent (MtCO2e)[131]. This was 3.1%higher than

[131]DECC Statistical Release February 2012,

the 2009 figure of 572.5 million tonnes. Between 2009 and 2010 the largest increases were experienced in the residential sector, up 15.1% (11.8 MtCO2e), and the energy supply sector, up by 2.8% (5.6 MtCO2e). Emissions from all other sectors were relatively stable, compared to 2009 levels.

Carbon dioxide (CO_2) is the main greenhouse gas, accounting for about 84% of total UK greenhouse gas emissions in 2010[91]. In 2010, UK net emissions of carbon dioxide were estimated to be 495.8 million tonnes (Mt). This was around 3.8% higher than the 2009 figure of 477.8 Mt. There were notable increases in emissions from the residential sector, up by 15.8% (11.8 Mt), and from the energy supply sector, up 3.1% (5.8 Mt). Again, emissions from all other sectors were relatively unchanged from 2009.

All areas of the UK are getting warmer, and the warming is greater in summer than in winter[132].

There is little change in the amount of precipitation (rain, hail, snow etc) that falls annually, but more is falling in the winter, with drier summers, for much of the UK[132]. Sea levels are rising, and are greater in the south of the UK than the north[132]. The widespread flooding events of 2007 cannot be directly attributed to climate change but it is expected to see more extreme rainfall events in the future, and hence more flooding as our climate changes.

England

In 2009 England's net emissions of CO_2 (by end user) were estimated to be 372 million tonnes, giving an estimate of 7.2 tonnes of CO_2 emissions per capita[133]. This compares to emissions of 433 million tonnes, giving an estimate of 8.6 tonnes of CO_2 emissions per capita in 2005.

In 2008, 29% of CO_2 emissions were from the energy supply sector, 20.3% from road transport, 31.1% from business and 24.1% from residential fossil fuel use.[134]

The 10 warmest years on record have occurred since 1997. Global temperatures for 2000-2008 now stand almost 0.2% warmer than the average for the decade 1990-1999.

Rainfall has decreased in summer and increased in winter since records began in 1766. Winter rainfall has been increasingly falling as heavy events over the past 45 years (rather than longer, more gentle rainfall). This kind of intense rainfall is a key factor in river and surface water flooding.

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http://www.decc.gov.uk/assets/decc/11/stats/climate-change/4282-statistical-release-2010-uk-greenhouse-gas-emissi.pdf

[132] Department for Energy and Climate Change: 2007 Greenhouse Gas Emissions, Final Figures 3rd February 2009, http://www.decc.gov.uk/assets/decc/202_20090326104955_e_@@_greenhousegasemissions.pdf

[133] DECC Statistical Release September 2011, http://www.decc.gov.uk/assets/decc/11/stats/climate-change/2750-statistical-summary-la-co2-emissions.pdf

[134] DECC http://www.decc.gov.uk/assets/decc/Statistics/climate_change/localAuthorityCO2/457-local-regional-co2-2005-2008-full-data.xls

The frequency of dry summers has increased over the decades, with 10 of the driest summers occurring in the last 30 years.

Sea levels around the UK have risen by 1mm/yr in the twentieth century, (corrected for land movement). The rate for the 1990s and 2000s has been higher. Rising sea levels are the result of various factors including the warming up and expansion of the ocean and the melting of low latitude glaciers due to climate change.

7.3.2 East of England

In 2009, the East of England's net emissions of CO_2 (by end user) were estimated to be 40.7 million tonnes, giving an estimate of 7.0 tonnes of CO_2 emissions per capita[135]. This compares to emissions of 45.3 million tonnes, giving an estimate of 8.2 tonnes of CO_2 emissions per capita in 2005.

Table 7.1 Carbon Emissions (by End User)

Year	Industry and Commercial	Domestic	Road Transport	LULUCF	Total (kt CO2)	Population ('000s, mid-year estimate)	Per Capita Emissions (t)
2005	16,829	13,837	14,230	475	45,371	5,551	8.2
2006	16,655	13,904	14,120	473	45,151	5,593	8.1
2007	16,141	13,551	14,267	496	44,455	5,649	7.9
2008	16,001	13,393	13,725	479	43,597	5,717	7.6
2009	14,169	12,160	13,229	492	40,051	5,766	7.0

Source: http://www.decc.gov.uk/assets/decc/11/stats/climate-change/2751-local-and-regional-co2-emissions-estimates.xls

Renewable Energy

In 2009, renewable energy sources provided 6.7% of the electricity generated in the UK, 1.2% higher

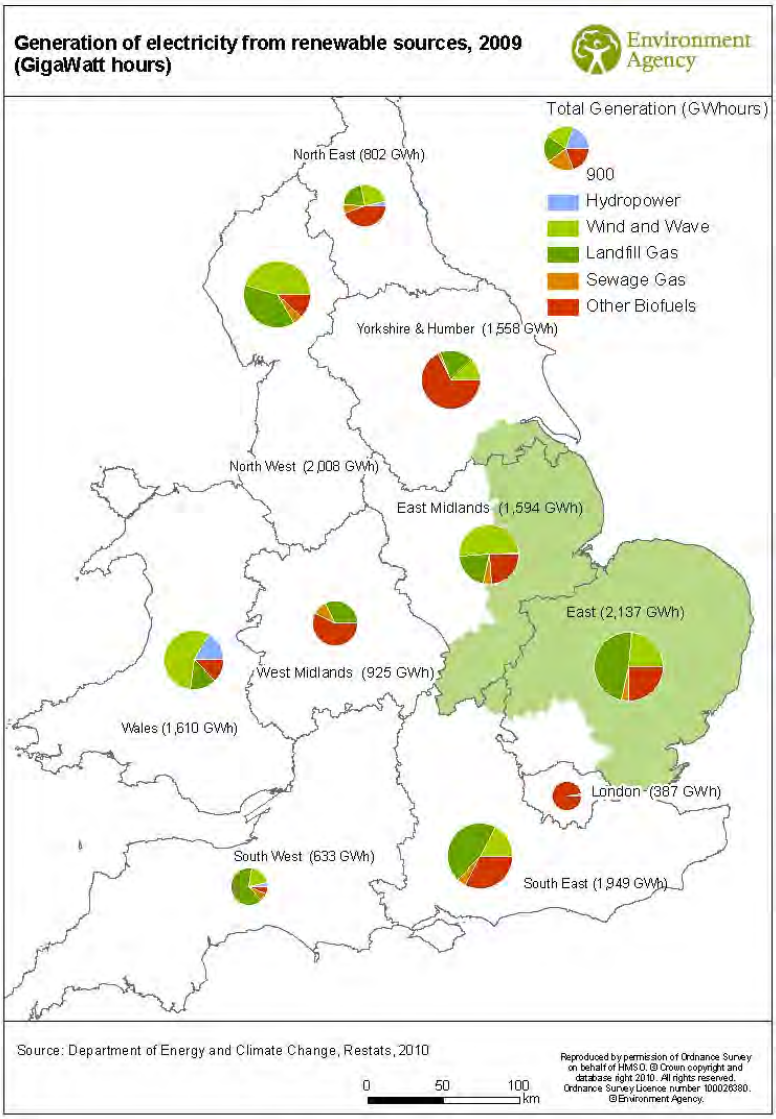
[135] DECC Statistical Release September 2011, http://www.decc.gov.uk/assets/decc/11/stats/climate-change/2750-statistical-summary-la-co2-emissions.pdf

than in 2008. 3,000GWh of electricity was generated across the East of England and East Midlands from both onshore and off-shore sources in 2009, with 10% of the electricity used in the region from renewable sources.

The Region currently has the highest installed capacity for renewable electricity generation of any English regions and there are significant opportunities for increased renewable generation. However, road transport emissions are well above the national average, reflecting the predominance of semi-rural communities.

Electricity from landfill gas, wind and wave power contributed the largest proportions to the regions renewable energy generation - over 2,600GWh generated across the East of England and East Midlands. The flat landscape and extensive coastline means the region is well placed for future opportunities in onshore and offshore wind and wave technologies.

Figure 7.1 Renewable Sources of Energy



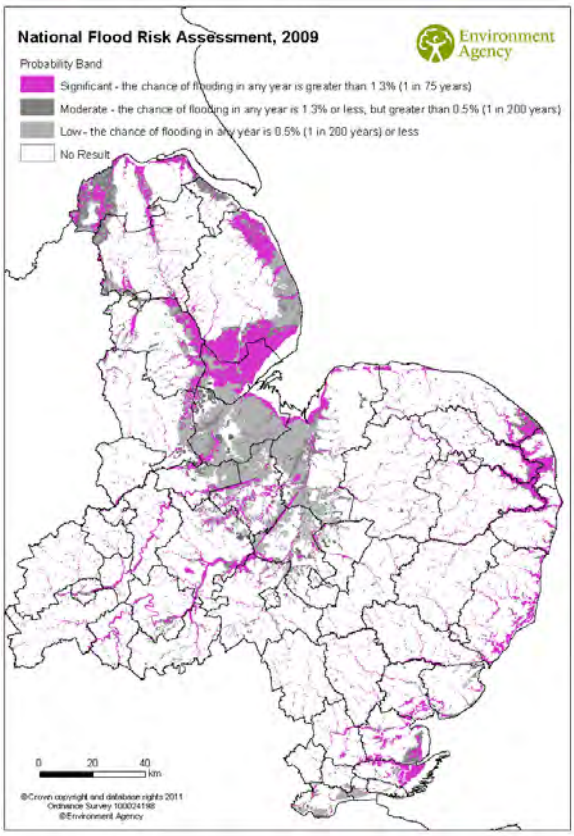
Flooding

Large areas of the region are at or below sea level and 20% of the region is within the flood zone. The East of England is particularly vulnerable to the effects of storm surges, sea level rise and saline intrusion. Coastal erosion has already resulted in some re-alignment of flood defences and loss of important habitats and, as the threat to existing defences grows, decisions will need to be made as to

where and how much investment in coastal flood management should take place to protect communities and key infrastructure[136].

In 2009 an estimated 400,000 properties are at risk of flooding from either rivers or the sea. This is approximately 11% of the total properties in the region. This includes households, non-residential properties (offices, factories, commercial properties and warehouses), and other assets such as electricity and water supply infrastructure. This is based on a 1:1000 (0.1% probability) of flooding in any one year. Of the 400,000 properties at risk of flooding, approximately 57,200 are at significant risk.[137]

Figure 7.2 Flood Risk Assessment



[136] 2010 ISA
[137] UK CCRA 2012

7.4 Environmental Characteristics of those Areas most likely to be Significantly Affected

7.4.1 National

UK

The main source for determining how the climate of the UK may change is the UK Climate Impacts Programme scenarios, published in 2009 and known as UKCP09. The UKCP09 findings indicate that all areas of the UK are getting warmer, and the warming is greater in summer than in winter. There is little change in the amount of precipitation (rain, hail, snow etc) that falls annually, but more is falling in the winter, with drier summers, for much of the UK. Sea levels are rising, and are greater in the south of the UK than the north[138].

The Climate Change Risk Assessment[139] (2012) outlines some of the most important risks and opportunities that climate change may present. It provides an indication of their potential magnitude, when they might become significant and the level of confidence in each finding. As well as the overall picture, specific findings are presented for five complementary themes: Agriculture & Forestry, Business, Health & Wellbeing, Buildings & Infrastructure and the Natural Environment. Key messages from the assessment include:

- Flood risk is projected to increase significantly across the UK. Increases in the frequency of flooding would affect people's homes and wellbeing, especially for vulnerable groups (e.g. those affected by poverty, older people, people in poor health and those with disabilities), and the operation of businesses and critical infrastructure systems. Annual damage to UK properties due to flooding from rivers and the sea currently totals around £1.3 billion. For England and Wales alone, the figure is projected to rise to between £2.1 billion and £12 billion by the 2080s, based on future population growth and if no adaptive action is taken.

- UK water resources are projected to come under increased pressure. This is a potential consequence of climate-driven changes in hydrological conditions, as well as population growth and the desire to improve the ecological status of rivers. By the 2050s, between 27 million and 59 million people in the UK may be living in areas affected by water supply-demand deficits (based on existing population levels). Adaptation action will be needed to increase water

[138] DECC (2007) http://www.decc.gov.uk/en/content/cms/what_we_do/lc_uk/loc_reg_dev/ni185_186/ni185_186.aspx
[139] Defra (2012) http://randd.defra.gov.uk/Document.aspx?Document=Summary_of_Key_Findings.pdf

efficiency across all sectors and decrease levels of water abstraction in the summer months.

- Potentially, there are health benefits as well as threats related to climate change, affecting the most vulnerable groups in our society. These are likely to place different burdens on National Health Service (NHS), public health and social care services. For example, premature deaths due to cold winters are projected to decrease significantly (e.g. by between 3,900 and 24,000 by the 2050s) and premature deaths due to hotter summers are projected to increase (e.g. by between 580 and 5,900 by the 2050s). Other health risks that may increase include problems caused by ground-level ozone and by marine and freshwater pathogens.

- Sensitive ecosystems are likely to come under increasing pressure. Although some species could benefit, many more would be negatively impacted. These impacts would have knock-on effects on habitats and on the goods and services that ecosystems provide (e.g. regulating water flows, pollination services).

The UK is experiencing sea level rise of approximately 1mm per year. Global sea-level is rising at about 3mm per year[140]. Central England's temperature has risen by about 0.7ºC over the last century, with 2004 being the warmest on record[141]. Sea-surface temperatures around the UK coast have risen over the past three decades by about 0.7ºC. Global average temperatures are rising at about 0.2ºC per decade. Severe windstorms around the UK have become more frequent in the past few decades, though not above that seen in the 1920s. Annual mean precipitation over England and Wales has not changed significantly since records began; however seasonal rainfall appears to be decreasing in summer and increasing in winter[140] .

Key climate change include that the UK climate is warming and becoming more seasonal; climate changes are more pronounced in south-east of the UK compared to the north-west; sea levels are rising, and UK greenhouse gas emissions are falling with a target of an 80% cut in emissions by 2050 (compared to 1990 levels).

7.4.2 East of England

The East of England is a low-lying area with one-fifth of the region below sea level. There is also some of the fastest eroding coastline in Europe in Norfolk and Suffolk. The specific geology of the coastal areas (clay and sandstone) makes them particularly vulnerable to erosion.

[140] Defra, Environment in your Pocket Statistics, 2009, http://www.defra.gov.uk/evidence/statistics/environment/eiyp/

The East of England is one of the most water-stressed regions in England with the lowest rainfall in the UK (at 845 mm - only 71% of the national average). Approximately 60% of the 800,000 million litres abstracted per annum were from surface water and 40% from ground water sources. 90% of abstraction was for public water supply. 30% of the surface and ground water resource catchments are already classed as having 'no water available', while over 50% are over-abstracted or over-licensed at low flows.

Agriculture is an important user of water in the region, with many crops requiring irrigation to ensure high quality and good yields - albeit using significantly less than the population as a whole.

7.5 Likely Evolution of the Baseline

7.5.1 National

UK

There has been a steady decrease in the 6 greenhouses gases of the Kyoto basket since 1990. In 2009 566.3 million tonnes of CO_2 equivalent were emitted from the UK, which was a 27.2% decrease compared to volumes emitted in 1990 and a 8.2% decrease compared to values in 2008. However, provisional results for 2010 estimate 582.4 million tonnes of CO_2 equivalent were emitted giving an increase of 2.8% compared to 2009 values[142].

UKCP09 provides the following prediction on changes to climate within the UK based on the medium emission scenario with 90% probability[143]:

- **2080 mean winter temperature**: the central estimates of change are projected to be generally between 2 and 3ºC across most of the country, with slightly larger changes in the south-east and slightly smaller in the north-west of Britain.
- **2080 mean summer temperature**: a more pronounced south to north gradient exists with changes in some parts of southern England being just over 4ºC and in parts of northern Scotland about 2.5ºC.
- **2080 mean summer daily maximum temperature**: central estimates show a gradient between parts of southern England, where they can be 5ºC or more, and northern Scotland,

[142] DECC (2011) 2010 Provisional GHG emissions http://www.decc.gov.uk/publications/basket.aspx?filetype=4&filepath=Statistics%2fclimate_change%2f1514-ghg-emissions-provisional-2010.xls&minwidth=true#basket

[143] UKCP09 http://ukclimateprojections.defra.gov.uk/content/view/515/499/

where they can be somewhat less than 3ºC.

- **2080 mean annual precipitation**: shows little change (few percent or zero);.
- **2080 mean winter precipitation:** increases are in the range +10 to +30% over the majority of the country. Increases are smaller than this in some parts of the country, generally on higher ground.
- **2080 mean summer precipitation**: general south to north gradient, from decreases of almost 40% in SW England to almost no change in Shetland.
- The range of absolute sea level rise around the UK (before land movements are included) and across the three emissions scenarios is projected to be between 12 and 76 cm for the period 1990–2095, which is a wider spread than that of the global average.
- The projected long-term future trends in storm surge that we find in UKCP09 are physically small everywhere around the UK, and in many places can be accounted for by natural variability. The surge level we expect to be exceeded on average once in 2, 10, 20 or 50 yr is not projected to increase by more than 9 cm by 2100 anywhere around the UK coast (not including the mean sea level change). The largest trends are found in the Bristol Channel and Severn Estuary.
- Seasonal mean and extreme waves are generally expected to increase to the South West of the UK, reduce to the north of the UK and experience a small change in the southern North Sea. Changes in the winter mean wave height are projected to be between –35 and +5 cm. Changes in the annual maxima are projected to be between –1.5 and +1 m.

The Climate Change Act 2008 was passed in November 2008 and creates a new approach to managing and responding to climate change in the UK. This includes putting in place legally binding targets with the aim of reducing emissions by at least 80% by 2050 (compared to 1990 levels) and a set of five-year carbon budgets (legally binding limits on the total quantity of greenhouse gas emissions that the country produces over a five year period) to 2022. Included within the Fourth Carbon Budget the Committee on Climate Change is the recommendation for an indicative 2030 target to reduce emissions by 60% relative to 1990 levels (46% relative to 2009 levels)[144].

The Carbon Plan 2011 explains that if the UK is to cut emissions by 80% by 2050, there will have to be major changes in how energy is generated and used. Energy efficiency will have to increase dramatically across all sectors. The oil and gas used to drive cars, heat buildings and power industry

[144] Committee on Climate Change (2010) Fourth Carbon Budget, http://www.theccc.org.uk/reports/fourth-carbon-budget

will, in large part, need to be replaced by electricity, sustainable bioenergy, or hydrogen. Electricity will need to be decarbonised through renewable and nuclear power, and the use of carbon capture and storage (CCS). The electricity grid will be larger and smarter at balancing demand and supply. In the next decade, the UK is expected to complete the installation of proven and cost effective technologies that are worth installing under all future scenarios. All cavity walls and lofts in homes, where practicable, are expected to be insulated by 2020. The fuel efficiency of internal combustion engine cars will improve dramatically, with CO_2 emissions from new cars set to fall by around a third. Many of our existing coal-fired power stations will close, replaced primarily by gas and renewables. More efficient buildings and cars will cut fuel costs. More diverse sources of electricity will improve energy security and reduce exposure to fossil fuel imports and price spikes. As part of this, the UK is committed to delivering 15% of its energy from renewable sources by 2020.

England

In 2009 England's emissions of the 'basket' of six greenhouse gases covered by the Kyoto Protocol were provisionally estimated to be 436 million tonnes CO_2 equivalent which is a 29.5% decrease compared to emissions in 1990[145].

UKCP09 provides the following changes in climate for England in 2080 based on a medium emission scenario with 90% probability[146]:

- **2080 mean winter temperature**: a change in temperature from 4.0ºC in the Northwest to 4.7ºC in the South and East of England.
- **2080 mean summer temperature**: a change in temperature from 5.4ºC in Yorkshire to 6.5ºC in the South East.
- **2080 mean winter precipitation:** increases are in the range 41% in the East Midlands to 54% in the South West.
- **2080 mean summer precipitation**: no change is expected in Yorkshire to a 7% increase in the South East and London.

England shares the same targets related to climate change and energy use as the rest of the UK. Although there are additional targets on a regional and local authority level contained within strategies there are too many to mention for the purposes of this report.

[145] National Atmospheric Emissions Inventory , Devolved Administration End User GHG Emissions Data http://uk-air.defra.gov.uk/reports/cat07/1109061103_DA_GHGI_report_2009_Main_text_Issue_1.pdf
[146] UKCP09 http://ukclimateprojections.defra.gov.uk/content/view/515/499/

7.5.2 East of England

According to the Environment Agency's state of the environment report for the Anglian Region, local predictions for climate changes in the 2080's include:

- hotter summers (mean temperatures likely to increase between 1.9ºC and 5.9ºC);
- drier summers (precipitation changes between +6% and -45%);
- warmer winters (mean temperatures likely to increase between 1.6 ºC and 4.7ºC);
- wetter winters (precipitation likely to increase between 4% and 44%); and
- sea level could rise by 18 - 37 cm in some areas by 2080.

Coastal change including habitat loss is a significant threat. High emissions projections indicate that the greatest proportion of habitat loss would be for saline lagoon, 20% of this resource would be losses from the East of England alone. The High emissions scenario projects coastal floodplain, grazing marsh and saline lagoon as losing <50ha each in the East of England, this represents the greatest loss for a region. More specifically, fen, purple moor grass and rush pasture and reed bed habitat lose <20ha within the region 4. The UKCCRA report recognises that the eastern coastal estuaries are vitally important for UK biodiversity and the analysis suggests that these areas may be the most affected by coastal change.[147]

Some of the largest deficits and greatest reductions in the flow of water are projected to be in the East of England. Average regional reductions in flow are 38% (-16 to -54%) for the Low emissions scenario and 56% (-38 to -70%) for High emissions scenario.

7.6 Assessing significance

Table 7.2 sets out guidance utilised during the assessment to help determine the relative significance of potential effects on climate change. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

[147] Sustainability East (2012), A Summary of the Climate Change Risks for the East of England

Table 7.2 Approach to determining the significance of effects on climate change and energy use

Effect	Description	Illustrative Guidance
++	Significant positive	• Alternative would significantly reduce carbon footprint of region (by >34% by 2020 compared to a 1990 baseline). • Alternative will increase resilience/decrease vulnerability to climate change in the wider environment.
+	Positive	• Alternative would reduce carbon footprint of region (by <34% by 2020 compared to 1990). • Alternative may increase resilience/decrease vulnerability to climate change in the wider environment
0	No (neutral effects)	• Alternative would not lead to an overall change in greenhouse gas emissions in a way that will not contribute to climate change or resilience to climate change within the wider environment.
-	Negative	• Alternative would increase carbon footprint of region (by <10% by 2020 compared to 1990). • Alternative may decrease resilience/increase vulnerability to climate change in the wider environment. • Alternative could result in increase in people or property at risk or affected by flooding, coastal inundation or sea level rise.
--	Significant negative	• Alternative would increase carbon footprint of region (by >10% by 2020 compared to 1990). • Alternative will decrease resilience/increase vulnerability to climate change in the wider environment. • Alternative could result in increase in significant number of people or property affected by flooding, coastal inundation or sea level rise.
?	Uncertain	• From the level of information available the impact that the alternative would have on this objective is uncertain.

7.7 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 7.3 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the climate change topic.

Table 7.3 Significant effects against the climate change topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
SS1 Retention	++	++	++	In addition to applying the guiding principles of the 2005 Sustainable Development Strategy, including living within environmental limits, the policy makes explicit reference to the need to help meet obligations on carbon emissions and adopt a precautionary approach to climate change by avoiding or minimising potential contributions to adverse change and incorporating measures which adapt as far as possible to unavoidable change. In consequence, retention of the policy is assessed as having a significant positive against the climate change topic.
SS1 Revocation	++	++	++	Paragraph 94 of the NPPF states that local planning authorities should adopt proactive strategies to mitigate and adapt to climate change in line with the provisions of the Climate Change Act 2008. Paragraph 95 of the NPPF seeks to support the move to a low carbon future, by stating that local planning authorities should plan for new development in locations and ways which reduce greenhouse gas emissions; actively support energy efficiency improvements to existing buildings; and when setting any local requirement for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards. Specifically, local planning authorities are expected to identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supplies (paragraph 97). Some counties in East of England have adopted Climate Change Strategies and Renewable Strategies and similarly some district authorities have also adopted such corporate documents. Where present, there is a link with development planning policy and all will remain unaffected by revocation. In consequence, revocation of the policy is assessed as having the same significant benefits as retention of the policy against the climate change topic.
SS8 Retention	++	++	++	The policy seeks to provide networks of accessible green infrastructure linking urban areas with the countryside. Such networks can mitigate the effects of climate change, for example, through flood attenuation.
SS8 Revocation	++	++	++	The core planning principles of the NPPF include the recognition that some green space and open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production). Under paragraph 156 of the NPPF local planning authorities should set out the strategic priorities for the area which will include climate change mitigation and adaptation, conservation and enhancement of the natural and historic environment, including landscape. In consequence, revocation of the policy is assessed as having the same significant benefits as retention of the policy against the climate change topic.
SS9 Retention	++	++	++	The policy includes provisions to ensure that new development is compatible with shoreline management and other longer term flood management plans, so as to avoid constraining effective future flood management or increasing the need for new sea defences.
SS9 Revocation	++	++	++	The NPPF (paragraph 168) makes it clear that Shoreline Management Plans should inform the evidence base for planning in coastal areas which paragraphs 93 -108 deal in detail with flooding and coastal change. Shoreline Management Plans and Catchment Flood Management Plans are prepared by the Environment Agency to provide advice to local authorities and other organisations on the risks associated with coastal processes and the flood risk across each river catchment

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				respectively. Revocation will not affect the presence of SMPs and CFMPs. In consequence, given the principles and guidance in the NPPF and the continuing presence of SMPs and CFMPs, revocation of the policy is assessed as having the same significant benefits as retention of the policy against the climate change topic.
E7 Retention	--	--	--	The policy concerns the roles of airports within the region and notes that Stansted and Luton Airports are outlined in the 2003 Air Transport White Paper. The policy notes that future development at these airports is the responsibility of the relevant airport operator/owner in conjunction with partners and that any proposals for further development should be informed by the 2003 White Paper and the policies of this RSS.. Support is given in the White Paper for the expansion of Norwich and Southend Airports. The policy is reflected in the RES which recognises the importance of an effective transport system (including air transport) that supports sustainable economic growth – a linked priority identified in the RES is to secure increased economic benefit from major international gateways including airports. The policy is linked to an increase in demand for air travel and will lead to an increase in flight movements for airports in the region. This will lead to increased aircraft emissions with the effects being significant for climatic factors.
E7 Revocation	--	--	--	Future development at and related to these airports will continue to be driven by evolving national aviation policy / strategy which is still as set out in the 2003 Aviation White Paper (until it is replaced). The relevant local authorities will decide what policies are appropriate to support the airports (e.g. housing for employees) informed by local needs and national policies on sustainable development. The revocation of the regional policy is likely to result in similar environmental effects to retention.
T1 Retention	++	++	++	The policy seeks to ensure the transport sector makes an appropriate contribution to reducing greenhouse gas emissions, particularly through increasing the use of more sustainable transport modes.
T1 Revocation	++	++	++	Paragraph 17 of the NPPF identifies as a core principle of planning the actively management of patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable. Section 4 (paragraphs 29-41) then deals with promoting sustainable transport. Revocation will not affect the existing Local Transport Plans adopted across the region which all seek to promote more sustainable forms of transport. In consequence, given the NPPF guidance and the presence of the LTPs, there would be similar significant benefits to climate change following revocation of this policy.
ENV1 Retention	++	++	++	The creation, protection, enhancement and management of areas and networks of green infrastructure will contribute to achieving carbon neutral development and flood attenuation.
ENV1 Revocation	++	++	++	The core planning principles of the NPPF include the recognition that some green space and open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production). Under paragraph 156 of the NPPF local planning authorities should set out the strategic priorities for the area which will include climate change mitigation and adaptation, conservation and enhancement of the natural and historic environment, including landscape.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				In consequence, revocation of the policy is assessed as having the same significant benefits as retention of the policy against the climate change topic.
ENV3 Retention	++	++	++	The policy will play a role in enabling habitats and species to adapt to climate change; and by protecting areas of habitat will contribute to mitigating the effects of climate change (e.g. protecting wetlands and coastal mudflats).
ENV3 Revocation	++	++	++	The core planning principles of the NPPF include the recognition that some green space and open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production). Under paragraph 156 of the NPPF local planning authorities should set out the strategic priorities for the area which will include climate change mitigation and adaptation, conservation and enhancement of the natural and historic environment, including landscape. In consequence, revocation of the policy is assessed as having the same significant benefits as retention of the policy against the climate change topic.
ENG1 Retention	++	++	++	New development should be located and designed to optimise its carbon performance to help meet regional and national targets for reducing climate change emissions. The policy encourages the supply of energy from decentralised, renewable and low carbon energy sources and requires new development of more than 10 dwellings or 1000m^2 of non-residential floor space to secure at least 10% of their energy from decentralised and renewable or low-carbon sources, unless this is not feasible or viable.
ENG1 Revocation	++	++	++	Paragraph 94 of the NPPF states that local planning authorities should adopt proactive strategies to mitigate and adapt to climate change in line with the provisions of the Climate Change Act 2008. Paragraph 95 of the NPPF seeks to support the move to a low carbon future, by stating that local planning authorities should plan for new development in locations and ways which reduce greenhouse gas emissions; actively support energy efficiency improvements to existing buildings; and when setting any local requirement for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards. Specifically, local planning authorities are expected to identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supplies (paragraph 97). Some counties in East of England have adopted Climate Change Strategies and Renewable Strategies and similarly some district authorities have also adopted such corporate documents. Where present, there is a link with development planning policy and all will remain unaffected by revocation. In consequence, revocation of the policy is assessed as having the same significant benefits as retention of the policy against the climate change topic.
ENG2 Retention	++	++	++	The policy supports the development of new facilities for renewable power generation with the aim that by 2010 10% of the region's energy and by 2020 17% of the region's energy should to come from renewable sources. The targets exclude energy from offshore wind.
ENG2 Revocation	++	++	++	Revocation will not affect the intent (to move towards a low carbon economy) behind this policy. One of the 12 core principles of planning set out in paragraph 17 of the NPPF is to support the transition to a low carbon future, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy). Similarly, paragraph 94 of the NPPF states that local

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				planning authorities should adopt proactive strategies to mitigate and adapt to climate change in line with the provisions of the Climate Change Act 2008. Under the Renewables Energy Directive, there is a legally-binding target to ensure 15% of energy comes from renewable sources by 2020 in the UK. The Carbon Plan 2011 sets out how the UK is to meet this. Whilst the policy target is higher than the 15% statutory target set out in the Carbon Plan 2011 the direction of travel and transformational shift from the current proportions of renewable and non renewable energy generation mix is very similar. Some local plans adopted before the East of England Plan was adopted do not contain policies on renewable energy and for these authorities there is a clear policy gap. Other pre-2008 local plans contain policies that support the production of renewable energy but do not include a target for its generation for the local authority areas. Many authorities in the East of England region (adopted before and after the Regional Strategy was adopted) contain policies which encourage a certain proportion of on-site renewable and/or decentralised renewable or low carbon energy and require it to be provided for developments over a certain specified size. Plans and core strategies put in place after the adoption of the East of England Plan tend to contain more detailed policies for the development of renewable energy and some make reference to the regional target for renewable energy generation. In the short term, the amount of renewable energy development will be dependent on the decisions of individual local authorities made in the light of their adopted plans, the NPPF and other material considerations.
WAT4 Retention	++	++	++	The policy recognises the significant risk of coastal and river flooding in parts of the East of England and identifies the priorities as defending existing properties from flooding and locating new development where there is little risk of flooding.
WAT4 Revocation	++	++	++	The NPPF and technical guidance on flood risk published alongside the framework sets out how local authorities should manage flood risk and would be unaffected by revocation of the regional strategy. Following revocation of regional strategies, local authorities will be expected to continue to work together across administrative boundaries and with the Environment Agency to plan development that properly minimises the effects of climate change, particularly from flooding and coastal change. For flooding matters, local authorities already have a duty to cooperate under the Floods and Water Management Act 2010. This contains provisions that cover regional working and co-operation such as the establishment of Regional Flood and Coastal Committees and the bringing together of lead local flood authorities (unitary and county councils), who will have a duty to cooperate, to develop local strategies for managing local flood risk. In addition, the Flood Risk Regulations 2009 imposes a duty on the Environment Agency and lead local flood authorities to determine whether a significant flood risk exists in an area and if so to prepare flood hazard maps, flood risk maps and flood risk management plans. In consequence, the significant positive effects from addressing this issue will be similar to those from retaining the policy.

7.7.1 Effects of Revocation

Climate change could significantly affect the East of England because of the extent of its coastline and its low lying geography. Coastal and riverine flooding is already an issue in the region. The region also has some of the hottest summers in the UK, and in the longer term, if temperatures increase as predicted, the urban heat island effect could become increasingly significant if not adequately managed.

There are two key aspects to climate change considered in this assessment. The first is the extent to which the region contributes to global emissions of greenhouse gases. The second is the extent to which the plan facilitates adaptation and mitigation of the impacts of climate change.

The sustainability appraisal undertaken of the proposed changes to the regional strategy published in 2010 concluded that the direct effects of 'greenhouse' gas emissions connected with the implementation of the Plan would be very difficult to identify against a background of existing emissions. Growth of housing, transport movement, waste generation and energy use were likely to mean that the implementation of the Plan would lead to a (cumulative) increase in carbon dioxide emissions in the region. Policies in the proposed changes and final plan sought to limit the increase in emissions, but these were not taken forward.

The final Sustainability Statement notes the inclusion in policy T1 of a new high level objective to manage travel behaviour and demand 'with the aim of reducing road traffic growth and ensuring the transport sector makes an appropriate contribution to the required reduction in greenhouse gases', and an outcome of 'reduced greenhouse gas emissions'. It also notes the inclusion of new policy (ENG1) for improving energy performance in development and reducing carbon emissions, and strengthening the 10% minimum renewable energy consumption requirement for new development included in the submission draft regional spatial strategy; and inclusion (in ENG2) of renewable energy generation targets.

The Climate Change Act 2008 as explained above creates a new approach to managing and responding to climate change in the UK. This includes putting in place legally binding targets with the aim of reducing emissions by at least 80% by 2050 (compared to 1990 levels) and a set of five-year carbon budgets (legally binding limits on the total quantity of greenhouse gas emissions that the country produces over a 5 year period) to 2022. In addition, the Carbon Plan 2011 explains that there will have to be major changes in how energy is generated and used. Energy efficiency will have to increase dramatically across all sectors (see above) including through more efficient buildings and cars. The planning system will have an important, but not necessarily leading, role in taking this forward. Revocation of the plan and the removal of regional policies such as Policy SS1, T1, ENG 1 and ENG2 will not have any material effects. While the requirement in policy ENG2 is for 17% of the region's energy to come from renewable on-shore sources by 2020, would be replaced by the national target of 15% following revocation of the regional strategy, given the amount of off-source wind energy associated

with the region, this reduction is not considered likely to materially affect climatic change of the achievement of the longer term targets.

Policy E7 is linked to an increase in demand for air travel and will lead to an increase in flight movements for airports in the region. This will lead to increased aircraft emissions with the effects being significant for climatic factors. This policy reflects the commitments in the 2003 Aviation White Paper and the airport operators own proposals and as such has been assessed to occur with both revocation or retention.

Turning to the effects of revoking policies such as SS1, SS8, SS9, ENV1 and WAT4 which seek to mitigate the effects of climate change by reducing the risk of flooding and adapting urban environments so they are less vulnerable to higher temperatures, these policies either replicate legal requirements, for example, provisions emanating from the Water Framework Directive or are set out in policy in the NPPF. Urban design will play an important role in climate change adaptation and mitigation, as will green infrastructure linked to Sustainable Drainage Systems (SuDS) within and around developments. This is already well established and expected to continue if the regional strategy is revoked.

One of the 12 core principles of planning set out in paragraph 17 of the NPPF is to support the transition to a low carbon future, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy). Similarly, paragraph 94 of the NPPF states that local planning authorities should adopt proactive strategies to mitigate and adapt to climate change in line with the provisions of the Climate Change Act 2008.

The NPPF seeks to support the move to a low carbon future, by stating that local planning authorities should plan for new development in locations and ways which reduce greenhouse gas emissions; actively support energy efficiency improvements to existing buildings; and when setting any local requirement for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards. Specifically, local planning authorities are expected to identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supplies.

Following revocation of regional strategies, local authorities will be expected to continue to work together across administrative boundaries and with the Environment Agency to plan development that properly minimises the effects of climate change, particularly from flooding and coastal change. For flooding matters, local authorities already have a duty to cooperate under the Floods and Water Management Act 2010. This contains provisions that cover regional working and co-operation such as the establishment of Regional Flood and Coastal Committees and the bringing together of lead local flood authorities (unitary and county councils), who will have a duty to cooperate, to develop local strategies for managing local flood risk. In addition, the Flood Risk Regulations 2009 imposes a duty on the Environment Agency

and lead local flood authorities to determine whether a significant flood risk exists in an area and if so to prepare flood hazard maps, flood risk maps and flood risk management plans.

7.7.2 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

The likely significant effects on climate change associated with the revocation and retention of the quantitative policies are summarised in **Table 7.3** for policy ENG2. Revocation will not affect the intent (to move towards a low carbon economy) behind the revoked policy. One of the 12 core principles of planning set out in paragraph 17 of the NPPF is to support the transition to a low carbon future. Under the Renewables Energy Directive, there is a legally-binding target to ensure 15% of energy comes from renewable sources by 2020 in the UK. The Carbon Plan 2011 sets out how the UK is to meet this. Whilst the policy target is higher than the 15% statutory target set out in the Carbon Plan 2011 the direction of travel and transformational shift from the current proportions of renewable and non renewable energy generation mix is very similar. The legally binding targets also apply if policy ENG2 is retained leading to the same significant positive effects as revocation of the policy.

The assessment has found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

7.7.3 Effects of Retention

Retaining the regional strategy would see continuation of the baseline identified above. The more recent legislative and national policy requirements which have come into effect since the regional strategy was adopted would in most cases steer development choices in the region, particularly as the regional

strategy became more out of date.

7.8 Mitigation Measures

No mitigation measures were identified as revocation would not have a significant on climatic factors.

A8. Material Assets

8.1 Introduction

The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of the proposals on revoking the regional strategies on material assets including waste and minerals. Information is presented for both national and regional levels.

Waste management in this context is defined as the processing, recycling or disposal of a range of waste types including municipal, commercial and industrial, construction, excavation and demolition and hazardous wastes. However, it is important to note that consideration of the management of waste links to a number of other SEA topics, the most relevant being climate change given the potential for waste to be recovered for energy use.

8.2 Summary of Plans and Programmes

8.2.1 International

The ***Waste Framework Directive*** 75/442/EEC as amended by 91/156/EEC, 91/92/EEC and 2008/98/EC provides the overarching framework for waste management at the EU level. It relates to waste disposal and the protection of the environment from harmful effects caused by the collection, transport, treatment, storage and tipping of waste. In particular, it aims to encourage the recovery and use of waste in order to conserve natural resources. The key principles of the Directive include the 'Waste Management Hierarchy' which stipulates waste management options based on their desirability. In order, these are: prevention; preparing for re-use; recycling; other recovery, e.g. energy recovery; and disposal. Key objectives are to reduce the adverse impacts of the generation of waste and the overall impacts of resource use. This should be done through a variety of mechanisms, including:

- by 2020 requiring member states to recycle 50% of their household waste and 70% of their non-hazardous construction and demolition waste;
- applying the waste hierarchy - promoting waste minimisation followed by reuse and recycling , other recovery (such as energy recovery) and disposal - as a priority order in waste prevention and management legislation and policy;
- ensuring that four specified materials (paper, metal, plastics and glass) are collected separately by 2015,

- taking measures as appropriate to promote the re-use of products and preparing for re-use activities; and
- extending the self-sufficiency and proximity principles to apply to installations for recovery of mixed municipal waste from households.

The Directive was transposed into English legislation through the Waste (England and Wales) Regulations 2011 (SI2011 No.988).

A compromise agreement was reached between the Council of Environment Ministers and the European Parliament in June 2008 on revisions to the Waste Framework Directive. The main changes include EU-wide targets for reuse and recycling 50% of household waste by 2020, and for reuse, recycling and recovery of 70% of construction and demolition waste by 2020. In this context, the ***Landfill Directive*** (European Commission, 1999) focuses on waste minimisation and increasing levels of recycling and recovery. The overall aim of the Directive is to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air and on the global environment, including the greenhouse effect as well as any resulting risk to human health from the landfilling of waste, during the whole lifecycle of the landfill. The Directive sets the target of reducing biodegradable municipal waste landfilled to 35% of that produced in 1995 by 2020.

There are a number of **Producer Responsibility Directives** relating specifically to consumer products. Their purpose is to require businesses to reuse, recover and recycle waste which comes from products they produce, and each Directive sets national targets for recovery and recycling of these wastes.

The ***EU Thematic Strategy on the Prevention and Recycling of Waste (2002-2012)*** is a long-term strategy aims to help Europe become a recycling society that seeks to avoid waste and uses waste as a resource.

The ***Basel Convention*** came into force in 1992 and is a global agreement, ratified by several member countries and the European Union, for addressing the problems and challenges posed by hazardous waste. The key objectives of the Basel Convention are:

- to minimise the generation of hazardous wastes in terms of quantity and hazardousness;
- to dispose of them as close to the source of generation as possible; and
- to reduce the movement of hazardous wastes.

8.2.2 National

UK

Environmental Permitting (England and Wales) Regulations 2010 SI 675 provides a system for environmental permits and exemptions for industrial activities, mobile plant, waste operations, mining waste operations, water discharge activities, groundwater activities and radioactive substances activities. It also sets out the powers, functions and duties of the regulators.

England

The **Waste Strategy (2007)** translates the principles of the previous EU Waste Framework Directive into UK policy. Its key objectives include:

- Decoupling waste growth (in all sectors) from economic growth and put more emphasis on waste prevention and re-use;
- Meeting and exceeding the Landfill Directive diversion targets for biodegradable municipal waste in 2010, 2013 and 2020;
- Increase diversion from landfill of non-municipal waste and secure better integration of treatment for municipal and non-municipal waste;
- Secure the investment in infrastructure needed to divert waste from landfill and for the management of hazardous waste; and
- Get the most environmental benefit from that investment, through increased recycling of resources and recovery of energy from residual waste using a mix of technologies.

The Strategy sets national targets for:

- Reducing the amount of household waste that is not either re-used, recycled or composted;
- Recycling and composting of household waste – at least 40% by 2010, 45% by 2015 and 50% by 2020; and
- Recovery of municipal waste – 53% by 2010, 67% by 2015 and 75% by 2020.

The Coalition Government carried out a ***National Review of Waste Policy in England (2011)***, looking

at the most effective ways of reducing waste, maximising the money to be made from waste and recycling and considering how waste policies affect local communities and individual households. The report set out a number of 'Principal Commitments' which aims to achieve a more sustainable approach to the use of materials, deliver environmental benefits and support economic growth. These include:

- promoting resource efficient product design and manufacture and target those waste streams with high carbon impacts, both in terms of embedded carbon (food, metals, plastics, textiles) and direct emissions from landfill (food, paper and card, textiles, wood);
- promoting the use of life cycle thinking in all waste policy and waste management decisions and the reporting of waste management in carbon terms, as an alternative to weight-based measures;
- developing a comprehensive Waste Prevention Programme and in the meantime will work with businesses and other organisations across supply chains on a range of measures designed to drive waste reduction and re-use as part of a broader resource efficiency programme; and
- continue to help local communities develop fit for purpose local solutions for collecting and dealing with household waste and work with councils to meet households' reasonable expectations for weekly collections, particularly of smelly waste.

Defra's ***Strategy for Hazardous Waste Management in England (2010)*** sets out the following principles for hazardous waste management:

- waste hierarchy;
- infrastructure provision;
- reduce our reliance on landfill;
- no mixing or dilution;
- treatment of hazardous organic wastes; and
- end reliance on the use of Landfill Directive waste acceptance criteria derogations.

PPS10: Planning for Sustainable Waste Management (2005) sets out the national planning framework in relation to waste. It states that planning has a key role in delivering sustainable waste management through both the development of appropriate strategies for growth, regeneration and the prudent use of resources and by providing sufficient opportunities for the development of new waste management facilities. PPS10 states that:

- Waste planning authorities should identify in their plans (development plan documents) sites and

areas suitable for new or enhanced waste management facilities for the waste management needs of their area. Development plans form the framework within which decisions on proposals for development are taken;

- The regional planning body should convene a broadly-based 'Regional Technical Advisory Board' (RTAB) to provide advice on the preparation of the strategy for waste management in the Regional Spatial Strategy and its implementation. PPS10 sets out the role and composition of a RTAB - it should be broadly based drawing from those with a direct interest in and knowledge of sustainable waste management; and

- In deciding which sites and areas to identify for such facilities, waste planning authorities should assess their suitability against criteria set out in PPS10. This includes the physical and environmental constraints on development and the cumulative effect of previous waste disposal facilities on the well-being of the local community.

The ***Natural Environment White Paper (2011)*** sets out the ambition that the use of peat will be reduced to zero in England by 2030. This will contribute to the protection of important lowland peat habitats (both here and overseas) and significant carbon stores, and will promote a shift towards the greater use of waste-derived and by-product materials. It also sets ambitious targets for reducing use within individual sectors, to drive action and provide clarity about the long-term direction of policy.

The ***Resource Security Action Plan (2012)*** provides a framework for business action to address risks about the availability of some non-renewable raw materials (including minerals), and sets out high level actions to build on the developing partnership between Government and businesses to address resource concerns. This Action Plan emphasizes the need to make best use of resources currently in use, reducing as far as practicable the quantity of material used and waste generated, and using as much recycled and secondary material as possible, before securing the remainder of material needed through new primary extraction.

With the exception of PPS10 which will remain in place until the National Waste Management Plan is published, the ***National Planning Policy Framework (2012)*** has replaced Planning Policy Statements, Planning Policy Guidance notes, Minerals Planning Statements, Minerals Planning Guidance and some Circulars. It sets out the Government's planning policies for England and how these are expected to be applied including in plan making and decision-taking on planning applications..

The Framework expects local planning authorities to set out the strategic priorities for the area in the local plan and include strategic policies to deliver the provision of infrastructure for waste management and the provision of minerals. In doing so, they should work with other relevant organisations and providers to assess the quality and capacity of infrastructure for waste and its ability to meet forecast demands. Specifically, minerals planning authorities are expected to develop and maintain an

understanding of the mineral resource in their areas and assess the projected demand for their use, taking full account of opportunities to use materials from secondary and other sources which could provide suitable alternatives to primary materials.

In order to facilitate the sustainable use of minerals, the Framework sets out a number of expectations relating to specific minerals for local authority plan-making and decisions on planning applications. In doing so the Framework it includes safeguards so as to ensure permitted operations do not have unacceptable adverse impacts on the natural and historic environment or human health.

8.2.3 East of England

There are seven waste and minerals planning authorities in the region, who under the Planning and Compulsory Purchase Act 2004 have responsibilities for producing waste management strategies and mineral plans. Of the seven, four have prepared core strategies following publication of the Regional Strategy in May 2008. Such plans include aims to progressively reduce the amount of waste which goes to landfill, achieve self-sufficiency in managing local wastes; and provide alternative waste management treatment facilities to landfill.

8.3 Overview of the Baseline

8.3.1 National

UK

In 2004, total UK non-radioactive waste arisings were around 335 million tonnes. Of this 32% was construction and demolition waste; 29% was mining and quarrying waste; 13% was industrial waste; 12% was commercial waste; 9% was household waste; 5% was dredging waste; and agricultural and sewage wastes made up for less than 1% each. Commercial and industrial waste arisings were therefore around 0.84 million tonnes in 2004. In 2007, 73 million tonnes of waste were sent to landfill (a decrease of 19.5% since 2002). The amount of waste recycled or composted has increased accounting for 34% of waste in 2007/08[148].

In 2002, 41% of commercial and industrial waste arisings were landfilled; 33% were recycled; 9% were reused; 4% were treated; 4% were thermally treated; 4% were unrecorded; 3% went to land recovery;

[148] Defra, Sustainable Development Indicators in your Pocket 2009,
http://www.defra.gov.uk/sustainable/government/progress/documents/SDIYP2009_a9.pdf

2% were transferred; and 1% was unsampled[149].

The total hazardous waste produced in UK in 2009 was 4,437,212 tonnes[150].

England

In 2004, total non-radioactive waste arisings in England were around 272,000,000 tonnes. Of this 32% was construction and demolition waste; 30% was mining and quarrying waste; 13% was industrial waste; 11% was commercial waste; 9% was household waste; 5% was dredged material; and agricultural and sewage wastes made up for less than 1% each[151].

The generation of household waste continued to decrease between the financial years 2009/10 and 2010/11, with a 0.9 per cent reduction to 23.5 million tonnes. This continues the slowing in a reduction of household waste since 2007/08.[152]

Waste to landfill has decreased minimally between 2009 and 2010. It fell by less than two per cent between 2009 and 2010 and has fallen by around 46 per cent since 2000. One of the principal reasons is the implementation of the Landfill Directive. Many older landfill sites that did not meet the stringent requirements of the Directive had to close by July 2009 at the latest and diversion targets for biodegradable municipal waste to landfill increase year on year. Also the slow down in economic growth in 2010 is associated with the minimal decrease in waste generated.[153]

The proportion of household waste sent for recycling, composting or reuse between April 2010 and March 2011 in England was 41.5 per cent, increasing from 39.7 per cent in the year April 2009 and March 2010.

A total of 47.9 million tonnes of commercial and industrial (C&I) waste were generated in England in 2009, a decrease from 67.9 million tonnes in 2002-3. C&I waste was roughly evenly split between the commercial and industrial sectors.

During 2010 in England and Wales over 3.7 million tonnes of hazardous waste were managed,

[149] Defra, edigest waste statistics,

http://www.defra.gov.uk/environment/statistics/waste/wrindustry.htm

[150] Environment Agency 2009 Hazardous Waste Arisings figures, http://www.environment-agency.gov.uk/static/documents/Research/EWHaz09_Final.xls

[151] Waste Strategy for England 2007, Defra, http://www.defra.gov.uk/environment/waste/strategy/strategy07/documents/waste07-strategy.pdf

[152] http://www.defra.gov.uk/statistics/files/mwb201011_statsrelease_v2.pdf

[153] http://www.environment-agency.gov.uk/research/library/data/132641.aspx

generated from nearly 160,000 businesses and industry, with:

- 14 per cent landfilled;
- 25 per cent transferred, before final disposal or recovery;
- 21 per cent treated;
- 30 per cent recycled, recovered or re-used; and
- 9 per cent incinerated.

This compared to the total hazardous waste produced in England alone in 2009 was 4,095,477 tonnes.[154]

8.3.2 East of England

Waste

In March 2010, there were 545 sites licensed by the Environment Agency to handle waste. In 2009, nearly 12 million tonnes of waste was deposited and processed by these licensed sites in the region, as follows:

- 3.3 million tonnes (28%) was inert waste;
- 0.2 million tonnes (2%) was hazardous waste (largely oily waste and asbestos); and
- 8.4 million tonnes was non-hazardous waste.

In terms of the source of the waste arisings, municipal solid waste comprised 3.2 million tonnes (40% of the non-hazardous waste element), a decline of 2.8% than in 2008/9. Of this total, 1.6 million tonnes was sent to landfill (40% lower than in 2001 and 9% lower than 2008/9), and 1.5million tonnes was recycled, reused or composted. The majority of local authorities met or exceed the 40% target set out in the Plan. Available landfill capacity decreased slightly, from 148million cubic metres in 2008 to 144 million cubic metres in 2009.

[154] Environment Agency 2009 Hazardous Waste Arisings figures, http://www.environment-agency.gov.uk/static/documents/Research/EWHaz09_Final.xls

Minerals

The East of England has a variety of mineral assets. They are a finite resource which can only be worked where they occur. While extraction can have significant environmental impacts, there may be opportunities for biodiversity enhancement and other improvements to the landscape on completion of restoration. The Government policy aim is to ensure that there is an adequate supply of minerals to meet the needs of society, but that this must be done within environmental limits. In addition, the East of England is also the point of entry for marine dredged aggregates, crushed rock from the Midlands and South West, and other minerals - notably oil and gas (by sea and by pipeline). There is also some export of minerals mainly for construction use in London and elsewhere in the UK by road, rail and sea.

Total sales of primary aggregate produced in the region in 2010 was 9.517 million tonnes, compared to 14.335 million tonnes in 2005. Total sales therefore declined by 33% between 2005 and 2010.

Appendix 2: Aggregate Sales in the East of England (2001–2010)

SALES (Thousand Tonnes)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	3 yr Avg (08-10)	5 yr Avg (06-10)	10 yr Avg (01-10)
Sand and Gravel													
Bedford, Central Bedfordshire & Luton	1,749	1,906	1,663	1,965	1,683	1,487	1,612	1,016	944	1,040	1,000	1,220	1,507
Cambridgeshire & Peterborough	2,859	2,733	2,628	2,751	3,221	2,763	2,820	3,052	2,315	1,800	2,389	2,550	2,694
Essex, Thurrock & Southend	4,231	4,659	4,471	4,300	4,144	4,066	4,091	3,288	2,794	2,986	3,023	3,445	3,903
Hertfordshire	1,674	1,539	1,260	1,047	965	1,231	1,010	989	1,214	1,173	1,125	1,123	1,210
Norfolk	2,748	2,587	2,488	2,561	2,382	2,450	1,978	1,586	1,378	1,186	1,383	1,716	2,134
Suffolk[4]	1,690	1,580	1,430	1,420	1,475	1,670	1,730	1,403	1,037	1,104	1,181	1,389	1,454
East of England	**14,951**	**15,004**	**13,940**	**14,044**	**13,870**	**13,667**	**13,241**	**11,334**	**9,682**	**9,289**	**10,102**	**11,443**	**12,902**
Rock													
Cambridgeshire Limestone	318	289	312	279	306	316	223	297	271	170	246	255	278
Norfolk Carstone	180	131	131	173	159	146	196	216	66	58	113	136	146

[4] Previously published 2008 figure for Suffolk did not include late returns received from operators. Receipt of sales returns from these operators after publication of the AMR has amended the sales figure for 2008 from 1.351mt to 1.403mt.
Previously published 2009 figure for Suffolk included estimated figures for some operators. Receipt of sales returns from these operators after publication of the AMR has amended the sales figure for the 2009 from 0.955mt to 1.037mt.

The main source of aggregate in the east of England is sand and gravel for use in the construction industry.

Total reserves of primary aggregate in the region in 2010 were 151.056 million tonnes, compared to 168.645 million tonnes in 2005. The distribution of permitted reserves for sand and gravel in 2010

between Mineral Planning Authorities remained broadly comparable with recent years. One Mjneral Planning Authority saw an increase in their reserve proportion in 2010, which was Bedford, Central Bedfordshire and Luton. Cambridgeshire and Peterborough saw a decrease in the proportion of sand and gravel reserves.

The other remaining East of England Mineral Planning Authorities' proportion of sand and gravel reserves for 2010 remained the same as the previous year.

Appendix 3: Aggregate Reserves in the East of England (2001-2010)

RESERVES (Thousand Tonnes)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 [5]	3 yr Avg (08-10)	5 yr Avg (06-10)	10 yr Avg (01-10)
Sand & Gravel													
Bedford, Central Bedfordshire & Luton	31,216	26,227	30,004	29,450	17,787	21,492	25,341	19,334	20,364	22,898	20,865	21,886	24,411
Cambridgeshire & Peterborough	47,892	56,637	53,111	49,800	48,504	48,504	45,684	45,490	49,918	46,200	47,203	47,159	49,174
Essex, Thurrock & Southend	68,476	57,686	59,639	54,600	51,000	50,122	46,684	39,191	36,706	37,358	37,752	42,012	50,146
Hertfordshire	14,717	12,582	11,551	9,721	12,585	11,466	10,841	10,869	10,619	10,786	10,758	10,916	11,574
Norfolk	21,793	23,211	23,283	20,977	17,027	17,509	17,393	16,069	18,021	17,017	17,036	17,202	19,230
Suffolk[6]	13,700	14,300	15,900	16,010	14,470	15,270	15,640	15,505	14,880	13,615	14,667	14,982	14,929
East of England	197,794	190,643	193,488	180,558	161,373	164,363	161,583	146,458	150,508	147,874	148,280	154,157	169,464
Rock													
Cambridgeshire Limestone	5,816	4,714	4,660	4,290	3,900	3,137	3,137	2,692	1,625	1,400	1,906	2,398	3,537
Norfolk Carstone	3,884	3,753	3,702	3,570	3,372	2,850	2,850	1,770	1,925	1,782	1,826	2,235	2,946

[5] Please note that for some MPAs there has been reassessment of reserves by operators at some existing sites during 2010.
[6] Previously published 2009 figure for Suffolk did not include late returns received from operators. Receipt of reserves figures from these operators after publication of the AMR has amended the reserves figure for 2009 from 13.08mt to 14.88mt.

Although aggregates are by far the main source of mineral extraction in the east of England region, there are a number of other mineral resources that can be found in the area.

Silica sand is an essential raw material for many industrial processes, including the manufacture of glass. Norfolk is one of the most important sources of silica sand in Britain, accounting for over 10 per cent of total output and a much larger proportion of glass sand production. The majority of the resources of silica sand are to the east of King's Lynn from upper Sandringham to the west of Hunstanton, southwards to Ryston (near Downham Market) in south-west Norfolk.

The three year average of silica sand extraction in Norfolk from 2008-2010 was 615,000 tonnes. This is a slight increase on the previous three year average (from 2007-2009) of 609,000 tonnes. The silica sand reserve at the end of 2010 was 5.574 million tonnes.

Silica sand sales in the central Bedfordshire region were 670,000 tonnes in 2010, a significant increase from a sale figure of 261,000 tonnes in 2009 (figures prior to 2009 are unavailable). The apparent large increase in Silica sand extraction between 2009 and 2010 may be due to an increase in the number of survey returns received in 2010, as well as the growing number of uses of Silica sand.

Several other minerals are extracted in the east of England in small quantities, including clay (used in the engineering of landfill sites and in flood protection schemes), chalk (used primarily used as a liming agent for farmland) and peat (used in the horticulture industry).

8.4 Environmental Characteristics of those Areas most likely to be Significantly Affected

8.4.1 National

UK

Although reuse and recycling rates for industrial wastes are increasing, due to the combined effects of statutory, reputational and financial drivers, there are still high levels of waste being disposed of, with limited opportunity for recycling hazardous and very low-level radioactive materials. There is pressure to achieving as close to zero landfill as possible throughout the UK[155, 156].

Commercial and industrial waste data is not routinely collated. Defra carried out a national survey of commercial and industrial waste at the end of 2010 This survey collected data from 4,074 businesses, plus data from pollution, prevention and control returns (PPC) and other sources, and was designed to produce estimates of arisings at a national level. Commercial and industrial waste is subject to similar pressures as municipal waste, namely increased waste prevention, adoption of recycling and reuse alternatives and reduced reliance on landfill.

[155] Wales Waste Information 2008, Environment Agency, http://www.environment-agency.gov.uk/research/library/data/111408.aspx

[156] Scotland's Zero Waste Plan Data, Scottish Environment Protection Agency, June 2010, http://www.sepa.org.uk/waste/waste_data/zero_waste_plan_data.aspx

8.4.2 East of England

Waste

The most common mode of disposal is landfill although at 40% lower than in 2001 there is clear downwards trend (reflecting progress towards the Landfill Directive targets).

Combining municipal and commercial and industrial waste streams, most waste in the region arose in Essex (2 million tonnes) with the other counties producing between 800,000 and 1.6 million tonnes each.

Of the waste arising within the region, the vast majority was dealt with within the region (84%) with the remainder exported mainly to London (0.5 million tonnes) and the South East (0.25 million tonnes). A further 0.125million tonnes exported to both the North East and West Midlands regions. Exported waste went mainly for recycling, composting and landfill disposal.

In 2009, 4.9million tonnes were imported, of which 3.4 million tonnes was non-hazardous waste. Waste from London comprised 1.9 million tonnes (40%) of this overall total region, and 1.6million (33%) from “unknown” origins.

Minerals

In Cambridge and Peterborough, a variety of important mineral resources are found within the plan area. This area contains a wide diversity of landscapes, including the flat landscape of the Fens and habitats and gently undulating clay lands, including some of national and international importance, as well as significant mineral deposits. The underlying geology of the area is relatively simple. Extensive deposits often occur under high quality agricultural land or in areas valued for their biodiversity and landscapes, such as river valleys, which need to be protected. Other minerals quarried include chalk, chalk marl and brick clay. Low purity chalk marl is found mainly on the valley sides of the rivers Cam and Rhee. The chalk and lower greensand deposits in the south and the limestone in the northwest are also important aquifers and require protection from inappropriate minerals and waste developments.

In Central Bedfordshire, the concreting sands and gravels are generally found in river valley and glacial deposits in the Ivel and Ouse valleys, whilst building sands and silica sand deposits are predominantly worked from deposits in the Greensand Ridge, which runs across the County from Leighton Buzzard in the west to Sandy in the east of the county.

Essex hosts a variety of important lowland habitats. In particular, the Essex coast is recognised as one of the most important for wildlife in the UK, with significant areas protected by national and international

designations mainly due to the large numbers of wildfowl and wading birds using the coast and estuaries. The main deposits exploited for sand and gravel are part of river terrace sand and gravels that are spread widely across north and central Essex but seeks to avoid any designated areas.

In Norfolk, sand and gravel is extracted throughout the county, whilst Silica sand is quarried in the Leziate area of West Norfolk.

Suffolk has an extensive spread of till (boulder clay) which is underlain by chalk. The Brecks area is characterised by wind blown sands, whereas Mid Suffolk is dominated by heavier clays. The Coastal Crag is made up of marine sands and gravels. Suffolk contains a range of sites with ecological designations, including six Ramsar sites, seven Special Protection Areas, 8 Special Areas of Conservation, 283 Sites of Special Scientific Interest (of which 36 are geological designations) and 25 Local Nature Reserves. Around 12% of Suffolk's landscape is designated as an Area of Outstanding Natural Beauty (AONB). Sand and gravel extraction takes place throughout the county but seeks to avoid these areas where possible. Clay is extracted on a small scale at Chillesford (a site in the Suffolk Coast and Heaths Area of Outstanding Natural Beauty).

8.5 Likely Evolution of the Baseline

8.5.1 National

UK

Non-radioactive waste management in the UK is moving towards greater reuse and recycling and less landfill. Between 2002 and 2007 in the UK, there was 19.5% decrease in waste disposed of in landfill sites. This includes waste produced by households, commerce and industry and construction and demolition.[157]

Hazardous waste production in England and Wales has decreased since 2004 by 17%. The majority of the decrease is due to the reduction in liquid inputs to one treatment facility on Teesside in 2009.[158]

England

In England, the total amount of non-radioactive waste sent to landfill has decreased from 80,000,000

[157] Waste Strategy for England 2007, Defra

[158] Environment Agency Waste Trends, http://www.environment-agency.gov.uk/research/library/data/123472.aspx

tonnes annually in 2000/01 to 72, 500,000 tonnes in 2004/05 at licenced landfill sites: with falls from 50% to 44% for industrial and commercial waste between 1998/99 and 2002/03.4 Between 1998/99 and 2002/03 there was a 1% reduction in the total amount (in tonnes) of commercial and industrial waste produced in England. Within this total, industrial waste had reduced to 38,000,000 tonnes in 2002/3 while the amount of commercial waste had grown to 30,000,000 tonnes. During this period, the tonnage of commercial and industrial waste sent to landfill has decreased, with more waste handled by transfer stations and treatment facilities[159]. In 2002/3 for the first time, recycling and reuse had overtaken landfill as the most common method of waste management. Overall 44% was sent to landfill and 45% recycled.

Defra has established targets for England which includes a greater focus on waste prevention seeking to achieve a fall of 50% per person of household waste arising. Recycling and composting of household waste targets have been established - at least 40% by 2010, 45% by 2015 and 50% by 2020; and recovery of municipal waste - 53% by 2010, 67% by 2015 and 75% by 2020.[160]

On the basis of the policies set out in Waste Strategy for England 2007, levels of commercial and industrial waste landfilled are expected to fall by 20% by 2010 compared to 2004. The Government is committed to Waste Framework Directive target to recover at least 70% of construction and demolition waste by 2020.

8.5.2 East of England

The national trend in waste being disposed of to landfill has been reflected in the East of England, with quantities decreasing by 40% between 2001 and 2009.

Authorities include figures for waste arisings in their waste and mineral plans, allowing for population increases over the period for waste reduction in their waste and mineral plans. For example in Cambridgeshire and Peterborough Minerals and Waste Core Strategy (adopted July 2011) the overall amounts of waste are expected to increase as follows:

- 5.1 million tonnes in 2011;
- 5.3 million tonnes in 2016;
- 5.6 million tonnes in 2021;
- 6.0 million tonnes in 2026.

[159] Commercial and Industrial Waste in England: Statement of aims and actions 2009, Defra, October 2009, http://www.defra.gov.uk/environ ment/waste/topics/documents/commercial-industrial-waste-aimsactions-091013.pdf
[160] Waste Strategy for England 2007, Defra

Plans also include recycling and recovery targets for the different waste streams. For example in Cambridgeshire and Peterborough as follows:

- Municipal Solid Waste: aiming to recycle/compost 67% of waste arisings by 2026;
- Commercial and Industrial aiming to recycle/compost 88% of waste arising by 2026;
- Construction and demolition aiming to recycle/recover 70% of waste arising by 2026.

Current targets are not available across all seven authorities.

8.6 Assessing significance

Table 8.4 sets out guidance utilised during the assessment to help determine the relative significance of potential effects on the material assets topic. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

Table 8.4 Approach to determining the significance of effects on material assets

Effect	*Description*	*Illustrative Guidance*
++	Significant positive	• Alternative will increase capacity of waste management infrastructure. • Alternative would create no additional hazardous or non-recyclable waste, whilst maximising the proportion of materials that are re-useable or recyclable.
+	Positive	• Alternative would not create an increase in the volume of hazardous and non-recyclable wastes that require disposal. • Alternative would increase the volume of materials reused and recycled.
0	No (neutral effects)	• Alternative would not create an increase in the volume of hazardous and non-recyclable wastes that require disposal. • Alternative will have no effect on the capacity of waste management infrastructure.
-	Negative	• Alternative will increase volumes of hazardous and non-recyclable waste that would require disposal. • Alternative may have a limited adverse impact on the capacity of existing waste management systems.

Effect	Description	Illustrative Guidance
--	Significant negative	• Alternative will generate a high volume of hazardous and non-recyclable waste that would require disposal. • Alternative will impede the achievement of government and national targets for minimising, recovering and recycling waste. • Alternative will have a significant adverse impact on the capacity of existing waste management systems (e.g. leading to the permitting of additional landfill capacity to accommodate waste).
?	Uncertain	• From the level of information available the effects the impact that the alternative would have on this objective is uncertain.

8.7 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 8.5 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the material assets topic.

Table 8.5 Significant Effects against the Material Assets Topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
E1 Retention	--	--	--	The policy sets out indicative targets for a net growth in jobs in the region over the plan period. It requires local development documents to provide an enabling context to achieve the targets. The demand for construction materials and energy is likely to increase while the amount of waste generated is also likely to increase.
E1 Revocation	--	--	--	The policies on the indicative targets for employment have been examined in all adopted local plans and/or core strategies in the East of England region. The analysis shows that the indicative targets for net growth in jobs are reflected in local plans or core strategies adopted after the adoption of the East of England Plan, or plans adopted just before the East of England Plan was adopted. So for these 24 local authority areas, in the short term (ie including day one of revocation of the regional strategy) there will be no impact of removing the East of England policy the equivalent targets are already set out within the relevant local plan. For the other 23 local plans in the region, the vast majority allocate land for employment (see policy E2) but no direct link is given to the number of jobs this is intended to support. For these authorities the short term impact is more difficult to determine since allocations of land within these plans cannot be directly linked to the number of jobs these are intended to support. However, overall the same significant negative effects as retention as identified.
E2 Retention	--	--	--	The policy seeks the allocation of an adequate range of sites/premises to accommodate the full range of sectoral requirements to achieve the indicative job growth targets of Policy E1. The effects will be the same as retention of policy E1
E2 Revocation	--	--	--	See the commentary of the effects of revocation of policy E1.
E3 Retention	--	--	--	The policy seeks the identification in LDDs of readily-serviceable strategic employment sites at specific strategic locations in order to deliver Policy E1..
E3 Revocation	--	--	--	See the commentary of the effects of revocation of policy E1.
E4 Retention	--	--	--	The policy seeks to support the growth on intra- and inter-regional sectors and business clusters. The exact impact will depend on the scale, nature and specific location of development, but is considered to be significant because of the increased use of

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				construction materials and energy.
E4 Revocation	--	--	--	Paragraph 21 of the NPPF states that local planning authorities should plan positively for the location, promotion and expansion of clusters or networks of knowledge driven, creative or high technology industries. The exact impact of revocation will depend on the scale, nature and specific location of development, but is considered to be significant because of the increased use of construction materials and energy.
E7 Retention	--	--	--	Significant negative effects were identified through the increased use of construction materials and energy through airport development.
E7 Revocation	--	--	--	Future development at and related to these airports will continue to be driven by evolving national aviation policy / strategy which is still as set out in the 2003 Aviation White Paper (until it is replaced). The effects are therefore likely to be the same as retention of the policy.
H1 Retention	--	--	--	The increased provision of housing is likely to lead to significant demand for construction material and energy.
H1 Revocation	?	--	--	Revocation of the Regional Strategy will not remove the need for more houses within the region. Indeed it is Government policy to boost significantly the supply of housing, for example through initiatives such as the Community Infrastructure Levy, New Homes Bonus and the local retention of business rates are intended to encourage a more positive attitude to growth and allow communities to share the benefits and mitigate the negative effects of growth. However, in the short and medium terms following revocation the impact will be uncertain in those 23 local authorities that do not have a plan that was in conformity with the regional strategy. For those authorities, the RS provided clarity on the quantum of development required; however, in the short and medium term following its revocation, there may be a temporary period where some local authorities revert to the original Local Plan whilst it develops a replacement. The amount of development anticipated in this period may be lower than if the RS were in place. This will mean that the negative effects associated with development (on biodiversity, water, air, material assets etc) will be lessened as would the beneficial effects (on population). For the 24 local authorities with core strategies and/or local plans in place that contain housing allocations that are consistent with the housing allocation set out in the regional policy, there will be no impact in the short term of revoking the regional policy. The application of the NPPFs presumption in favour of sustainable development and its policies to boost the supply of housing will help where plans or policies are absent, silent or out of date.
WM1 Retention	++	++	++	The policy reinforces aspects of national policy that will need to apply across the region if waste generation is to be successfully decoupled from economic growth. It respects the European and national policy context and, in seeking to achieve the required shift towards more sustainable waste management, builds on principles set out in the Waste Strategy for England and PPS10. Viewing waste as a resource will have significant benefits to material assets from example by replacing primary aggregate with recycled construction waste and making effective use of recovered energy.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
WM1 Revocation	++	++	++	The objectives of the policy reflect national policy and legislation which will remain in place. The effects on the environment will therefore be the same following revocation.
WM6 Retention	++	++	++	Actively integrating waste management as part of new development, and considering the impact of waste arising as part of construction of new development, in line with Planning Policy Statement 10, will encourage better use of waste as a resource.
WM6 Revocation	++	++	++	Revocation of this policy should not have any different effects as the policy largely reflects national policy in Planning Policy Statement 10.
CH1: Retention	0	--	--	The key aspects of the strategy for Chelmsford are to provide for substantial growth of housing within an allocation of 16,000 for the District as a whole and further increase and diversify its employment base (with benefits to the population but negative effects on water and material assets (linked to waste generation and use of construction materials); maximising the re-use of previously developed land and provide for sustainable urban extensions (with significant adverse impacts on the soil resource in the longer term) and assisting the development of more sustainable transport systems (some benefits for air quality and climatic factors). This policy is reflected in the RES which identifies the London Arc as one of seven Engines of Growth. This will have significant negative effects on material assets particularly in the longer term because of the increased generation of waste and use of construction materials
CH1 Revocation	0	-	--	Chelmsford Borough Council adopted its core strategy in February 2008 just before adoption of the regional strategy. The core strategy identifies (paragraph 1.22) that "the Borough Council is continuing to use the key components and proposals of the Draft East of England Plan, as set out below, as the baseline for the Spatial Strategy. However, the overall Borough-wide Spatial Strategy was designed from the outset to be capable of accommodating a higher housing allocation and is considered able to meet these potential increased growth requirements. Revocation of policy CH1 will leave the 2008 core strategy in place. As this is in conformity with the regional strategy it is considered reasonable to conclude that the same environmental effects are likely following revocation as for retention.
NR1 Retention	-	-	--	The aim is for Norwich to be a regional focus for housing, employment, retail, leisure, cultural and educational development. It seeks significant net additional dwellings over the period 2001-2021. This will have significant negative effects on material assets particularly in the longer term because of the increased generation of waste and use of construction materials
NR1 Revocation	-	-	--	A joint core strategy for Broadland, Norwich and South Norfolk was adopted in March 2011. It underwent SA and is in general conformity with the Regional Strategy. Revocation of policy NR1 will leave decisions to the relevant local authorities set against the policies in the joint core strategy. The general effects on the environment of revocation of the policy are therefore likely to be similar to those of retention. The scoring in this assessment is therefore the same.
SV1	0	-	--	The 2004 Sustainability Appraisal identified that policy SV1 in the medium to long term would help generate substantial employment growth in the area, providing jobs for people in the region and encourage inward investment (significant benefits to population over that

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
Retention				period). the construction and use of the housing provision for the area will lead to significant use of natural resources and energy.
SV1 Revocation	0	-	?	Provision of appropriate infrastructure should help to prevent overloading of water and waste water systems, although this is dependent upon the amount of development taken forward in the longer term, when the Council's IPPS is replaced by a new adopted Local Plan.

8.7.1 Effects of Revocation

The significant adverse effects on material assets are all linked to the increased use of construction materials and energy associated with the quantum of development proposed across the region. The assessment of core strategies and/or local plans indicated that 24 contained housing allocations are consistent with the housing allocation set out in the regional policy. The NPPF seeks to boost significantly the supply of housing and local authorities will need to plan to meet the full objectively assessed needs for market and affordable housing in their housing market area (paragraph 47 of the NPPF) and deliver land for employment. This is likely to lead to similar significant adverse effects on material assets as retention of the Regional Strategy.

Two waste policies WM1 and WM6 seek to reduce the amount of primary minerals required for construction and are therefore identified as bringing significant positive effects. However, as they reflect national policy and legislation which will remain in place. The positive effects on the environment will therefore remain following revocation.

8.7.2 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or

- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

The likely significant effects on material assets associated with the revocation and retention of the quantitative policies are summarised in **Table 8.1** for policies E1, E2, E3, H1, NR1, and CH1. The revocation of all of these policies was identified to have significant negative effects, but these were the same as retaining them. Revocation of SV1 may lead to potential a less than significant effect in the long term but this is uncertain.

The assessment has found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

8.7.3 Effects of Retention

Demand for construction materials and energy will continue if the Regional Strategy is retained and will continue to have significant adverse effects on material assets. Optimum use of recycled materials will reduce but not remove the significant effects.

8.8 Mitigation Measures

Assuming that the level of growth in the region will be more or less the same irrespective of whether the Plan is revoked, the main mitigation measures to address increased demand for construction materials and energy is to make optimum use of recycled materials.

A9. Cultural Heritage

9.1 Introduction

The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of the proposals to revoke regional strategies on cultural heritage. Information is presented for both national and regional levels.

Cultural heritage, including architectural and archaeological heritage, within this context is defined as below-ground and upstanding evidence of past human activity and encompasses artefacts, buried and underwater archaeological sites, earthworks, buildings, battlefields, historic gardens, historic landscapes, wrecks, hedgerows and ancient woodland.

There are links between the cultural heritage topic and other topics in the SEA, specifically landscape and land use (as part of soils and geology).

9.2 Summary of Plans and Programmes

9.2.1 International

The ***World Heritage Convention*** aims to promote co-operation amongst nations to protect heritage that is of such outstanding value that its conservation is important for current and future generations; and established a register of World Heritage Sites. It is intended that properties on the World Heritage List will be conserved for all time. Member states commit themselves to ensure the identification, protection, conservation, and presentation of World Heritage properties.

The World Heritage Committee's ***Operational Guidelines for the Implementation of the World Heritage Convention (2008)*** set out: the procedure from the inscription of properties on the World Heritage List and the List of World Heritage in Danger; the protection and conservation of World Heritage properties; the granting of International Assistance under the World Heritage Fund; and the mobilisation of national and international support in favour of the Convention.

The ***UNESCO Convention for the Protection of the Archaeological Heritage of Europe (revised)*** is a Europe-wide international treaty which establishes the basic common principles to be applied in national archaeological heritage policies. It supplements the general provisions of the ***UNESCO World Heritage Convention (1972)*** and aims to protect archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study. It sets out a framework which requires the member states to:

- maintain an inventory of archaeological heritage and designated protected monuments and areas;
- create archaeological reserves; and
- for finders of any element of archaeological heritage to report and make it available to the competent authority.

The ***European Convention on the Protection of the Archaeological Heritage (1992)*** made a number of important agreements including setting the definition of archaeological heritage as 'all remains and objects and any other traces of mankind from past epochs….shall include structures, constructions, groups of buildings, developed sites, moveable objects, monuments of other kinds as well as their context, whether situated on land or under water.

9.2.2 National

UK

The ***Ancient Monuments and Archaeological Areas Act 1979*** provides for the scheduling of ancient monuments and offers the only legal protection specifically for archaeological sites. The ***Planning (Listed Buildings and Conservation Areas) Act 1990*** outlines the level of protection received by listed buildings, scheduled monuments and buildings within Conservation Areas.

There are a number of other Acts which afford protection to cultural and historical assets, including the ***Protection of Wrecks Act 1973***, which provides protection for shipwrecks of historical, archaeological or artistic value; the ***Protection of Military Remains Act 1986***, which provides protection for the wreckage of military aircraft and designated military vessels, and the ***Treasure Act 1996***, which sets out procedures for dealing with finds of treasure, its ownership and rewards, in England, Wales and Northern Ireland.

Conservation areas were introduced by the **Civic Amenities Act 1967** and are designated for their special architectural and historic interest. Most conservation areas are designated by the local planning authority. English Heritage can designate conservation areas in London, where they have to consult the relevant London Borough Council and obtain the consent of the Secretary of State for National Heritage. The Secretary of State can also designate in exceptional circumstances - usually where the area is of more than local interest.

At a national level, the draft ***Heritage Protection Bill*** contains provisions to unify the designation and consent regimes for terrestrial heritage assets, and transfer responsibility for designation of these assets. It also contains provisions to reform the marine heritage protection regime in England and Wales by

broadening the range of marine historic assets that can be protected. The draft Bill is based on the proposals set out in the White Paper, Heritage Protection for the 21st Century (2007), and is one element of a wider programme of on-going heritage protection reforms. There are however, no current plans to enact the Bill and it is not known whether its provisions will become statute.

The Department for Culture, Media and Sport White Paper ***Heritage Protection for the 21st Century (2007)*** sets out a strategy for protecting the historic environment, based on three core principles: developing a unified approach to the historic environment; maximising opportunities for inclusion and involvement; and supporting sustainable communities by putting the historic environment at the heart of an effective planning system.

England

The National Planning Policy Framework (NPPF) (2012) expects local planning authorities to set out in their local plan a positive strategy for the conservation and enjoyment of the historic environment and in doing so recognise that heritage assets are an irreplaceable resource. The Framework sets out the core land use planning principles that should underpin both plan-making and decision-taking and in doing so expects planning to "conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations".

When considering the impact of a proposed development on the significance of a designated heritage asset, the Framework expects great weight to be given to the asset's conservation. The more important the asset, the greater the weight should be. The Framework explains that significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, the Framework expects any harm or loss to require clear and convincing justification. Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, "local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss", or all of the criteria set out in paragraph 133 (mostly relating to the lack of a viable use) apply.

English Heritage, the Government's statutory adviser on the historic environment in England, has published a number of guidance documents for the protection of the historic environment, including ***Wind Energy and the Historic Environment (2005)***, ***Biomass Energy and the Historic Environment (2005)***, ***Climate Change and the Historic Environment (2005)*** and ***Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (2008)***.

9.2.3 East of England

No relevant plans were identified within the region for this topic.

9.3 Overview of the Baseline

9.3.1 National

UK

The UK has over 459,000 listed buildings, approximately 33,720 scheduled monuments, 2,416 historic parks and gardens, in excess of 10,259 conservation areas and 28 World Heritage Sites.[161]

England

In England there are approximately 374,081 listed building entries, 19,717 scheduled monuments, 1,601 registered historic parks and gardens, 9,080 conservation areas, 43 registered historic battlefields, 46 designated wrecks and 17 World Heritage Sites. Nearly 19,446 sites in England are 'at risk'.

The density of shipwreck remains in the English territorial sea is amongst the highest in the world due to the combined effects of historically high volumes of shipping traffic, a long history of seafaring and an often hazardous coastline.[162]

English Heritage has identified the following proportions of heritage sites as at risk within England:

- 3.1% of grade I and II listed buildings;
- 7.4% of conservation areas (from those that were included within the report);
- 17.2% of scheduled monuments;
- 6.1% of registered parks and gardens;
- 14% of registered battlefields; and

[161] Department of Culture, Media and Sport, 2009, http://www.culture.gov.uk/4168.aspx

[162] English Heritage, http://www.english-heritage.org.uk/caring/listing/what-can-we-protect/listed-buildings/

- 17% of protected wreck sites[163].

A nationwide survey of conservation areas, conducted by English Heritage and the 75% of England's local planning authorities who responded, indicates that approximately 1 in 7 is at risk from neglect, decay or unsympathetic change[164]. The main threats identified were:

- unsympathetic replacement doors and windows (83% of conservation areas);
- poorly maintained roads and pavements (60%);
- the amount of street clutter (45%);
- loss of boundary walls, fences or hedges (43%);
- unsightly satellite dishes (38%);
- the effects of traffic calming or traffic management (36%);
- alterations to front elevations, roofs and chimneys (34%);
- unsympathetic new extensions (31%);
- the impact of advertisements (23%); and
- neglected green spaces (18%).

9.3.2 East of England

The region is home to 57,643 listed buildings (15% of the England total), 1,741 listed Grade I and 3,421 listed Grade II* buildings (17% of the national total). In 2007, 1.7% of Grade I and II* buildings were deemed at risk, the lowest proportion of Grade I and II listed buildings at risk of any region. There are a host of towns and cities with important medieval cores.

The East of England has over 18,000ha of ancient woodland, an important cultural asset. However, the value of the historic environment is not simply the sum of the value of designated assets. Rather, throughout the region great value is attached to historic landscapes and the historic settlements that sit within these landscapes.

[163] English Heritage, 2010, Heritage at Risk Summary, http://www.english-heritage.org.uk/publications/har-2010-summary/
[164] http://www.english-heritage.org.uk/content/publications/publicationsNew/heritage-at-risk/Conservation_Areas_at_Risk/caar-booklet-acc.pdf

Listed building consents increased by 7% between 2009/10 and 2010/11, growing to 3,937 in 2010/11. Between the peak year of 2004/05 and 2010/11, listed building consents dropped 14% in comparison with planning applications which fell by 27%. English Heritage suggests that this indicates that listed building consents are less affected by the economic context than overall planning applications.

Conservation area consents by 10% in 2010/11 to 449 compared to the previous year. Since *Heritage Counts* started collecting this data in 2002/03, there has been no discernible trend. Applications relating to Parks and Gardens have increased 22% from 90 in 2009/10 to 110 in 2010/11. As with conservation area consents there has been no clear trend over time.

Figure 8.1 Cultural Heritage Assets in East of England

TABLE 8.1

County/ Unitary	Listed Buildings	Scheduled Monuments	Conservation Areas	Registered Parks & Gardens
Bedfordshire & Luton	3,351	154	91	19
Cambridgeshire & Peterborough	8,183	324	223	37
Essex, Thurrock & Southend	14,315	320	235	39
Hertfordshire	7,746	173	186	42
Norfolk	10,527	436	291	52
Suffolk	13,188	328	169	23
Total	**57310**	**1,735**	**1,195**	**212**

Source: East of England Plan 2008 (based on 2007 figures)

English Heritage publish an annual report identifying heritage at risk. Key findings for the East of England published in 2011 as summarised below[165].

Buildings at risk

- Nationally, 3.0% of grade I and II* listed buildings are at risk. In the East of England this falls to 1.8%, representing 93 sites.

[165] http://www.english-heritage.org.uk/content/publications/publicationsNew/heritage-at-risk/har-2011-local-summaries/acc-HAR-2011-eoe-summary.pdf

- sites have been removed from the 2010 Register, but 5 have been added.
- 50% of entries (54 buildings) on the baseline 1999 Register for the East of England have been removed as their futures have been secured, compared to the national figure of 53% (757 buildings).
- 38 listed places of worship were added to the Register.

Scheduled Monuments

- 16.9% (3,339) of England's 19,748 scheduled monuments are at risk, compared to 12.4% (215 sites) in the East of England.
- In the East of England, 17 sites have been removed from the 2010 Register, but 23 sites have been added.
- 15.3% of entries (31 sites) on the baseline 2009 Register for the East of England have been removed due to positive reasons, compared to the national figure of 11.9% (399 sites).
- Arable ploughing and unrestricted plant, scrub or tree growth account for nearly two thirds of sites at risk nationally. In the East of England, ploughing is the greatest source of risk (affecting 65% of sites).
- Nationally, 82% of scheduled monuments at risk are in private ownership, this rises to 92% in the East of England.

Registered Parks and Gardens

- 103 of England's 1,610 registered parks and gardens are at risk, an increase from 6.2% (99) in 2010 to 6.4% in 2011. In the East of England, 8 of the 211 sites are at risk (3.8%).
- Nationally, 6 sites have been added and 2 removed from the 2010 Register. In the East of England, 1 site has been added and one removed.

Registered Battlefields

- Of the 43 registered battlefields in England, 6 are at risk, 2 less than the 2008 baseline. The only registered battlefield in the East of England is not at risk.

Protected Wreck Sites

- Of the 46 protected wreck sites off England's coast, 7 are at risk, 3 less than the 2008 baseline. The East of England's one protected wreck site is not at risk.

Conservation Areas

- 288 local planning authorities (86%) have taken part in the national survey of conservation areas, of which 36 are in the East of England. This is 75% of our local planning authorities.
- We now have information on the condition of 7,841 of England's 9,600 designated conservation areas and 516 (6.6%) are at risk.
- Of the 867 conservation areas surveyed in the East of England, 43 (5%) are at risk.

9.4 Environmental Characteristics of those Areas most likely to be Significantly Affected

9.4.1 National

UK

Although from 2000 to 2007 there has been a steady decrease in the number of buildings identified as at risk, for the first time between 2007 and 2008, the number of entries within the Buildings at Risk Register rose for the first time[166]. Furthermore, the average cost of repairing each building on the Register has steadily increased.

Redundancy is a major factor driving listed buildings into risk. The kinds of historic buildings now at greatest risk are those associated with defence (15%), agriculture (8%) and manufacturing industry (13%).

There are concerns that the current recession will reduce public spending which will further reduce conservation staff for local authorities and reduce grants and subsidies to problem sites at a time when there will be an reduction in the willingness of developers to take on more challenging buildings at risk, an increase in vacancy rates and a decrease in funds owners will be abele to invest in repair and maintenance.

[166] English Heritage, Heritage at Risk Report 2010, http://www.english-heritage.org.uk/publications/har-2010-report/

9.4.2 East of England

Key characteristics identified in the ISA for the East of England include

- Cambridge is a prime example of a settlement with a historic core that is likely to come under significant pressure as a result of further growth
- Consequential effects of growth around Cambridge could impact Ely and English Heritage also identified the potential for growth at Ely to result in significant impacts to the setting of Ely Cathedral. They class Ely as being of 'international importance'. More generally, they considered that growth in East Cambridgeshire could lead to the potential for significant effects on sensitive views across the historic Fenland landscape, but this effect was less certain.
- Some areas within the London Arc show extensive 20th century modification - and so might be considered less sensitive - but important settlements and stretches of countryside remain, and it is the case that the relative rarity of such historic environment features makes preserving them particularly important.
- Bury St. Edmunds is an important historic town, and the countryside to the south contains a rich historic landscape, along similar lines to North Essex. The heaths and fens of Forest Heath and north St. Edmundsbury are also notable. St. Edmundsbury and Forest Heath will both see annual housing growth of 1.2%.
- The historic environment of Thetford ranges from Iron Age, Saxon and medieval sites through to the legacy of its London Overspill Town status. Thetford has around 20 scheduled monuments and 200 listed buildings within what is otherwise a relatively small town, and the surrounding rural landscape has important historic features ranging from Thetford Forest and the Brecks to large estates. These qualities combine with the habitat constraints limit the area which can be developed. Breckland is allocated the same amount of housing development as was the case under Scenario 1, which is considerably less than the allocation in the adopted Plan.
- Wymondham, which will receive a considerable proportion of the growth allocated to the Greater Norwich Area, is very important as a result of the Abbey and its historic role as a market town. There are very specific visual links to the surrounding countryside.
- English Heritage had questioned how growth at St. Albans could continue without eroding the Green Belt setting, and leading to coalescence with neighbouring towns. Furthermore,

St Albans city centre Conservation Area is identified as 'at risk' from development pressures.

- Great Yarmouth is one example of a town where there is the potential for the historic environment to support growth and regeneration by helping to ensure high quality place making. However, it is uncertain whether the historic environment would still be able to support positive place-making under higher levels of growth.
- Similarly, in the Thames Gateway the historic environment should be an important element of the regeneration of town centres.
- Directing additional growth to rural and coastal areas could potentially result in the need to develop smaller settlements where the historic character can more easily be 'swamped'. In general, the effect of the draft Review will not be to increase development in more rural parts of the region.

9.5 Likely evolution of the baseline

9.5.1 National

UK

The current trend in cultural heritage condition is generally towards little change in the number of historic assets and a decline in the percentage that are at risk.[167]

English Heritage report that there has been little change in the total number of historic assets between 2002 and 2009; the total number of listed buildings in England has increased by 0.9% during this period with the largest increase in Grade II* (1.4%). The number of scheduled monuments has increased by 1.9% over the same period whilst registered parks and gardens increased by 7.3% (104) between 2002 and 2009. There was an increase in the number of scheduled monuments by 1.9% between 2002 and 2009.[168]

[167] http://www.english-heritage.org.uk/hc/upload/pdf/HC08_National_Acc.pdf)
[168] English Heritage, Heritage Counts 2009, England, http://hc.english-heritage.org.uk/upload/pdf/HC09_England_Acc.pdf?1286268742

9.5.2 East of England

English Heritage's *Heritage at Risk Register* (2011) for the East of England lists the heritage assets at risk within each local authority area and identifies that risk results from neglect, decay or inappropriate development. The key findings for the East of England are:

- 50% of buildings at risk (54 buildings) on the baseline 1999 Register have been removed as their futures have been secured;
- 38 listed places of worship were added to the Register in 2011;
- 17 scheduled monuments have been removed from the 2010 Register, but 23 sites have been added; and
- 1 registered park or garden has been added to the register and one removed.

9.6 Assessing Significance

Table 9.1 sets out guidance utilised during the assessment to help determine the relative significance of potential effects on cultural heritage. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

Table 9.1 Approach to Determining the Significance of Effects on Cultural Heritage

Effect	*Description*	*Illustrative Guidance*
++	Significant positive	• Alternative would make a significant positive and long-term contribution to the setting and conservation of designated cultural heritage features (e.g. – through enhancement of settings, permanent removal of structures creating a negative visual impact, large scale enhancement of designated features).
+	Positive	• Alternative would bring minor short-term improvements to the setting and conservation of designated or locally important cultural heritage features.
0	No (neutral effects)	• Alternative would not have any significant effects on any cultural heritage sites or assets.
-	Negative	• Alternative would bring minor short-term degradation to the setting and conservation of designated cultural heritage features.
--	Significant negative	• Alternative would cause long-term degradation to the setting and conservation of designated and locally important cultural heritage features (e.g. – through direct and permanent loss or damage to designated sites, introduction of structures that will have a considerable and permanent negative visual impact).
?	Uncertain	• From the level of information available the effects the impact that the alternative would have on this objective is uncertain.

9.7 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 9.2 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the cultural heritage topic.

Table 9.2 Significant Effects against the Cultural Heritage Topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
C1 and C2 Retention	++	++	++	The policy focus of C1 is to ensure that local authorities should include development plan policies that support and grow the region's cultural assets. The policy also aims to help contribute to local regeneration and help deprived areas. Policy C2 seeks to ensure that proposals for cultural facilities do not adversely affect areas designated for their ecological, landscape or historic value, including sites of European or international importance for nature conservation. The policy also seeks to optimise opportunities to use means of transport other than the car and use transport networks that have adequate capacity to accommodate passenger and rail freight requirements. It should contribute significantly to maintaining and enhancing the built and historic character.
C1 and C2 Revocation	++	++	++	The NPPF (Paragraph 70) sets out policies to deliver the social, recreational and cultural facilities and services the community needs. It states that local planning authorities should plan positively for the provision and use of shared space, community facilities (such as sports venues and cultural buildings), to enhance the sustainability of communities and residential environments. Paragraph 28 of the NPPF sets this out for rural areas. Policies in the NPPF also seek to promote and conserve cultural heritage, designated landscapes and green infrastructure, which will also contribute to the provision of cultural facilities and the delivery of significant benefits to the population and human health as well as cultural heritage The policy references Living East. Living East was the cultural consortium for the East of England, established in 1999 by the Department for Culture, Media and Sport and included resources from the East of England Development Agency. LPAs were intended to liaise with Living East on site allocations for cultural facilities. Revocation will not affect the overall level of protection provided to cultural heritage by the policy or the direction to promote cultural heritage.
ENV2 Retention	++	++	++	Although the policy focus is on the conservation of the landscape, it also reflects the statutory requirement to conserve and enhance the cultural heritage (alongside natural beauty and wildlife) within the North and Suffolk Broads and the four AONBs in the region. As these are statutory requirements they impact in the short to long term and the requirements remains in place if the regional strategy was revoked.
ENV2 Revocation	++	++	++	Paragraph 115 of the NPPF continues the emphasis placed on conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty,

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				which have the highest status of protection in relation to landscape and scenic beauty. The NPPF also maintains the policy previously contained in PPS7 that local planning authorities should set criteria based policies against which proposals for any development on or affecting protected landscape areas will be judged (paragraph 113), while landscape character assessments should be prepared where appropriate (paragraph 170). In consequence, revocation has been assessed as having the same positive benefits as retention.
ENV5 Retention	++	++	++	The policy repeats the requirement previously in PPS7 and now in the NPPF to protect ancient semi-natural woodland, other woodlands of acknowledged national or regional importance and aged or veteran trees. As it repeats national policy, the revocation of ENV5 would have no effects on cultural heritage.
ENV5 Revocation	++	++	++	
ENV6 Retention	++	++	++	This policy deals specifically with the protection, conservation and where appropriate enhancement of the historic environment. It identifies a number of locations, such as the historic cities of Cambridge and Norwich which are especially significant in the East of England. The policy was based on PPGs 15, Planning and the Historic Environment and 16, Archaeology and Planning. It was assessed as having as significant positive effect on this topic.
ENV6 Revocation.	++	++	++	Legislation protecting listed buildings, scheduled monuments, conservation areas and registered parks and gardens remain in place. These high levels of protection would be unchanged by revocation. The NPPF includes reference to the historic environment within the definition of sustainable development, 'sustainable development involves seeking positive improvements in the quality of the built, natural and historic environment, as well as in people's quality of life'. Section 12 of the NPPF outlines the specific requirements for LPAs concerning the historic environment. These include that LPAs should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance. Given that Policy ENV6 identified specific provisions for the historic cities of Cambridge and Norwich, the relevant policies have therefore been examined in the Cambridge Local Plan and the Core Strategy that included Norwich. The Cambridge Local Plan was adopted in July 2006 (see Appendix C) and sets out detailed policies for the protection of the heritage aspects of Cambridge, including safe guarding the environmental character of Cambridge, protection of the built environment and policies on major change which highlight the importance of the enhance the setting and character of Cambridge. The joint Core Strategy for Broadland, Norwich and South Norfolk, adopted in March 2011 includes policy 11 for Norwich City centre to enhance the regional centre role through enhanced by the historic city (see Appendix C). While the regional strategy identified those heritage assets in the East of England which are especially significant heritage assets, given the content of local plans and the policies set out in the NPPF, it is unlikely that the revocation of policy ENV 6 would remove the protection afforded to these assets and it is unlikely that revocation of this policy would have any effects different from retention.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
ENV7 Retention	++	++	++	The policy seeks to maximise opportunities for the built heritage to contribute to physical, economic and community regeneration, and with conservation-led regeneration local authorities should respect the quality and distinctiveness of traditional buildings and the value they lend to an area through their townscape quality, design and use of materials. In consequence, the policy is assessed as having a significantly positive effect against this topic.
EN7 Revocation	++	++	++	The NPPF devotes a whole section to good design (Section 7) and taken together with other policies in the framework should help to minimise the adverse effects of delivering the necessary development. Paragraph 58 of the NPPF states that local plan policies should respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation. Local planning authorities should look for opportunities for new development. Paragraph 147 o the NPPF also states that within Conservation Areas and World Heritage Sites and within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably. In consequence, revocation of policy ENV 7 will have similar benefits to retention for the cultural heritage topic.
CSR1 Retention	++	++	++	This policy seeks to deliver significant development in the sub-region (significantly positive for the population but adverse for material assets because of the increased use of construction materials and energy and the generation of waste), but given the potential for adverse environmental effects, the policy contains a number of provisions to minimise impacts and is scored positively in many areas. The historic character and setting of Cambridge should be protected and enhanced, together with the character and setting of the market towns and other settlements and the important environmental qualities of the surrounding area. This will have significant benefits for cultural heritage.
CSR1 Revocation	++	++	++	Revocation of policy CSR1 is unlikely to lead to different environment effects from its retention. There will continue to be a demand for housing in the sub-region (with the same adverse effects on water and material assets). The major planned development at Northstowe as indicated above has already started. Cultural heritage will continue to be protected through policies in the NPPF until such time as up to date local plans are in place.
CSR3 Retention	++	++	++	The policy maintains the Green Belt around Cambridge to define the extent of urban growth in accordance with the purposes of the Cambridge Green Belt. This aims to preserve the character of Cambridge and maintain and enhance the quality of Cambridge's setting. In consequence, the retention of the policy is assessed as having a significant positive effect on this topic.
CSR3 Revocation	++	++	++	Revocation of the policy would require deferral back to the Local Plan policy position. The Cambridge Local Plan was adopted in 2006. The Cambridge Policy 4/1 aims to protect the Green belt around Cambridge. The policy states that: “There is a presumption

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				against inappropriate development in the Cambridge Green Belt as defined on the Proposals Map. The purposes of the Green Belt are to: • preserve the unique character of Cambridge as a compact, dynamic City with a thriving historic centre; • maintain and enhance the quality of its setting; and • prevent communities in the environs of Cambridge from merging into one another and with the City. The Green Belt preserves the setting and special character of Cambridge as a dynamic city with a thriving historic centre and maintain and enhance the quality of Cambridge's setting. The explanatory text identified that the extent of the Green Belt may needed to be revisited in the review of the regional strategy which would have made the long-term effects uncertain. However, as there is no longer a mechanism to review the regional strategy the uncertainty has been removed. As Cambridge City's local plan policy repeats the wording of policy CSR3, revocation of the regional strategy would have no effect.
LA4 Retention	0	0	0	The assessment of retention of policy LA4 received a neutral score. However, the sustainability appraisal for the Watford Borough Council's draft Core Strategy (which would replace the regional strategy) scored significant positive for cultural heritage. The assessment reflects the appraisal finding, although it should be recognised that the assessment is not necessarily like for like.
LA4 Revocation	++	++	++	

9.7.1 Effects of Revocation

Currently, the East of England is home to 15% of the total of England's listed buildings and was assessed in 2007 as having the lowest proportion of Grade I and II listed buildings at risk of any region. The East of England Plan policy ENV6 concerned the protection and enhancement of the historic environment. Revocation will not affect the intent behind the policy as existing legislation protecting listed buildings, scheduled monuments, conservation areas and registered parks and gardens remain in place.

Paragraphs 126 - 141 of the NPPF set out strong national policy on conserving and enhancing the historic environment. It states that local planning authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats.

When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the

greater the weight should be (paragraph 132).

The most important cultural heritage sites are subject to statutory protection. This is supported by national planning policy for the protection and conservation of the historic environment. Following revocation of regional strategies, local authorities would still need to continue to work together on conservation, restoration and enhancement of the heritage and historic environment.

In planning for the historic environment, local authorities should continue to draw on available information, including data from partners, to address cross boundary issues; they should also continue to liaise with English Heritage to identify and evaluate areas, sites and buildings of local cultural and historic importance.

Revocation of policy CSR3 maintains the Green Belt around Cambridge as seeks to preserve the character of Cambridge as a dynamic city with a thriving historic centre while maintaining and enhancing the quality of Cambridge's setting. As the policy is repeated in Policy 4/1 (Green Belt) in Cambridge City's local plan which was adopted July 2006, revocation of the regional strategy will not have any effect.

9.7.2 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

The likely significant effects on cultural heritage associated with the revocation of the quantitative policies are summarised in **Table 9.2** for policy CSR3 and LA4. Retention of policy CSR3 was identified to have the same significant positive effects as revocation. However, while revocation of Policy LA4 was identified to being significantly positive, its retention was identified to result in neutral effects. However, the significant positive effects were identified in the sustainability appraisal of the draft Watford Borough Council Core Strategy and are not therefore directly comparable with retention of the policy.

The assessment has found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

9.7.3 Effects of Retention

Retention of the regional strategy would result in continuation of the baseline (subject to factors such as the level of English Heritage funding). Because of the strong planning policy and legal protection given to heritage assets, most to the damaging activities are caused by factors outside of the control of the planning system (particularly arable ploughing).

9.8 Mitigation Measures

As revocation will not have any effects on cultural heritage no mitigation measures have been identified.

A10.Landscape and Townscape

10.1 Introduction

The overview of plans and programmes and baseline information contained in this section provides the context for the assessment of potential effects of the proposals to revoke the regional strategies on landscape and townscape. Information is presented for both national and sub-regional levels.

Landscape in this context is defined by **The European Landscape Convention** as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors'. This definition is stated as covering natural, rural, urban and peri-urban (i.e. the urban-rural fringe) and includes land, inland water and marine areas. For the purposes of this appraisal though, landscape is taken to apply to rural areas and townscape to urban areas. Visual effects are those effects that influence how people see a landscape or townscape, such as the erection of a building.

10.2 Summary of Plans and Programmes

10.2.1 International

The ***European Landscape Convention*** is principally directed at the national level, but emphasises the importance of landscape as a cultural as well as an aesthetic asset. It commits signatories to promoting the protection, management and enhancement of landscapes across a country, and integrating landscape considerations into all relevant policies. The Convention's definition of landscape reflects the idea that landscapes evolve through time, as a result of being acted upon by natural forces and human beings. It also underlines that a landscape forms a whole, the natural and cultural components of which are taken together, not separately. The convention also calls for improved public involvement in landscape matters. The UK became a signatory to the European Landscape Convention in 2006.

10.2.2 National

UK

In the UK, there are numerous Acts governing the protection of the countryside, landscape and natural environment. The ***National Parks and Access to the Countryside Act 1949*** makes provision for National Parks, confers powers for the establishment and maintenance of nature reserves, makes provision for the recording, creation, maintenance and improvement of public paths and for securing

access to open country and confers further powers for preserving and enhancing natural beauty. National Parks are areas of relatively undeveloped and scenic landscape. Designation as a national park may include substantial settlements and human land uses which are often integral parts of the landscape. Land within a national park remains largely in private ownership. There are currently thirteen national parks in England and Wales. Each park is operated by its own national park authority, with two "statutory purposes":

- to conserve and enhance the natural beauty, wildlife and cultural heritage of the area, and
- to promote opportunities for the understanding and enjoyment of the parks.

The Norfolk Broads and Suffolk Broads have the same status as the national parks in England and Wales. The Broads Authority has powers and duties almost identical to the national parks, but is also the third-largest inland navigation authority. Because of its navigation role the Broads Authority was established under its own legislation on 01 April 1989. The Broads Authority Act 2009 improves public safety on the water.

AONBs are areas of high scenic quality that have statutory protection in order to conserve and enhance the natural beauty of their landscapes. AONB landscapes range from rugged coastline to water meadows to gentle lowland and upland moors. Natural England has a statutory power to designate land as Areas of Outstanding Natural Beauty

The ***Countryside and Rights of Way Act 2000*** increased the duty of provision of public access to the countryside and strengthened legislation relating to Sites of Special Scientific Interest (SSSIs). In particular, it requires public bodies to further the conservation and enhancement of SSSIs both in carrying out their operations, and in exercising their decision making functions.

The ***Marine and Coastal Access Act 2009*** seeks to ensure clean healthy, safe, productive and biologically diverse oceans and seas, by putting in place better systems for delivering sustainable development of marine and coastal environment.

Other relevant Acts include:

- The ***1967 Forestry Act (as amended 1999)*** restricts and regulates the felling of trees. The ***1968 Countryside Act*** enlarges the function of the Agency established under the National Parks and Access to the Countryside Act 1949, to confer new powers on local authorities and other bodies for the conservation and enhancement of natural beauty and for the benefit of those resorting to the countryside.
- The ***1986 Agriculture Act (with numerous revisions)*** covers the provision of agricultural services and goods, agricultural marketing compensation to tenants for milk quotas, conservation and farm grants.

- The ***Commons Act 2006***, which protects common land and promotes sustainable farming, public access to the countryside and the interests of wildlife.

England

The ***Natural Environment and Rural Communities (NERC) Act 2006*** implements key elements of the Government's Rural Strategy published in July 2004. The NERC Act is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy. The NERC Act established a new independent body - Natural England - responsible for conserving, enhancing, and managing England's natural environment for the benefit of current and future generations. The Act made amendments to the both the Wildlife and Countryside Act 1981 and the Countryside and Rights of Way Act 2000, which further enhance provisions to biodiversity generally and SSSIs in particular.

The ***National Planning Policy Framework (2012)*** includes strong protections for valued landscapes and townscapes as well as recognising the intrinsic character and beauty of the countryside. The importance of planning positively for high quality design is underlined and local and neighbourhood plans are expected to "develop robust and comprehensive policies that set out the quality of development that will be expected for the area". Planning policies and decisions are expected to respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation. The Framework states (paragraph 64) that "Permission should be refused for development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions".

The Framework has a number of specific requirements relating to planning and landscape including a clear expectation that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes. Local planning authorities are expected to set criteria based policies against which proposals for any development on or affecting protected landscape areas will be judged. In doing so, distinctions should be made between the hierarchy of international, national and locally designated sites and "great weight" should be given to "conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty". Local planning authorities in their plan-making are expected to take account of climate change and changes to landscape and contain a clear strategy for enhancing the natural, built and historic environment. Where appropriate, "landscape character assessments should also be prepared, integrated with assessment of historic landscape character, and for areas where there are major expansion options assessments of landscape sensitivity".

10.2.3 East of England

No relevant plans were identified within the region for this topic.

10.3 Overview of the Baseline

10.3.1 National

UK

Statutory sites designated (wholly or partially) for their landscape value include National Parks, AONBs, Country Parks, Registered Historic Parks and Gardens, Historic Gardens and Designed Landscapes, National Scenic Areas (NSAs) and Regional Parks (in Scotland) and World Heritage Sites.[169]

Other important (non-statutory) sites include Areas of Great Landscape Value (AGLV) in Scotland; Heritage Coasts (in England and Wales); and National Trust/National Trust for Scotland properties.

The UK has 15 National Parks[170] and (excluding Scotland) 49 AONBs[171]. Each National Park is administered by its own National Park Authority whose duty it is to conserve and enhance natural beauty, wildlife and cultural heritage; and to promote opportunities for the understanding and enjoyment of the special qualities of National Parks by the public. The Broads Authority in England has a third purpose to protect the interests of navigation[172]. The primary purpose of AONB is to conserve and enhance the natural beauty of the landscape.

England

The 'Character of England Landscape, Wildlife and Cultural Features Map' produced in 2005 subdivides England into 159 areas with similar landscape character called National Character Areas (NCA).[173]

There are nine National Parks in England; the most recently designated National Park being the South Downs National Park on 31 March 2010). Together with The Broads (which has similar protection to a National Park) they cover 9.3% of the land area in England.

[169] JNCC, landscape designations, http://www.jncc.gov.uk/page-1527
[170] Association of National Park Authorities, http://www.nationalparks.gov.uk/
[171] National Association of AONB, http://www.aonb.org.uk
[172] http://www.nationalparks.gov.uk/learningabout/factsandfigures.htm
[173] http://www.naturalengland.org.uk/ourwork/landscape/englands/character/areas/default.aspx

There are 34 AONBs in England, one of which straddles England and Wales (the Wye Valley AONB). AONBs cover 18% of England and Wales.[174] The East Hampshire and Sussex Downs AONB designations were revoked on the 31 March 2010 when the South Downs National Park Designation Order came into effect. In all, AONB designation covers approximately 15 per cent of the land area of England.

England has been divided into areas with similar landscape character, which are called National Character Areas (NCAs). A total of 159 NCAs have been identified in England. The boundaries of the NCAs are not precise and that many of the boundaries should be considered as broad zones of transition.

Natural England are currently re-writing and re-designing all of England's 159 NCA profiles and aim to publish the first of the new versions from September 2012.

Heritage Coasts are areas defined (they are not statutorily designated) for the beauty and undeveloped nature of the coastline. They represent 33% (1,057km) of England's coastline and are managed to conserve their natural beauty and, where appropriate, to improve accessibility for visitors. Most Heritage Coasts are within the boundaries of National Parks or AONBs, although some including Lundy, the Durham Coast, and Flamborough Head stand alone.

A national record of nearly 1450 Registered Historic Parks and Gardens which contribute to the landscape is maintained by English Heritage. It is a non-statutory designation but the designation is a material planning consideration.

There are 17 World Heritage Sites in England, the most recent of these to be recognised as such is the Cornwall and West Devon mining landscape which was inscripted by UNESCO in 2006.[175]

10.3.2 East of England

The East of England is generally low-lying and much of the fens and central lowlands are at or below sea level. The region is dominated by large-scale expansive landscapes. Much of the region is very rural with a dispersed settlement pattern of small towns and villages.

The East of England is home to several landscapes of national importance including the Norfolk and Suffolk Broads National Park and four AONBs: the Norfolk Coast AONB; the Suffolk Coast and Heaths AONB; the Dedham Vale AONB; and a small area of the Chilterns AONB. Together, these areas

[174] See http://www.aonb.org.uk/wba/naaonb/naaonbpreview.nsf/Web%20Default%20Frameset?OpenFrameSet&Frame=Main&Src=%2Fwba%2Fnaaonb%2Fnaaonbpreview.nsf%2F%24LU.WebHomePage%2F%24first!OpenDocument%26AutoFramed (accessed 19.10.2009)

[175] http://whc.unesco.org/en/list/

account for 7.5% of the region's land area. The region's two stretches of Heritage Coast comprise a substantial proportion of the Norfolk Coast and Suffolk Coast and Heaths AONBs and 24% of the region's total length of coastline.

The Norfolk Coast AONB covers 450 km^2 of varied land and seascape. Stretching from the huge mudflats of the Wash, it extends through sandy beaches, coastal marshes and soft cliffs to the dune systems at Winterton.

The Suffolk Coast and Heaths AONB is a coastal area covering 400km^2.

It combines shingle beaches, sandy cliffs, saltmarsh and estuaries, with grazing marsh, reedbeds, heathland, farmland and woodland.

The Chilterns AONB covers over 800 km^2, with much of this lying outside the East of England region. The gently rolling hills are covered in beech woodland and chalk downland as well as large areas of intensive arable cultivation.

The Dedham Vale AONB is a nationally important example of a clayland landscape. This traditional English lowland landscape consists of picturesque villages with vernacular buildings and impressive churches, rolling farmland, river, meadows and a wide variety of wildlife.

Figure 10.1 Areas of Outstanding Natural Beauty - East of England

Area of Outstanding Natural Beauty	Area (sq km)	Coverage within East of England
Chilterns	833	Parts of Central Bedfordshire, Luton and North Hertfordshire, as well as parts of Buckinghamshire and Oxfordshire
Dedham Vale	90	Parts of Colchester, Tendring, Babergh
Norfolk Coast	451	Parts of Kings Lynn & West Norfolk, North Norfolk, Great Yarmouth
Suffolk Coast and Heaths	403	Parts of Babergh, Suffolk Coastal, Waveney

Water is a significant feature of the region's landscape and identity:

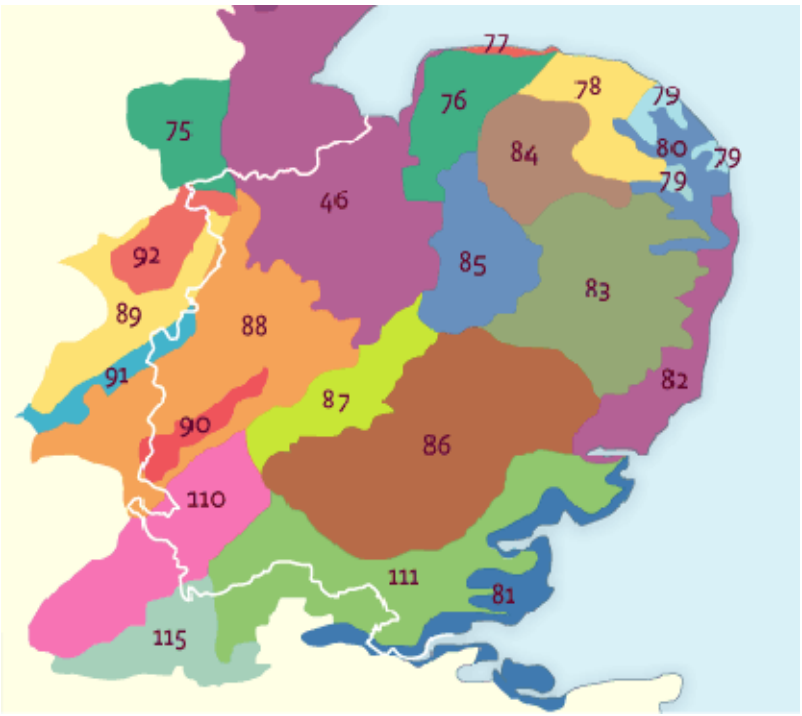
- The fens provide one of England's largest river drainage basins.
- There is over 400km of low lying and soft coastline in Norfolk, Suffolk and Essex with beaches, dunes and saltmarsh. The coastline is punctuated by creeks and estuaries such as the Wash, Stour and Orwell, Colne, Blackwater, Crouch and Roach, and Thames.
- The Broads has over 200 km of waterways, five rivers and around 50 shallow lakes or 'broads', largely in Norfolk.

- The Halvergate marshes is Europe's largest river valley and grazing marsh complex of its type, and was the pioneer site internationally for England's agri-environment programme.
- River valleys, which include the Waveney-Little Ouse, Wensum, Stour, Blackwater, Lee and Colne.

In contrast, areas such as the Brecks are very arid, Norfolk, Suffolk and Bedfordshire contain important heathlands; there are the distinctive chalk downlands of the Chilterns at the region's western edge; the more rolling chalk-lands of north Hertfordshire, north-west Essex and south-eastern Cambridgeshire; and the arable landscapes of mid Suffolk and Essex.

There are 21 National Character Areas in the East of England[176].

Figure 10.2 National Character Areas in the East of England



[176] http://www.naturalengland.org.uk/publications/nca/eastofengland.aspx

Key:

46. The Fens
76. North West Norfolk
77. North Norfolk Coast
78. Central North Norfolk
79. North East Norfolk & Flegg
80. The Broads
81. Greater Thames Estuary
82. Suffolk Coast & Heaths
83. South Norfolk & High Suffolk Claylands
84. Mid Norfolk
85. Breckland
86. South Suffolk & North Essex Clayland
87. East Anglian Chalk
88. Bedfordshire & Cambridgeshire Claylands
89. Northamptonshire Vales
90. Bedfordshire Greensand Ridge
91. Yardley-Whittlewood Ridge
92. Rockingham Forest
110. Chilterns
111. Northern Thames Basin
115 Thames Valley

10.4 Environmental Characteristics of those Areas most likely to be Significantly Affected

10.4.1 National

UK

The UK has many important and protected landscapes which may be sensitive to development. The character of the UK's landscapes are broadly being maintained, however 20% show signs of neglect.

The natural environment of the UK is much less 'rich' than 50 years ago and remains under pressure from more intense use of the land and sea; continuing economic development, climate change and increased pressures from public access.

Although it is recognised that some changes in landscape, such as restoration of derelict industrial sites, have led to improvements in the quality of the natural environment, Natural England state that landscape change on the whole is resulting in declining diversity, distinctiveness and ecological richness[177].

[177] http://www.naturalengland.org.uk/ourwork/landscape/threats/default.aspx

10.4.2 East of England

The 2010 ISA reflects on a visible landscape change happening in the East of England. It cites the 2003 Regional Environment Strategy which stated that "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". In addition, the Regional Environmental Strategy argues that in terms of landscape character "there has been a steady decline in distinctiveness both within and between character areas.

10.5 Likely evolution of the baseline

10.5.1 National

UK

Over the last century the following landscape character trends have been experienced: [178]

- a gradual erosion of local distinctiveness in some areas, through a process of standardisation and simplification of some of the components that make up landscape character;
- a loss of some natural and semi-natural features and habitats such as ancient woodlands and unimproved grassland;
- a decline in some traditional agricultural landscape features such as farm ponds and hedgerows, and a loss of archaeological sites and traditional buildings;
- increased urbanisation, often accompanied by poor design standards and a decline in the variety of building materials, and the importation of urban and suburban building styles into rural areas; and
- a loss of remoteness and reduced tranquillity because of built development and traffic growth.

There are a number of pressures and risks outlined in the ***State of the Natural Environment 2008***) that may affect the quality of landscapes in England. These include[179]:

[178] Natural England, State of the Natural Environment 2008, Landscape Characterisation and Change, http://www.naturalengland.org.uk/publications/sone/sections.aspx
[179] Natural England (2008) State of the Natural Environment http://www.naturalengland.org.uk/publications/sone/default.aspx

- **Sea-level rise:** Over the next few decades it is anticipated that there will be major sea incursions inland during storms, particularly on the south and east coasts of England. If measures such as managed retreat are not adopted in low-lying areas, there may be widespread losses of intertidal and coastal habitats. In the coastal zone, sea-level rise may also result in the direct loss of freshwater habitats such as reedbeds and wet grasslands.

- **Fire:** More droughts in the future will make the countryside increasingly vulnerable to wildfire, with potential for heathland, grassland, broadleaved woodlands and bogs to undergo major change in their structure.

- **Grazing management:** More summer droughts may mean that grazing is no longer possible in some open habitats such as fens, grasslands and heathlands due to die-back of vegetation and a lack of drinking water for animals. The spread of diseases (e.g. bluetongue) related to climate change may also reduce livestock numbers and restrict movement, altering grazing patterns and landscapes.

- **Energy production:** The production of biofuels in the countryside may result in changes to landscapes. Wind energy developments are likely to be more common.

- **Development pressure:** Within rural England, the area of developed land has increased by about 4% since 1990. It is expected that the pace of development within England will increase in the future to make up for the current shortfall in housing provision. The effect of this increase pressure for development is likely to be felt most acutely in central and southern England, particularly around identified Growth Areas and Growth Points.

England

Natural England report that in 2008 existing landscape character was being maintained in 51% of England's landscapes, whilst in a further 10% existing character was being enhanced. However, 20% of landscapes were showing signs of neglect. [180]

Data from 1990 to 2003 indicates that in England the number of Character Areas with patterns of change that either maintain or enhance character has increased from 36% to 61%. The number of Character Areas with evidence of neglect or erosion of character has decreased. This evidence suggests that the character of the majority of English landscapes, at Character Area scale, is being sustained.

Forestry Commission England seeks to maintain the area of certified woodland and to ensure that 95% of woodland SSSIs are in favourable condition by 2011[181].

[180] Natural England, State of the Natural Environment 2008, Landscape Characterisation and Change, http://www.naturalengland.org.uk/publications/sone/sections.aspx
[181] Forestry Commission England, 2008, Delivery Plan 2008-2012: England's Trees, Woods and Forests

The protected nature of National Park and AONB landscapes make it less likely that these landscapes will be affected by some of the risks outlined (e.g. development pressure) although those protected landscapes nearest to existing urban areas are more likely to be at risk.

10.5.2 East of England

Over the last century landscape and townscapes have experienced:

- a gradual erosion of local distinctiveness in some areas, through a process of standardisation and simplification of some of the components that make up landscape character;
- a loss of some natural and semi-natural features and habitats such as ancient woodlands and unimproved grassland;
- a decline in some traditional agricultural landscape features such as farm ponds and hedgerows, and a loss of archaeological sites and traditional buildings;
- increased urbanisation, often accompanied by poor design standards and a decline in the variety of building materials, and the importation of urban and suburban building styles into rural areas; and
- a loss of remoteness and reduced tranquillity because of built development and traffic growth.

The key issues identified in the 2010 ISA of the East of England Plan was where a change in landscape character, loss of tranquillity and a sense of place and community coincided.

The ISA reported that signs of change which are inconsistent with the current landscape character have been identified to differing degrees in several areas. It was suggested that care must be taken not to further damage the distinctiveness of the local landscape through either new large scale developments or through cumulative impacts from smaller developments. It will be important that development is located so as to avoid impacts on sensitive landscapes, and that policy ensures that any effects are minimised or mitigated.

Along with a loss of the distinctiveness of the landscape character there has been a noticeable decrease in the tranquillity of landscapes and landscapes that are genuinely ‘wild and remote’. Transport corridors have a significant impact on tranquillity due to noise. Local distinctiveness is an important element of sense of place and therefore sense of community.

10.6 Assessing significance

Table 10.1 sets out guidance utilised during the assessment to help determine the relative significance

of potential effects on the landscape and townscape objective. It should not be viewed as definitive or prescriptive; merely illustrative of the factors that were considered as part of the assessment process.

Table 10.1 Approach to determining the significance of effects on landscape and townscape

Effect	*Description*	*Illustrative Guidance*
++	Significant positive	• Alternative would make a significant positive contribution to statutorily-designated landscapes. • Alternative would have a significant positive effect on the setting and attractiveness of local landscapes and townscapes (e.g. through the replacement of poorly designed/derelict buildings with high quality development). • Alternative would enhance public access to the countryside and increase open space provision.
+	Positive	• Alternative would serve to enhance statutorily-designated landscapes. • Alternative would have a positive effect on the setting and attractiveness of local landscapes and townscapes. • Alternative would enhance public access to open spaces and the countryside.
0	No (neutral effects)	• Alternative would not have any effects on landscapes or visual amenity. • Alternative would not enhance or restrict public access to open spaces and the countryside.
-	Negative	• Alternative would have short-term negative effects on statutorily-designated landscapes. • Alternative would have a negative effect on the intrinsic character of landscapes and townscapes. • Alternative would affect the visual amenity of local communities. • Alternative would temporally restrict public access to open spaces and the countryside.
--	Significant negative	• Alternative would have long-term negative effects on statutorily-designated landscapes (such as AONBs). • Alternative would severely affect the intrinsic character of landscapes and townscapes. • Alternative would severely affect the visual amenity of local communities. • Alternative would result in the loss of open spaces and restrict public access to the countryside.
?	Uncertain	• From the level of information available the effects the impact that the alternative would have on this objective is uncertain.

10.7 Assessment of Significant Effects of Retention, Revocation and Partial Revocation

Table 10.2 summarises the significant effects identified in the detailed assessment of the East of England Plan policies against the landscape topic.

Table 10.2 Significant effects against the Landscape and Townscape topic

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
SS8 Retention	+	++	++	The policy seeks to provide networks of accessible green infrastructure linking urban areas with the countryside. The explanatory text refers to the importance with urban extensions of developing complementary strategies for the positive management of the adjoining countryside to ensure that development is successfully absorbed in the landscape. The effects of the policy are more likely to be felt in the medium to long term as urban extensions are brought forward.
SS8 Revocation	+	++	++	Paragraph 115 of the NPPF continues the emphasis placed on conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The NPPF also maintains the policy previously contained in PPS7 that local planning authorities should set criteria based policies against which proposals for any development on or affecting protected landscape areas will be judged (paragraph 113), while landscape character assessments should be prepared where appropriate (paragraph 170). In consequence, revocation has been assessed as having the same positive benefits as retention.
SS9 Retention	++ -	++ -	++ -	Although the policy or its supporting text makes no reference to landscape, by seeking to conserve the coastal environment and coastal waters, including the natural character, historic environment and tranquillity of undeveloped areas linked to the need for environmental protection and enhancement there will be significant benefits for the landscape. The benefits will be seen in the short through to the long term, and as the policy reflects national policy (e.g. the protection of heritage coast) and legislation (protected coastal habitats), the revocation of the regional strategy is not thought likely to result in a reduction in the identified benefits.
SS9 Revocation	++ -	++ -	++ -	In addition to the landscape policies of the NPPF already noted, paragraphs 105 to 108 of the NPPF contains a number of policies specific to the coast. Local planning authorities should apply Integrated Coastal Zone Management across local authority and land/sea boundaries. They should reduce risk from coastal change by avoiding inappropriate development in vulnerable areas or adding to the impacts of physical changes to the coast. They should identify Coastal Change Management Area where any area is likely to be affected by physical changes to the coast and be clear as to what development will be appropriate in such areas and in what circumstances. In addition, paragraph 114 provides for the maintenance of the character of the undeveloped coast, protecting and enhancing

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				its distinctive landscapes, particularly in areas defined as Heritage Coast, and seeks improvement to public access to and enjoyment of the coast. Shoreline Management Plans (SMPs) are prepared by the Environment Agency to provide advice to local authorities and other organisations on the risks associated with coastal processes. Revocation will not affect the presence of SMPs and they should continue to inform the evidence base for planning in coastal areas. The policy and guidance contained in the NPPF combined with the SMPs will ensure that the landscape benefits identified will be maintained.
ENV1 Retention	++	++	++	The policy states that local development documents should define a multiple hierarchy of green infrastructure, in terms of location, function, size and levels of use, based on analysis of natural, historic, cultural and landscape assets, and the identification of areas where additional green infrastructure is required. The policy identifies a number of 'assets' of regional significance for the retention, provision and enhancement of green infrastructure including the Norfolk and Suffolk Broads, AONBs, Heritage Coast and other areas of landscape importance such as the Community Forests in the region. The significant positive effects of the policy are short to long term.
ENV1 Revocation	++	++	++	Paragraph 115 of the NPPF continues the emphasis placed on conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The NPPF also maintains the policy previously contained in PPS7 that local planning authorities should set criteria based policies against which proposals for any development on or affecting protected landscape areas will be judged (paragraph 113), while landscape character assessments should be prepared where appropriate (paragraph 170). In consequence, revocation has been assessed as having the same positive benefits as retention.
ENV2 Retention	++	++	++	In accordance with statutory requirements, local planning authorities should afford the highest level of protection to the East of England's nationally designated landscapes – the Norfolk and Suffolk Broads, the Chilterns, Norfolk Coast, Dedham Vale, and Suffolk Coast and Heaths Areas of Outstanding Natural Beauty (AONBs), and the North Norfolk and Suffolk Heritage Coasts. The policy also aims to protect and enhance the diversity and local distinctiveness of identified the countryside character areas through the use of area wide strategies based on landscape character assessments, developing criteria based polices and securing mitigation measures where damage to local landscape character is unavoidable. The policy has significant benefits in the short, medium and long term.
ENV2 Revocation	++	++	++	Paragraph 115 of the NPPF continues the emphasis placed on conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The NPPF also maintains the policy previously contained in PPS7 that local planning authorities should set criteria based policies against which proposals for any development on or affecting protected landscape areas will be judged (paragraph 113), while landscape character assessments should be prepared where appropriate (paragraph 170). In consequence, revocation has been assessed as having the same positive benefits as retention.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
ENV3 Retention	++	++	++	The policy sets out the statutory requirement to protect internationally and nationally important designated sites and seeks to ensure that the region's wider biodiversity, earth heritage and natural resources are protected and enriched through the conservation, restoration and re-establishment. As habitats and landscape are interlinked the policy will also have significant effects on the conservation and enhancement of the landscape. The effects are short to long term. As the policy sets out legal requirements and the policies now contained in the NPPF, revocation of the regional strategy would not have any effects.
ENV3 Revocation	++	++	++	The legal requirement for local planning authorities to ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation would be unchanged by revocation. Paragraph 109 to 119 of the NPPF will apply concerning the protection and enhancement of the natural and local environment. This includes recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity and providing net gains in biodiversity where possible. Paragraph 117 states that planning policies should: • plan for biodiversity at a landscape-scale across local authority boundaries; • identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation; • promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan; • aim to prevent harm to geological conservation interests; and • where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas. The plan policies are supported by the development management requirements set out in paragraph 118. In addition, the introduction of Local Nature Partnerships announced in the Natural Environment White Paper which will complement existing local partnerships which deal with matters such as provision of green infrastructure will improve the chances of the delivery of the policy. Such partnerships will be able to work across administrative boundaries enable planning of networks at the scale that has the most impact. In consequence, revocation has been assessed as having the same positive benefits as retention.
ENV4 Retention	+	++	++	The policy seeks to promote and encourage the expansion of agri-environment schemes to increase the landscape value of farmland and increase public access. The effects are likely to be in the medium and in particular the long term although it is not clear what scope the planning system has to influence or deliver the policy. As the policy relates to agri-environmental schemes, revocation of the regional strategy will not have any effects on the delivery of the benefits identified.
ENV4 Revocation	+	++	++	The policy promotes agri-environment schemes (AES). AES schemes are voluntary agreements that pay farmers and other land managers to manage their land in an environmentally responsible way. The schemes are run by Natural England, on behalf of

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				Defra. AES are supported through the Rural Development Programme for England 2007–2013 (RDPE), with EU funding from the European Agricultural Fund for Rural Development, part of the Common Agricultural Policy (CAP), transfers (known as modulation) from the Single Farm Payment (SFP), and match funding from the UK Treasury. Revocation of the East of England Plan will not affect AES. The NPPF requires that where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality. More generally, paragraph 109 in the NPPF states that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interests and soils and preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil (and other types) of pollution. Taken together these policies provide at least the same level of benefits as for the retention of the policy and more importantly, revocation would leave AES unaffected.
ENV5 Retention	++	++	++	The policy seeks to achieve an increase in woodland cover by protecting and achieving better management of existing woodland and promoting new planting where consistent with landscape character. It also protects ancient semi-natural woodland and aged or veteran trees which are significant components of the landscape. It targets new woodland creation at schemes for the restoration of derelict or contaminated land and sites formerly used for mineral-extraction or industry, green infrastructure within areas planned for significant growth, increasing tree cover in Community Forests, along transport corridors and to link native and newly created woodland. The policy therefore has significant short, medium and long term benefits.
ENV5 Revocation	++	++	++	The protection of ancient semi-natural woodland and other woodlands of acknowledged national or regional importance would remain in the absence of the plan (Paragraph 118 of the NPPF). This would maintain the significant positive effects on biodiversity and cultural heritage. The creation and enhancement of green infrastructure is likely to include a woodland component where local planning authorities and their communities consider this to be appropriate.
ENV6 Retention	++	++	++	The policy states that local planning authorities and other agencies should identify, protect, conserve and, where appropriate, enhance the historic environment of the region, its archaeology, historic buildings, places and landscapes, including historic parks and gardens and those features and sites (and their settings). This policy brings significant landscape benefits in the short, medium and long term.
ENV6 Revocation	++	++	++	Legislation protecting listed buildings, scheduled monuments, conservation areas and registered parks and gardens remain in place. Paragraph 109 of the NPPF sets out that planning policies will protect and enhance valued landscapes, geological conservation interests and soils. Paragraphs 126 - 141 of the NPPF set out strong national policy on conserving and enhancing the historic environment. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				While the regional strategy identified those heritage assets in the East of England which are especially significant heritage assets, given the content of local plans and the policies set out in the NPPF, it is unlikely that the revocation of policy ENV 6 would remove the protection afforded to these assets and it is unlikely that revocation of this policy would have any effects.
ENV7 Retention	+	++	++	The policy requires new development to be of high quality which complements the distinctive character and best qualities of the local area and promotes urban renaissance and regeneration. The main effects of the policy will increase with time (medium and especially the long term) as new development comes forward.
EN7 Revocation	+	++	++	The NPPF devotes a whole section to good design (Section 7) and taken together with other policies in the framework should help to minimise the adverse effects of delivering the necessary development. Paragraph 58 of the NPPF states that local plan policies should respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation. Local planning authorities should look for opportunities for new development. Paragraph 147 of the NPPF also states that within Conservation Areas and World Heritage Sites and within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably. The policy which previous drew together components of PPS 1, 3, and 15 are now contained in the NPPF, so revocation of the regional strategy is unlikely to have an effect.
CSR3 Retention	++	++	++	The policy maintains the Green Belt around Cambridge to define the extent of urban growth in accordance with the purposes of the Cambridge Green Belt which are to preserve the character of Cambridge as a dynamic city with a thriving historic centre and maintain and enhance the quality of Cambridge's setting. The explanatory text identified that the extent of the Green Belt may needed to be revisited in the review of the regional strategy which would have made the long-term effects uncertain.
CSR3 Revocation	++	++	++	Revocation of the policy would require deferral back to the Local Plan policy position. The Cambridge Local Plan was adopted in 2006. The Cambridge Policy 4/1 aims to protect the Green belt around Cambridge. The policy states that: "There is a presumption against inappropriate development in the Cambridge Green Belt as defined on the Proposals Map. The purposes of the Green Belt are to: • preserve the unique character of Cambridge as a compact, dynamic City with a thriving historic centre; • maintain and enhance the quality of its setting; and • prevent communities in the environs of Cambridge from merging into one another and with the City. The Green Belt preserves the setting and special character of Cambridge as a dynamic city with a thriving historic centre and maintain and enhance the quality of Cambridge's setting. The explanatory text identified that the extent of the Green Belt may needed to be revisited in the review of the regional strategy which would have made the long-term effects uncertain. However, as there is no longer a mechanism to review the regional strategy the uncertainty has been removed.

Regional Plan Policy	Score			Commentary
	Short Term	Medium Term	Long Term	
				As Cambridge City's local plan policy repeats the wording of policy CSR3, revocation of the regional strategy would have no effect. However, as there is no longer a mechanism to review the regional strategy the uncertainty has been removed. With revocation of the regional strategy, it would be for the local authority to decide whether it was appropriate to review the Green Belt and this would need to be in accordance with the policy in the NPPF.
ETG1 Retention	+	++	++	The strategy for the sub-region aims to achieve transformational development and change throughout Essex Thames Gateway. The policy includes references to creating an attractive image, promoting excellence in the design of buildings and public realm and creating townscapes and landscapes of high quality and distinctiveness. The effects will be seen mainly in the medium to long term as the strategy developed.
ETG1 Revocation	?+	++	++	Delivery of this Strategy was dependent on the Thames Gateway South Essex Partnership; however, as of 1st April 2012 the company limited by guarantee has ceased to operate. A new partnership between the six local authorities covering South Essex has been formed to carry forward the work of driving the economic growth of the area. Leaders / Cabinet members from Basildon Borough Council, Castle Point Borough Council, Essex County Council, Rochford District Council, Southend-on-Sea Borough Council and Thurrock Council form the board of the new partnership. These LPAs will need to establish a strategy and reflect this in their respective adopted Local Plans to promote design elements of those outlined. These will follow the guidance in the NPPF devotes a whole section to good design (Section 7) and should help to maximise the benefits over the long term. So whilst revocation of the East of England Plan has an effect on the achievement of this strategy and in the short and medium term, it will not affect the long term.
LA4 Retention	+	+	+	The assessment of retention of policy LA4 received a neutral score. However, the sustainability appraisal for the Watford Borough Council's draft Core Strategy (which would replace the regional strategy) scored significant positive for cultural heritage. The assessment reflects the appraisal finding, although it should be recognised that the assessment is not necessarily like for like.
LA4 Revocation	++	++	++	
SV1 Retention	+	+	+	The assessment of the effects of retaining policy SV1 on the landscape was minor positive in the short medium and long term. However, the sustainability appraisal of an Interim Planning Policy Statement (IPPS) published by the local authority in April 2012 scored landscape as significantly positive in the medium term. That score is reflected here as an assessment of the effect of revocation of the regional strategy.
SV1 Revocation	+	++	?	

10.7.1 Effects of Revocation

The regional strategy contains a number of policies which seek to conserve or enhance the rural and urban landscape in the region. The East of England is home to several landscapes of national importance and landscape conservation was a specific policy in the East of England Plan (ENV2). This repeats the legal requirements and national policy (paragraph 115 of the NPPF) requirements so the

protection afforded to the Norfolk and Suffolk Broads, the four AONBs in the region and the expanse of Heritage Coast would be unaffected by revocation.

Policies on biodiversity and earth heritage (ENV3) and woodlands (ENV5) by seeking to conserve and enhance habitats and woodland respectively also provide important landscape benefits are largely covered by legislation (e.g. the Habitats Regulations) or national policy, so revocation would be unlikely to have any effects. The one area where revocation may have an effect is on the policy intention of significantly increasing the area of new woodlands. While the main driver for woodland expansion in recent years has been linked to agri-environment schemes or woodland grants (with the conversion of agricultural land), the planning system has played a role in safeguarding areas for example linked to Community Forests. However, the overall effect and its significance are also influenced by available funding which is outside the scope of the planning system. Similarly policy ENV4 (Agriculture, Land and Soils) seeks to achieve improvements to the farming landscape through agri-environmental schemes which is outside the scope of the planning system and is unlikely therefore to be affected by revocation of the regional strategy.

Policy ENV7 (Quality in the built environment) together with policy ENV1 (Green infrastructure) and SS8 (Urban Fringe) seek to improve the landscape of urban and urban fringe areas. These policies are all reflected in the NPPF and revocation so their intended effects would be delivered if the regional strategy was revoked.

10.7.2 Effects of Partial Revocation

The effects of partial revocation concern either

- Revoking all the quantified and spatially specific policies (for instance where a quantum of development, land for development or amounts of minerals to be extracted or waste disposal is allocated to a particular location in the region) and retaining for a transitional period the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period all the spatially specific policies where a quantum of development or land for development is allocated to a particular location in the region and revoking the non spatial policies, ambitions and priorities; or
- Retaining for a transitional period policies, ambitions and/or priorities, the revocation of which may lead to likely significant negative environmental effects.

The likely significant effects on landscape associated with the revocation and retention of the quantitative policies are summarised in **Table 10.2** for policy CSR3, ETG1, LA4, and SV1. The same significant positive effects were identified for both revocation and retention of policies CSR3 and ETG1 (in the

medium to long term). The assessment of the revocation of policies LA4 and SV1 were taken from the sustainability appraisals of the developing core strategies for the two areas and are not therefore directly comparable with the assessment of retention of the policy.

The assessment has found that there are no policies in the East of England Plan where the act of revocation will cause a significant negative effect whilst retaining the same policy will maintain a significant environmental benefit.

10.7.3 Effects of Retention

The effects of retaining the regional strategy would see a continuation of the baseline, at least in so far as it is influenced by the planning system (e.g. as opposed to the agri-environment schemes), with a high level of protection given to those landscape of national and local importance. It is expected, as with revocation that the quality of the urban and suburban landscape will improve over time with the creation of more green infrastructure and more sensitive building design.

10.8 Mitigation Measures

One area that has been identified if the regional strategy is revoked concerns the expansion of woodland. To an extent it may be mitigated through additional tree planting as part of the creation or management of green infrastructure. Larger schemes would depend on the available funding and wider policies on woodland, and while a positive approach nationally would mitigate the any effects of the policy gap, they are beyond the remit of the planning system.