Suffolk Flood Risk Management Partnership

# Suffolk Flood Risk Management Strategy

## Sustainability Appraisal Report

**July 2012**

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# 1. Non-technical summary

## 1.1. Summary of the SA/SEA process

1.1.1. This is a Sustainability Appraisal Report for the proposed Suffolk Local Flood Risk Management Strategy (hereafter referred to as LFRMS), and is the second stage of the Sustainability Appraisal (SA) process incorporating the requirements of the Strategic Environmental Assessment (SEA) Directive and follows on from the Scoping Report published in April 2012.

1.1.2. The SA/SEA of Suffolk LFRMS document assesses its significant environmental, social and economic effects. The SA/SEA should inform and influence the development of plans and programmes early in the process with the aim of making them more sustainable. This report is the SA/SEA Report for Suffolk LFRMS draft document and is issued along with it for public participation and presents information on the likely effects of the LFRMS. The process of appraisal has been carried out in accordance with Office of the Deputy Prime Minister guidance, namely – A Practical Guide to the Strategic Environmental Assessment Directive - September 2005.

## 1.2. Summary of the likely significant effects of the LFRMS

1.2.1. The Suffolk LFRMS is designed to help everyone understand and manage the risk of flooding in the county. The Draft LFRMS contains objectives which form the basis for preparing actions to reduce the risk of flooding and the effect it has to protect people's safety and wellbeing. The SA/SEA compatibility matrix of these against SA/SEA objectives indicates no major conflicts (see Table 2.6). The following is a list of the Draft LFRMS actions followed by sustainability summary of these options against the SA/SEA objectives.

### To Improve the Understanding of Local Flood Risk

| **Option 1**<br><br>Do Nothing | **Option 2**<br>Maintain mechanisms for reporting and recording flood incidents | **Option 3**<br>Improve measures and mechanisms for reporting and recording flood incidents |
|---|---|---|
| Does not seek to improve current knowledge of local level flood risk. | Provides for a repository for flood related data which represents a better approach than what currently exists. | Proactive approach seeks to deliver detailed modelling of surface water. |

## Raise Community Awareness

| **Option 1**<br><br>Do Nothing | **Option 2**<br>Provide information for those aware of their risk of steps that can be taken | **Option 3**<br>Improve the flood risk guidance and information and the ways it is distributed to the public to reduce the flood risk |
|---|---|---|
| Negative impact as not attempt at public engagement would be made. | Will have generally positive performance across relevant indicators. | Aims to communicate information differently to people hence has positive effect. |

## Prevent an increase in flood risk as a result of development

| **Option 1**<br>Do Nothing | **Option 2**<br>Develop a SuDS guidance and prepare a database of historic and predicted local flood risk for use by planning authorities |
|---|---|
| Will have negative effects as will not offer a clear local level guidance or co-ordination on the legislative requirements for SuDS. | Will have positive effect as will provide clear local guidance on the design requirements that developers, consultants and designers should follow when creating SuDS. |

## Establish Working Framework with other Risk Management Authorities

| **Option 1**<br>Disband current partnership arrangements and rely on ad hoc discussions | **Option 2**<br>Continue to work in partnership through the Suffolk Flood Management Partnership and the Suffolk Coast Forum |
|---|---|
| Will have negative effect as not sharing of information will not better inform, co-ordinate and manage flood risk across Suffolk. | Will have positive effects. Allows to pool knowledge and data between stakeholders, leading to a more efficient co-ordination of time and resources. |

## Achieve Wider Environmental Benefits

This action has a clear focus on improving environmental features, therefore scored positively on most of environmental SA/SEA objectives.

## Maintenance Methods of New Structures

Maintenance of privately owned flood defences and ordinary watercourses will reduce the blocking of watercourses and reduce the likelihood of flooding wherever it may occur allowing positive effects on the SA/SEA objectives.

**Sharing Information to Aid Local Decision Making**

Working in partnership will improve data, time and resources, hence has positive effects on SA/SEA objectives.

**Management of Fens Area**

Encourages the practitioners involved in water level management within this special area is integrated into overall flood risk strategies.

## 1.3. How to comment on the report

1.3.1. If you would like to comment on any part of this document please respond by any of the following means:

(a) by e-mail to irina.davis@suffolkcc.gov.uk
(b) by post to:

Irina Davis
Strategic Environmental Assessment Officer
Development Section
Suffolk County Council
Endeavour House
8 Russell Road
Ipswich
Suffolk IP1 2BX

1.3.2. The consultation period runs from the 29th July to the 14th September, 2012.

1.3.3. This document will be available on the Suffolk County Council website at: www.suffolk.gov.uk/floodrisk

## 1.4. Difference the process has made

1.4.1. The Sustainability Appraisal process is an integral part of the development of the Suffolk LFRMS and has encouraged communication between experts and colleagues throughout. The role of the SA/SEA is to assist with the identification of the appropriate options, by highlighting the sustainability implications of each, and by putting forward recommendations for improvement.

## 1.5. Post consultation changes

1.5.1. The Scoping Report for LFRMS was available for consultation from the 29th April to the 24th June, 2012. Three statutory

consultation bodies were consulted on the Scoping Report and changes were made as a result of the comments received:

- Wording changed in relation to SA/SEA objective from '…cultural heritage and assets within Suffolk' to '…cultural heritage and historic assets to address the comment of English Heritage. Also, additional indicator was inserted into the SA/SEA Framework: 'number of Scheduled Monuments at risk of flooding' as well as listed buildings.

# 2. Background

## 2.1. Purpose of the SA/SEA

2.1.1. **Strategic Environmental Assessment** (SEA) is the European Directive 2001/42/EC which states that its objective is "to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development".

2.1.2. The aim of the SEA is to indentify potentially significant environmental effects created as a result of the implementation of the plan or programme 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 factor' as specified in Annex 1(f) of the Directive.

2.1.3. **Sustainability Appraisal (SA)** is the process by which the UK Government has transposed the SEA Directive into town planning legislation to incorporate economic and social objectives as well as environmental ones. The stages and tasks of the SA process are outlined in Table 1, and also correlate with the stages of the Development Plan Documents (DPDs).

2.1.4. Both processes are undertaken during the preparation of a plan or strategy to aid the implementation of sustainable development. The main difference between them is that while SEA has more of an environmental focus, SA includes greater coverage of the social and economic aspects of sustainable development. Although SA and SEA are distinct requirements, government guidance has recommended a single appraisal process.

## 2.2. The Aim and Structure of this Report

2.2.1. This SEA/SA Report has been compiled in order to inform the public, Statutory Environmental Bodies (SEBs) and other interest groups of the outcome of the assessment of the Suffolk FRMS. This report is fully compliant with both the EU SEA Directive (2001/42/EC), the UK SEA legislation (Environmental Assessment of Plans and Programmes Regulations 2004) and Planning and Compulsory Purchase Act 2004. Table 1 demonstrates which parts of the EU SEA directive that the SA Report complies with.

**Table 1: Compliance with EU SEA Directive**

| Information requirement of the SEA Directive (defined by Annex II) | Section of the Environmental Report |
|---|---|
| An outline of the contents and main objectives of the plan or programme, and its relationship with other relevant plans and programmes | Part 2.3, 4.1 |
| The relevant aspects of the current state of the environment | Part 4.2 |
| The environmental characteristics of areas likely to be significantly affected | Part 4.3 |
| Any existing environmental problems which are relevant to the plan or programme, in particular, those relating to areas designated at the European level for importance to wildlife (SPAs, SACs) | Part 4.3 |
| The environmental protection objectives, established at international, Community or Member State 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. | Part 4.4 |
| The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as biodiversity, population, human health, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the inter-relationships between these issues. | Part 5 |
| 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. | Part 5.2 |
| An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack or know-how) encountered in compiling the required information. | Part 5.3 |
| A description of the measures envisaged concerning monitoring | Part 6.2 of this report |
| A non technical summary of the information provided | Part 1.1 of this report |

## 2.3. Local Flood Risk Management Strategy (LFRMS)

2.3.1. The Flood and Water Management Act 2010 identified Suffolk County Council as the Lead Local Flood Authority (LLFA) for the county of Suffolk. This gives the county council a strategic role in overseeing the management of local flood risk. As LLFA Suffolk County Council is required by the Flood and Water Management Act 2010 to produce a Local Flood Risk Management Strategy (LFRMS) which must be maintained, applied and monitored. It follows the publication of a National Flood & Coastal Erosion Risk Management Strategy which sets out principles that must guide all flood and coastal risk management activities.

2.3.2. The requirement to produce a Local Strategy is predominantly concerned with the management of surface, ground and ordinary water course flooding but will clearly need to link to flooding from rivers and the seas. The strategy will not cover coastal erosion risks. Ordinary watercourses are defined as those which are not main river, with main rivers themselves being defined by the Water Resources Act 1991 as being a watercourse shown as such on the Environment Agency main river map and this includes any structure or appliance for controlling or regulating the flow of water into, in or out of the channel.

2.3.3. LFRMS are statutorily required to include the following:

- The risk management authorities in the LLFA area and what flood and coastal erosion risk management functions they may exercise in relation to the area. If functions normally carried out by one body will be carried out by another, this also has to be specified.
- The objectives for managing local flood risk. These will be relevant to the local area and reflect the level of local risk.
- The measures proposed to achieve the objectives. This could include a wide range of measures such as sustainable drainage systems, designation of features, improvements to the drainage network and application of the planning system.
- How and when measures are expected to be implemented.
- The costs and benefits of these measures and how they are to be paid for.
- The assessment of local flood risk for the purpose of the strategy. The strategy may identify gaps in the understanding of local flood risk and specify the actions which could close these gaps.
- How and when the strategy is to be reviewed. The review period is not specified at the national level and it is therefore up to the LLFA to decide what is appropriate.

- How the strategy contributes to the achievement of wider environmental objectives.

2.3.4. The Local Food Risk Management Strategy will be a statutory document, which will impact on the activities of local authorities, the Environment Agency, highways authorities and Internal Drainage Boards. They will all have a duty to ‘act consistently with the local strategy’ when undertaking their flood and coastal erosion risk management functions and have a ‘duty to have regard for the strategy’ when discharging other duties that may affect flood and coastal risk.

# 3. Methodology used

## 3.1. Approach adopted in the SA/SEA

3.1.1. Prior to starting the SA/SEA process a plan or programme would normally undergo 'screening'. This process determines whether the plan is subject to the SEA Directive and therefore requires SEA. In the case of Local Flood Risk Management strategies, this question is answered in Article 3 of the 'SEA Directive' which states the SEA is required for plans and programmes which are likely to have significant environmental effects and which are prepared for water management (See Table 2.1 below).

**Table 2.1: Suffolk Flood Risk Management Strategy - Screening using ODPM Practice Guide 2005**

| | | |
|---|---|---|
| 1. | Is the SLFRMS subject to preparation and/or adoption by a national, regional or local authority OR prepared by an authority for adoption through a legislative procedure by Parliament of Government? (Article 2(a)) | Yes |
| 2. | Is the SLFRMS required by legislative, regulatory or administrative provisions? (Article 2(a)) | Yes |
| 3. | Is the SLFRMS prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use, AND does it set a framework for future development consent of projects in Annexes I and II to the EIA Directive? (Art. 3.2(a)) | Yes |
| 4. | Will the SLFRMS in view of its likely effect on sites, require an assessment under Article 6 or 7 of the Habitats Directive? (Article 3.2(b)) | Yes |
| 5. | Does the SLFRMS set the framework for future development consent of projects (not just projects in Annexes to the EIA Directive)? (Article 3.4) | Yes the proposed SuDs guidance will and guiding principles are promoting and protecting blue corridors and use of multifunctional above ground SuDs. Aiming for zero overall increase in flows to sewers and watercourses. Also move to achieving greenfield pre development flow rates for surface water management. |

| | | |
|---|---|---|
| 6. | Is the SLFRMS sole purpose to serve national defence or civil emergency OR is it a financial or budget PP | No It is related to civil emergencies but it is not an action plan |
| 7. | Is it likely to have a significant effect on the environment? (Article 3.5) | Yes |

3.1.2. The methodology adopted for the SA/SEA of the LFRMS incorporates the requirement of the SEA Directive and has been developed in accordance with the following guidance:

- The Plan Making Manual (PAS online guidance available at: www.pas.co.uk)
- A Practical Guide to the Strategic Environmental Assessment Directive (ODPM, 2005).

**Table 2.2: The stages and tasks of the SA/SEA against the DPD production stages**

| SEA Stages | SA/SEA Tasks |
|---|---|
| Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope | A1: Identifying other relevant policies , plans and programmes, and environmental protection objectives.<br>A2: Collecting baseline information.<br>A3: Identifying environmental issues and problems.<br>A4: Developing the SEA objectives and framework.<br>A5: Consulting on the scope of the SEA. |
| Stage B: Developing and refining options and assessing effects | B1: Testing the plan objectives against the SEA objectives.<br>B2: Developing strategic alternatives.<br>B3: Predicting the effects of the plan, including alternatives.<br>B4: Evaluating the effects of the plan, including alternatives.<br>B5: Mitigating adverse effects.<br>B6: Proposing measures to monitor the environmental effects of implementing the plan. |
| Stage C: Preparing the SA/SEA Report | C1: Preparing the SA/SEA Report |

| | |
|---|---|
| Stage D: Consulting of the draft Suffolk LFRMS and the SA/SEA Report | D1: Consulting on the draft Suffolk LFRMS and SA/SEA Report with the public and consultation Bodies.<br>D2: Assessing significant changes.<br>D3: Making decisions and providing information. |
| Stage E: Monitoring the significant effects of implementing the LFRMS | E1: Developing aims and methods for monitoring.<br>E2: Responding to adverse effects. |

3.1.3. Stage A of the SA process was addressed in the SA Scoping report for Suffolk LFRMS which was consulted in April 2012. The SA Scoping Report has informed this Initial SA report by providing: an analysis of a range of sustainability topics relevant to flood risk management in Suffolk; identification of key sustainability issues and problems; and development of an SA Framework (including SA objectives and broad indicators) for the appraisal of the LFRMS at each stage of preparation.

## 3.2. Who was consulted, and when

3.2.1. The original three Statutory Environmental Bodies (SEBs) were consulted on the LFRMS Scoping Report in April 2012. As a result of the consultation, several changes were made to the SA/SEA Report in response to the comments received from English Heritage Statutory Environmental Body.

## 3.3. Difficulties encountered in compiling information

3.3.1. Not all the relevant information was available at county level and as a result regional data was used to identify trends but it is believed that the available information shows a comprehensive view on sustainability within the county of Suffolk.

3.3.2. Some uncertainties exist around the precise impacts of climate change on Suffolk and that evidence base is incomplete.

3.3.3. It should be noted that while the baseline will be continually updated throughout the SA/SEA process, the information outlined within this report represents a snapshot of the information available at the time of undertaking this round of assessments.

# 4. SEA objectives, baseline and context

## 4.1. Plans and programmes

4.1.1. European Directive 2001/42/EC requiring Strategic Environmental Assessments (SEA) on the effects of certain plans and programmes on the environment (those which have land use implications) was incorporated into UK law in July 2004. Current government guidance for spatial plans requires a Sustainability Appraisal (SA); to incorporate a wider consideration of social and economic considerations than SEA alone.

4.1.2. The relationship between various policies, plans, programmes and environmental protection objectives may influence the LFRMS. The relationships are analysed to:

- Identify any external social, environmental or economic objectives that should be reflected in the SEA process;
- Identify external factors that may have influenced the preparation of the plan ; and
- Determine whether the policies in other plans and programmes might lead to cumulative or synergistic effects when combined with policies in the plan.

**Table 2.3: Links to other policies, plans and programmes**

| **International/European Context** |
|---|
| The Johannesburg Declaration on Sustainable Development – Commitments arising from summit. Sept 2002 |
| The UN Millennium Declaration and Millennium Development Goals – Sept 2000 |
| Kyoto Protocol and the UN Framework Convention on Climate Change – May 1992 |
| Bern Convention on the Conservation of European Wildlife and Natural Habitats – 1979 |
| Ramsar convention on Wetlands of international importance especially as waterfowl habitat – 1971 |
| Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979) |
| European Spatial Development Perspective (May 1999) |
| European Directives |
| Air Quality |
| Air Quality Framework Directive – 96/62/EC |
| - The first Daughter Directive – 1999/30/EC |
| - The second Daughter Directive – 2000/69/EC |
| - The third Daughter Directive relating to Ozone – 2002/69/EC |
| ***Climate Change*** |
| Directive to promote electricity from renewable energy – 2001/77/EC |
| ***Water*** |
| Water Framework Directive – 2000/60/EC |
| Urban Waste Water Treatment Directive – 91/271/EEC |
| Water pollution caused by Nitrates from agricultural sources: Nitrates Directive – 91/676/EEC |
| Bathing Water Quality Directive – 76/160/EEC |

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|---|
| Drinking Water Directive – 98/83/EC |
| The Floods Directive, 2007 |
| Landfill Directive, 1991 |
| Groundwater Directive, 1980 |
| ***Nature and Biodiversity*** |
| Directive 79/409/EEC on the Conservation of Wild Birds |
| Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora |
| Waste Management |
| Waste Framework Directive 75/442/EEC, as amended |
| Landfill Directive- 99/31/EC implemented July 2001 |
| Incineration of Waste- 2000/76/EC implemented December 2002 |
| Integrated Pollution Prevention and Control Directive- 96/61/EC implemented 2000 |
| Sewage Sludge Directive- 86/278/EC |
| Waste Electrical & Electronic Equipment Directive- 02/96/EC |
| ***Others*** |
| A New Partnership for Cohesion – Third Report on Economic and Social Cohesion (Feb 04) and Draft New Regulations for Renewed Structural Funds (July 2004) |
| Aarhus Convention |
| EU Sixth Environmental Action Plan |
| |
| **National, Regional and Local Context – cross-cutting topics** |
| Energy White Paper |
| Planning White Paper |
| National Planning Policy Framework March 2012 |
| **Urban** |
| Urban White Paper |
| Towns and Cities Strategy and Action Plan, Urban Renaissance in the East of England |
| **Rural** |
| Government Rural White Paper: Our Countryside – the future – a fair deal for rural England, DETR (2000) |
| Rural Strategy (2004) |
| The Countryside and Rights of Way Act 2000 |
| **Sustainable Communities** |
| A Better Quality of Life: a Strategy for Sustainable Development in the UK (1999), Taking it on: Developing UK Sustainable Development Strategy Together (Consultation: 2004) |
| The UK Government Sustainable Development Strategy - Securing the Future (March 2005) |
| Sustainable Communities Plan: Building for the Future (2003) |
| A Sustainable Development Framework for the East of England, October 2001 |
| Creating Sustainable Communities – In the East of England (Jan 2005) |
| Transport |
| The Future of Air Transport- White Paper (Dec 2003) |
| Civil Aviation Act (Nov 2006) |
| The Future of Rail - White Paper (2004) |
| The Future of Transport : a network for 2030 - White Paper (2004) |
| Government/DfT 10 Year Transport Plan 2000 (RSS) |
| East of England Regional Transport Strategy (April 2003) (Incorporated as a chapter in RPG14) |
| Suffolk County Council, Local Transport Plan 2011-2031 |
| Local Transport Action Plan (Lowestoft, Beccles, Felixstowe and the Trimleys, Sudbury and Great Cornard, Saxmundham, etc) |
| **Community Strategies and Community Development Strategies** |

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| Altogether a better Suffolk – Suffolk's Community Strategy 2004 |
| **Suffolk Structure Plan** |
| Suffolk Structure Plan – 2001 |
| **Neighbouring Authority Plans and National Park Plans** |
| **Public Service Agreements (County and local)** |
| Local Area Agreement: Suffolk 2005-2008 |
| Social – National, Regional and Local Context |
| **Social Inclusion** |
| Regional Social Strategy for the East of England (May 2004 but RSS scoped March 2004 version) |
| Suffolk County Council Equalities Policy, April 2003 |
| **Health** |
| Choosing Health: Making healthy choices easier (Nov 2004) |
| Social Care Annual Plan 2003-4 |
| Healthy Sustainable Communities- what works? (Milton Keynes South Midlands Health & Social Care Group/NHS 2004) |
| Healthy Futures: A Regional Health Strategy for the East of England 2005-2010, May 2006 |
| Health Protection Agency's position statement on Municipal Solid Waste Incineration (2005) |
| **Culture** |
| Culture: a catalyst for change. A Strategy for Cultural Development for the East of England, Living East (June 2004) |
| A Cultural Strategy for Suffolk, March 2002 |
| **Education** |
| Suffolk's Strategy for Learning 2004-9: The Single Plan (March 2004) |
| Schools Plan / College Plan Local |
| School Organisation Plan 2005-2010 August 2005 |
| **Housing** |
| The East of England Regional Housing Strategy 2003-2006, Regional Housing Forum (April 04) |
| Regional Housing Strategy for the East of England 2005-2010 (July 2005) |
| Affordable Housing Study: The Provision of Affordable Housing in the East of England 1996-2021, 2003 |
| East of England Affordable Housing Study Stage 2: Provision for Key Workers and Unmet Housing Need |
| Suffolk Supporting People Five-Year Strategy 2005-2010 (August 2005) |
| ODPM Circular January 2006: Planning for Gypsy and Traveller Caravan Sites |
| **Community Safety** |
| Suffolk Community Safety Strategy, 2001 |
| **Environmental – National, Regional and Local Context** |
| **Environmental Strategies** |
| Working with the Grain of Nature: A biodiversity Strategy for England, 2011 |
| Wildlife & Countryside Act, 1981 (as Amended); Countryside and Rights of Way Act, 2000 |
| Environment Act, 1995 |
| The Natural Environment and Rural Communities (NERC) Act, 2006 |
| Conservation of Habitat and Species Regulations, 2010 |
| A Practical Guide to the Strategic Environmental assessment Directive, 2006 |
| Securing the Future: Delivery the Sustainable Development Strategy, 2005 |
| **Soil** |
| Farming and Food Strategy, Facing the Future, DEFRA, (Dec 2002) |
| The First Soil Action Plan for England: 2004-2006 (2004) |
| Safeguarding our Soils, A Strategy for England, 2009 |
| Contaminated Land (England) Regulations, 2006 |

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| **Climate** |
| Adapting to Climate Change in England. A Framework for Action, 2008 |
| Climate Change UK Programme: Tomorrow's Climate Today's Challenge, 2006 |
| Nottingham Declaration on Climate Change |
| Air Quality |
| National Air Quality Strategy for England, Wales, Scotland and Northern Ireland (Jan 2000) |
| **Water** |
| National Planning Policy Framework, 2012 |
| Flood and Water Management Act, 2010 |
| The Flood Risk Regulations, 2009 |
| Future Water, The Government's water strategy for England, 2008 |
| The Water Supply (water Quality) Regulations Act, 2000 |
| Water Act, 2003 |
| Water Resources Act, 1991 |
| Water Industry Act, 1999 |
| Groundwater Regulations, 1998 |
| Surface Waters Regulations, 1996 |
| Guidance for risk management authorities on sustainable development in relation to their flood and coastal erosion risk management functions, 2011 |
| Protection of Water Against Agricultural Nitrate Pollution (England and Wales) Regulations, 1996 |
| Water for People and the Environment; Water Resources strategy for England and Wales, 2009 |
| Directing the Flow: Priorities for Future Water Policy, 2002 |
| The Impact of Flooding on Urban and Rural Communities, 2005 |
| Land Drainage Act, 1991 (as Amended 2004and 2011) |
| The Environmental Impact Assessment (Land drainage Improvement Works) Regulations, 1999 |
| EA Policy: Sustainable Drainage Systems, 2002 |
| Eutrophication strategy, 2002 |
| Anglian River Basin Management Plan, 2009 |
| Thames River Basin Management Plan, 2009 |
| East of England Plan (May 2008) |
| Catchment Flood Management Plan Broadland Rivers (2009) |
| Catchment Flood Management Plan East Suffolk (2009) |
| Catchment Flood Management Plan Great Ouse (2009) |
| Catchment Flood Management Plan North Essex (2009) |
| The Kelling to Lowestoft SMP (2011) |
| The Suffolk SMP covering Lowestoft to Felixstowe (2011) |
| The Essex and South Suffolk SMP which covers the Stour and Orwell estuaries (draft) |
| Strategic Flood Risk Assessment |
| Surface Water Management Plan for Ipswich (Draft) |
| **Regional/Local Biodiversity/Geodiversity Action Plans** |
| Earth Science Conservation in Great Britain- A Strategy (1990) |
| Geodiversity and the Minerals Industry- Conserving our Geological Heritage (2003) |
| Local Geodiversity Action Plans- Setting the Context for Geological Conservation (2005) |
| UK RIGS Development Strategy 2006- 2010 (2006) |
| The Suffolk Geodiversity Action Plan- draft (March 2006) |
| UK Biodiversity Action Plan, 2004 |
| **Countryside Management** |
| Dedham Vale AONB Management Plan 2004-9 |

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|---|
| Suffolk Coasts and Heaths AONB Management Plan 2008-13 |
| Suffolk Rights of Way Improvement Plan (2006) |
| Suffolk- Creating the Greenest County (Statement of Intent) |
| **Woodland** |
| Woodland for Life: The Regional Woodland Strategy for the East of England (Nov 2003) |
| **Minerals and Waste** |
| Minerals Core Strategy Adopted (2008) |
| Waste Core Strategy Adopted (2011) |

| Economic – National, Regional and Local Context |
|---|
| **Economic and Employment strategies** |
| A Shared Vision – The Regional Economic Strategy for the East of England (Nov 2004) |
| Prioritisation in the East of England, June 2003 |
| Regional Emphasis Document SR2004, December 2003 |
| Framework for Regional Employment and Skills Action (FRESA) (2003) |
| International Business Strategy, Consultation Draft, December 2003 |
| Expanding Suffolk's Horizons: 2004-7 – A New Economic Strategy for Suffolk |
| Suffolk Rural Action Plan, March 2006 |
| **Tourism** |
| Regional Tourism Strategy 2000-2010 |
| Tomorrows Tourism Today (August 04) |
| Sustainable Tourism Strategy for the East of England (March 2004) |
| Good Practice Guide on Planning for Tourism (DCLG May 2005) |
| **Suffolk Tourism Partnership** |
| The Sunrise Coast, Tourism Strategy 2006 |

## 4.2. Environmental, social and economic baseline characteristics

4.2.1. Suffolk County Council maintains a significant database of information abut the principal physical, economic, social and environmental characteristics of the county. The County Council places a high priority on the continued collection and management of data which allows the accurate description of environmental, social and economic issues in the county.

4.2.2. The baseline data for the SA/SEA includes existing environmental and sustainability information from a range of sources which is both quantitative and qualitative. The information provides the basis for assessing the potential impact of the LFRMS policies and will aid development of appropriate mitigation measures, together with future monitoring data.

4.2.3. The following figure (Figure 2.1) gives an indication of where Suffolk is in relation to the surrounding counties as well as the location of the districts within Suffolk.

**Figure 2.1 Map of Suffolk showing districts and county boundary**


4.2.4. Suffolk is situated in the East of England, and covers an area of 3802 km2. It contains seven District and Borough Councils, two of which (Waveney and Suffolk Coastal) have North Sea coastlines. It borders Norfolk, Cambridgeshire and Essex. In the north of the county, parts of the Waveney Valley is within the Norfolk and Suffolk Broads, which has a similar status to a National Park.

## SOCIAL ISSUES

### Population

4.2.5. In 2010 Suffolk was the 7th fastest growing county in the country with a population of 719,500. Since 2001, rate of growth has been 7.4%, faster than England but not as fast as neighbouring counties.

4.2.6. Ninety percent of the population growth in Suffolk is due to net in-migration. Births only just exceed deaths, contributing just 10% of the population growth between 2001–2009. In 2009 the net in-migration was from internal flows within the UK as there were slightly more international migrants leave Suffolk than arrive.

4.2.7. Almost 60% of the population growth has occurred in Suffolk's towns and the Ipswich corridor, with concentration in the main

towns of Ipswich, Lowestoft and Bury St Edmunds plus Stowmarket, Haverhill, and Sudbury and the smaller towns of Saxmundham, Mildenhall and Hadleigh. Of Suffolk's largest 10 towns this list omits Felixstowe (5th largest population) and Newmarket (7th) reflecting strategic planning constraints.

4.2.8. The only current population projection for Suffolk is the ONS 2008 trend based which suggests the County's population will grow by 100,000 between 2009 and 2021. Further evidence that the ONS 2008 based projection may be too high given the impact of the recession, comes from comparison of the Mid year estimate for 2009 which is 714,000 whereas the figure in the projection for 2009 is 717,500. The ONS 2010 now suggests growth of 57,200 between 2011 and 2021 with a longer term view further 70,600 between 2021 and 2035 to reach 848,100.Hence caution needs to be applied when using the ONS 2008 based projection and it underlines the urgent need of a policy based projection for Suffolk. Now confirmed by release of 2010 projection.

4.2.9. The age structure of the county also has sustainability issues. The 2010 age structure shows that compared to England, Suffolk has fewer young adults aged 20 to 39 and more aged over 60, pronouncedly in the 60-65 category.

**Housing**

4.2.10. The Environment Agency has estimated the number of properties at risk of surface water flooding in Suffolk to be 32,500 (flooding to a depth of 0.3m from an event with a 1 in 200 annual chance of occurring. This compares to 54,000 in Essex and 35,800 in Norfolk.

4.2.11. The rate of completion of new dwellings influences the flow of migrants into the County plus its availability at the right price is important for emerging households. The location of new housing can change the character and composition of an area with implications for service provision. The recession in 2008 saw completions fall and in the most recent year 2009/10 Districts report that housing completions have fallen to a 9 year low of 2,218. The "target" for housing set in the East of England Plan was 61,700 between 2001 and 2021. This would have meant an average build of 3,085 per year. Even with the peaks and troughs in house building Suffolk is broadly in line with the previously set housing targets. However this masks that Districts in the east of the County (Waveney and Suffolk Coastal) are currently out performing their housing targets whilst the West (St Edmundsbury and Forest Heath) are behind.

| | Housing Stock at 2010/11 | | | | |
|---|---|---|---|---|---|
| **Local Authority Name** | **Local Authority (incl. owned by other Las)** | **Housing association** | **Other public sector** | **Private sector (P)1** | **Total (P)1** |
| Babergh | 3,502 | 1,537 | 22 | 33,560 | 38,620 |
| Forest Heath | 6 | 3,888 | 38 | 23,020 | 26,960 |
| Ipswich | 8,174 | 4,599 | 160 | 45,820 | 58,760 |
| Mid Suffolk | 3,418 | 1,214 | 0 | 36,530 | 41,160 |
| St Edmundsbury | 0 | 7,791 | 476 | 37,900 | 46,170 |
| Suffolk Coastal | 0 | 6,323 | 0 | 51,890 | 58,210 |
| Waveney | 4,584 | 2,793 | 0 | 47,530 | 54,900 |
| Suffolk Total | 19,684 | 28145 | 696 | 276250 | 324780 |

Source: HSSA

4.2.12. New housing developments place pressures on existing schools, road networks and other services such as supermarkets and healthcare. It naturally follows that such developments will also have an impact on waste collection and disposal services which in turn will impact on the need for additional sites to meet demand.

4.2.13. The average house price in Suffolk is £154,428 (March 2011) up only 0.9% in the last year compared to 6.9% the previous year. Prices have been falling since June 2010. With banks currently requiring deposits of around 15% this equates to £23,164. Lending amounts have also changed from about 5 times an individual's salary to 3 times. This is affecting the housing market with only around 1,000 transactions happening a month in 2010 compared to 1,700 in the summer of 2007. As Figure 4 shows the average house price in Suffolk is currently falling away from the UK average, suggesting house prices are rising quicker elsewhere.

4.2.14. Social and Registered Social Landlord housing is an important part of the stock of housing for people with limited means. In 2010 Suffolk District Councils owned and managed 19,642 dwellings (down 214 on 2009). Registered Social Landlords (who also manage all of St Edmundsbury and Suffolk Coastal's stock) own and manage 27,600 dwellings (up 423 on 2009) meaning that overall there are 47,242 units in Suffolk, up 0.4% on last year.

4.2.15. In 2009/10 there were 8,612 supported housing units available for various groups of vulnerable and marginalised adults. Older people represented 79% (6,268) of this uptake, with homeless people representing 9% (752), people with learning disabilities 3% (278) young people 3% (210), people with mental health

problems 3% (215) marginalised people 2% (179) and people with physical and sensory impairment 1% (102).

**Health**

4.2.16. In 2009 life expectancy (LE) for men in Suffolk was 80 years and 84 years for women. There is a 5.3 year gap in LE between men living in the least and most deprived areas in Suffolk and a 4.4 year gap for women which is lower than the England average.

4.2.17. Life expectancy provides an overall indication of the health of the population. A boy born in 2009 in Suffolk would expect to live on average 80 years (9th highest for counties in England) whilst a girl would on average be expected to live 84 years (7th highest). As with England, life expectancy in Suffolk has been increasing year on year. Since 2000 average life expectancy for males in Suffolk has increased by 2.6 months per year and 1.9 months per year for females.

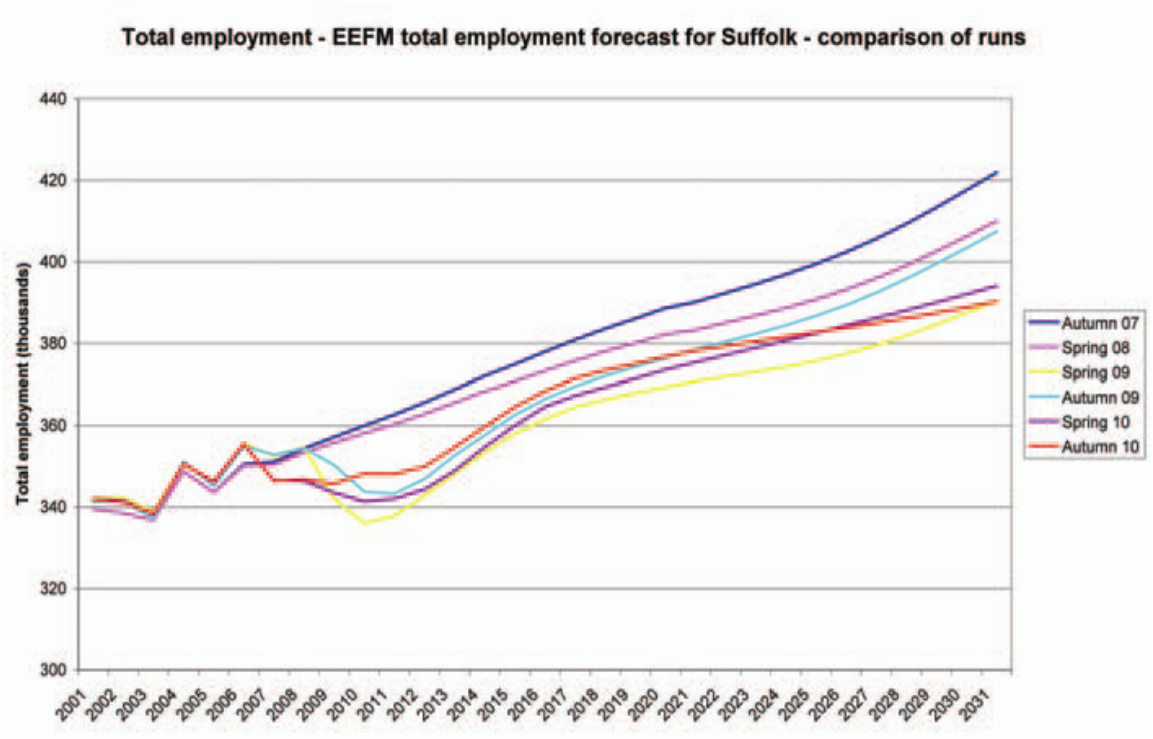
4.2.18. Although life expectancy is increasing, inequalities exist between different groups and geographical areas in Suffolk. In 2005-09 life expectancy among males living in the most deprived parts of Suffolk was on average 5.3 years less than males living in the least deprived areas, the gap for females was 4.4 years. Since 2001 the gap in life expectancy has decreased by 0.6 years (11% decrease) for males and increased by 0.1 years (6% decrease) for females. The decrease in the life expectancy gap for males in Suffolk and the small increase for females differs from the national trend which saw the gap increase by 0.5 years for males and 0.4 years females. Even though inequalities are reducing we should be mindful that pockets of deprivation exist, where individuals experience significantly worse health outcomes compared to the rest of the population.

**Employment**

4.2.19. The latest forecasts available are from the Autumn 2010 run. This suggests that the job losses have not been/will not be as deep as feared and therefore the recovery is forecast to be stronger than any of the previous three runs, despite government spending cuts. However, growth is forecast to slow from around 2017 onwards although employment is expected to return to the 2008 level by 2013. The model anticipates that the manufacturing sector will continue to decline over the longer term but given the resilience of this sector seen in Suffolk, and presence of Advanced manufacturing the predictions may be overly pessimistic. The model suggests that Waveney will struggle to recover to its 2008 level of employment in the period up to 2031. The employment in Suffolk is heavily dependant on public sector (local government, health and education).

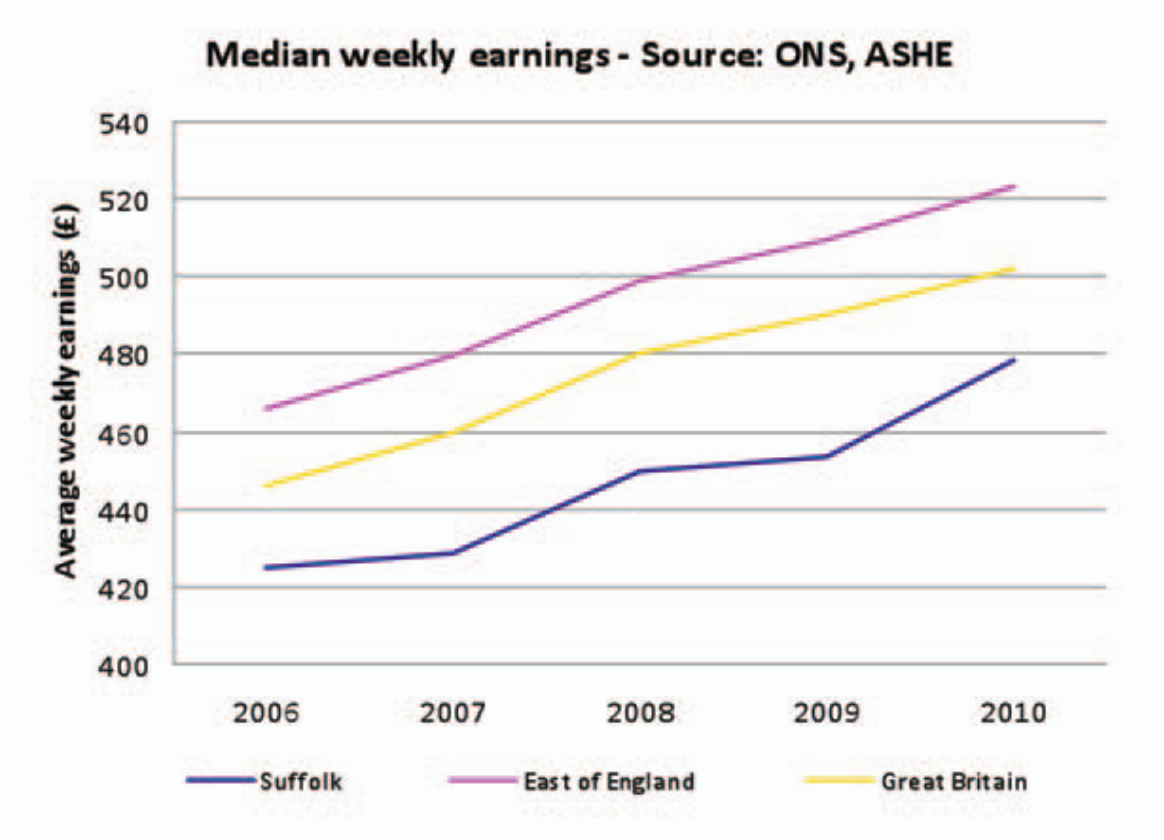
4.2.20. Average weekly earnings in Suffolk at £478 in 2010 remain below the regional (£523) and national averages (£502) according to the Annual Survey of Hours and Earnings from the Office for National Statistics (Figure 12). The gap in median earnings levels between Suffolk and the East of England and Great Britain has narrowed in 2010. This may suggest some improvement in the range of highly skilled jobs available in the county.

**Figure 2.3: Total employment forecast for Suffolk**




Source: East of England Forecasting Model

**Figure 2.4: Median weekly earnings**



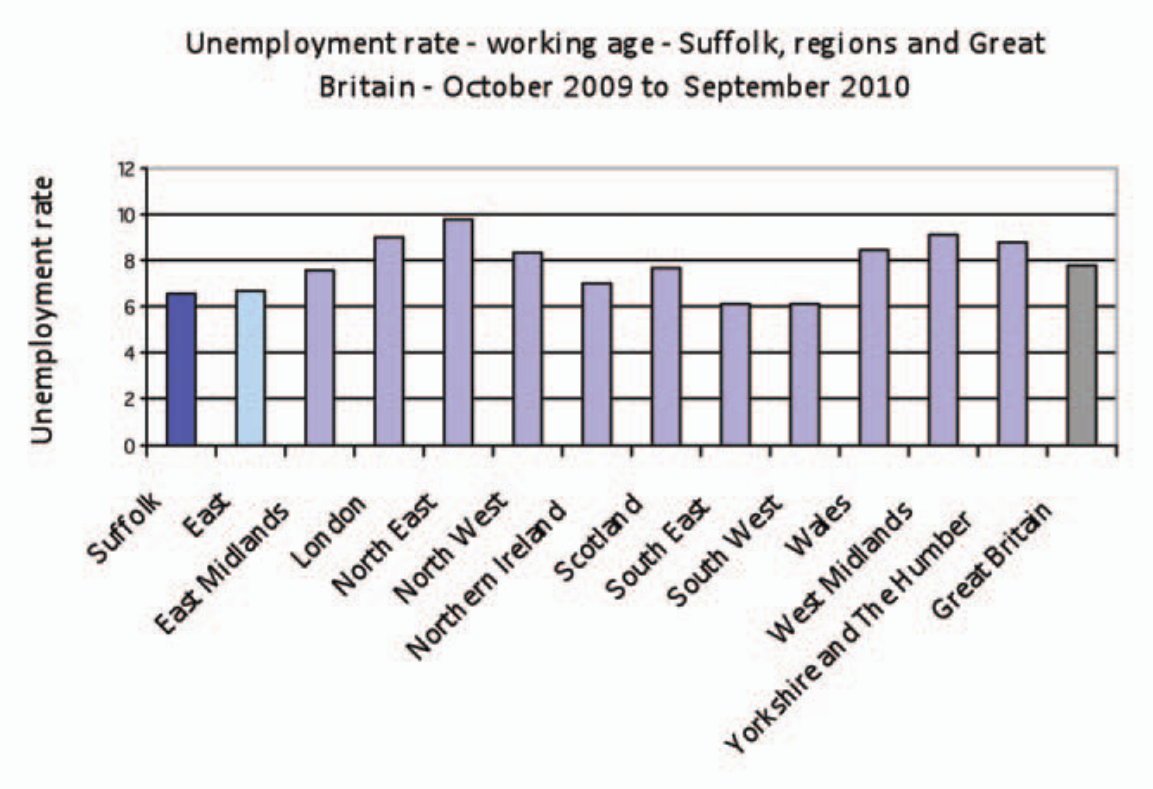

## Productivity

4.2.21. Gross value added (GVA) estimates the value of an output (goods or services) less the value of inputs used in that output's production process. GVA per head is used as a proxy for estimating the productivity of an economy. It allows us to judge how much economic output is produced relative to the size of the economy and its productive resources. The higher the GVA the better as it indicates an efficient economy. Suffolk GVA per head at £17,735 remains relatively low compared to the UK average of £21,103 and other areas due to the dominance in the county of comparatively low-skilled sectors. It is also not growing at the same pace as the UK. In the East of England, Suffolk GVA per head is above that of Norfolk and Essex, but below the average of the region as a whole.

4.2.22. The UK experienced a fall in Gross Domestic Product (GDP) for six consecutive quarters from the second quarter of 2009 to the third quarter of 2010, resulting in the longest recession since quarterly figures were first recorded in 1955 (a recession is defined as a fall in GDP in two consecutive quarters). Evidence from a range of sources had suggested that Suffolk weathered the impacts of the economic downturn relatively well. Figure 2.5 compares the average unemployment rate with other areas,

showing that at 6.6% our rate is only higher than the South East and South West.

**Figure 2.5: Unemployment rates in Suffolk, the regions and Great Britain**




4.2.23. Overall in the period October 2007 to September 2010 we have seen the numbers unemployed increase by 9,400 (68%) whilst the number of Job Seeker Allowance claimants increased by 3,500 (42%) in the same period and figures up to April 2011 show an increase of 4,533 (53%). Over 3000 jobs have been created although these are only the ones reported to Job Centre Plus and the press and are unlikely to include new self-employed, small businesses. Hence it can be concluded that there are fewer jobs in Suffolk and unemployment is rising – not everyone is finding jobs outside the County. Not all unemployed people chose to claim or can claim Job Seekers Allowance. Those with insufficient National Insurance contributions or exceeding the income or savings limits will not qualify. With rising unemployment there may be less ability to buy which could have implications for local retail and service businesses.

**Crime**

4.2.24. Suffolk is one of the safest Counties in the England as long term levels of recorded crime are comparatively low when considered in the national context. During 2010/11 there were 46,357 crimes recorded and 34,565 Anti Social Behaviour (ASB) offences recorded by Suffolk Constabulary. In recent years perceptions of

anti-social behaviour have also been amongst the lowest in the country.

4.2.25. The top 5 most recorded crimes in Suffolk during 2010/11 were theft and handling stolen goods (which included shop-lifting), criminal damage, other burglary, theft from a vehicle and other violence against the person. Ipswich had the most offences in all 5 of these crime categories with Ipswich Alexandra ward being the most prevalent with 8% of the total crime committed. Lowestoft and in particular Lowestoft Harbour ward was the second highest crime location followed by Lowestoft Kirkley and Ipswich Gipping. Mid-Suffolk with 3,433 offences in 2010/11 had the least crime across all crime categories of the Suffolk Districts.

## ENVIRONMENTAL ISSUES

### Air quality

4.2.26. The condition and quality of the natural environment ultimately determine the potential health and wellbeing of Suffolk's population. Whilst physical health is directly influenced by the quality of local air and water and by opportunities for physical recreation, access to open landscapes and association with natural plants and wildlife are increasingly recognised as protective factors for mental wellbeing. Furthermore, the environment of Suffolk is also the basis for much of its economic activity, such as farming, tourism and energy production, without which material needs cannot be met.

4.2.27. Air quality in Suffolk is generally good and the exceptions are highly localised, associated with concentrations of road traffic in town centres. Measured particulate pollution is within national limits, but there are currently 9 Air Quality Management Areas (AQMA) across the county reflecting local concentrations of the irritant gas nitrogen dioxide. As noted above, the installation of a new UTMC system in Ipswich will help reduce air quality problems in the town, whilst in other areas progress is being made in preparing Air Quality management Plans.

### Water quality and resources

4.2.28. In terms of use of resources daily domestic water consumption averaged 153 litres per person across the East of England in 2008-09: slightly above the national average of 150 litres. In 2009 Suffolk consumed 3648 GWh of electrical energy and 5835 GWh of energy from gas. The total energy demand in the county, including transport, was estimated at 16,647 GWh for 2008 with domestic use (5671 GWh) slightly greater than that of either the transport (5541 GWh) or industrial & commercial (5396 GWh)

sectors. Suffolk could generate about 293 GWh (about 1.8% of total demand) per year from renewable sources if all the installations in operation, under construction or with planning consent were on line. The county has 725 renewable energy systems registered for the electrical Feed In Tariff. These are predominantly domestic microgeneration (716), with 4 commercial and 5 community installations combining to give nearly 2 MW generating capacity. In the 3 years to August 2009, 237 renewable source heating projects were completed in Suffolk under the Low Carbon Buildings Programme. The vast majority (209) use solar energy to heat domestic hot water.

4.2.29. There is a limit to the amount of waste water that can be safely returned to our rivers and the sea without having a detrimental impact on the environment. Furthermore, we know that extreme rainfall can overwhelm drains and overtop flood defences. Climate change is bringing fresh challenges as patterns of rainfall are predicted to change, with more intense rainfall events.

4.2.30. The South East of England is already suffering a shortage of water for human consumption and this situation will be exacerbated by climate change and the planned increase in development in the region. The object of water cycle management is to make better use of the water that we have, Even Suffolk, noted as a relatively dry county, experiences times of rainfall sufficient to cause flooding and what is required is to manage water surplus and shortage effectively.

**Soil**

4.2.31. Suffolk is rich in agricultural farmland. About 1% of the county's soils are Grade 1, with grades 2 and 3a each at about 20%; in total, about 45% of the county's soils are classed as "best and most versatile".

**Waste**

4.2.32. The average weight of refuse generated by Suffolk households is just over 1000 kg for 2010-11, having stabilised after a downward trend. More than half of it is now recycled, reused or composted. The proportion of municipal waste buried in landfill sites has also declined steadily to about 37% in 2010-11. An incineration plant is due to be operational at Great Blakenham from the end of 2014. This facility will process the bulk of Suffolk's residual waste to generate electricity and thereby remove much of the need for landfill sites in the county.

4.2.33. Waste production is likely to continue to increase if the projected levels of population and employment growth take place, although

the latest projections used by Suffolk's waste planners anticipate that waste growth will be at 1.35% from 2005/06 until 2009/10. After this, then growth is expected to be tied to the housing growth at 0.9%.

4.2.34. The county of Suffolk has 18 household waste recycling centres, 7 composting sites (or compost processing sites), 18 landfill sites, 26 waste transfer facilities, 25 metal recycling facilities, 2 materials recovery facilities and 8 incinerators (which together deal principally with municipal and commercial and industrial waste). Sites are located evenly throughout the county, along major transport routes. Waste transfer facilities are concentrated along the A14 and near the County's borders with Essex and Norfolk.

**Traffic and transport**

4.2.35. In 2011, 33.4% of respondents usually travelled to work by sustainable modes {Bus, Car passenger, Cycle, Park and Ride, Taxi, Train, Walk and Work from home}, which is the same as both the 2009 and 2010 published figure. When restricted to those organisations that formed the original 2005 base set the sustainability now stands at an all time high of 34.3%.

4.2.36. From 2005 through to 2010 percentage travelling by sustainable means has increased from 27.8% to 34.3%, with a peak in 2008 of 34.2% and a marginal decline of 0.8% to 2010 followed by a record high of 34.3% in 2011.

4.2.37. Most sustainable modes have increased steadily from 2005 through to 2010 with:

- Walking to work increasing from 7.3% to 10.6%.
- Home working increasing, more than 4 fold, from 0.3% to 1.9%
- Park and Ride increasing, more than 2 fold, from 0.6% to a peak of 1.4% in 2010 but has dropped to 0.9% in 2011 on the closure of Bury Rd Park and Ride in Ipswich.
- Train travel increasing, more than 2 fold, from 1.3% to 3.5%

4.2.38. The decline has been in bus usage which started dropping from a peak of 9.2% in 2007 to 5.0% in 2011. This decline is statistically significant (99% confidence limit is 1.3%, based on a Poisson distribution) is not consistent with overall bus usage. A number of factors have been considered as causes for the decline but at the current time the underlying cause has not been identified.

4.2.39. The dispersed nature of Suffolk's rural population combined with a lack of services and regular scheduled public transport in rural

areas is unlikely to lead to decreased demand for private travel in the near future.

4.2.40. The Port of Felixstowe, the largest container port in the country, contributes significantly to HGV traffic in Suffolk, particularly on the A14. The approved port expansion there, along with the approved port at Bathside Bay in Harwich, Essex, will lead to an increase in HGV traffic in the future.

4.2.41. The average speed on Suffolk's roads now stands at an all time low of 38.9mph (derived using Suffolk County Councils Automatic Traffic Count sites), dropping by 6% over the last decade from 41.4mph in 2000. Comparable declines are recorded for all districts and all road types.

4.2.42. In 2010 traffic levels on Suffolk's roads were 3% less than they were in 2007 when we saw the peak traffic flows nationally and on the County's roads. Traffic levels in 2010 were the same as they were in 2003, despite a 6% increase in population from 2000 to 2009.

4.2.43. The implication of flooding of roads can have serious disruption to transport infrastructure and have considerable implications to resident's wellbeing and the economy. Therefore LFRMS should seek to manage flood risk to infrastructure and material assets within Suffolk.

**Energy**

4.2.44. Suffolk could generate about 293 GWh (about 1.8% of total demand) per year from renewable sources if all the installations in operation, under construction or with planning consent were on line. The county has 725 renewable energy systems registered for the electrical Feed In Tariff. These are predominantly domestic microgeneration (716), with 4 commercial and 5 community installations combining to give nearly 2 MW generating capacity. In the 3 years to August 2009, 237 renewable source heating projects were completed in Suffolk under the Low Carbon Buildings Programme. The vast majority (209) use solar energy to heat domestic hot water.

4.2.45. The average weight of refuse generated by Suffolk households is just over 1000 kg for 2010-11, having stabilised after a downward trend. More than half of it is now recycled, reused or composted. The proportion of municipal waste buried in landfill sites has also declined steadily to about 37% in 2010-11. An incineration plant is due to be operational at Great Blakenham from the end of 2014. This facility will process the bulk of Suffolk's residual waste to generate electricity and thereby remove much of the need for landfill sites in the county.

## Flooding

4.2.46. The nature of flood risk within Suffolk is extremely varied and widespread across the county. Suffolk has an extensive coast and estuaries, a network of rivers and low lying land, which combined with a number of urbanised areas, means it is at risk of flooding from a range of different sources. The main sources of flood risk within Suffolk include: **Surface water flooding**, also known as **pluvial flooding** or flash flooding, occurs when high intensity rainfall generates runoff which flows over the surface of the ground and ponds in low lying areas. It is usually associated with high intensity rainfall (typically greater than 30mm/hr) and can be exacerbated when the ground is saturated or when the drainage network has insufficient capacity to cope with the additional flow. Based on current information Suffolk has nearly 32,500 properties predicted to be affected by surface water flooding during an extreme rainfall event with a 0.5 per cent (1 in 200) chance of happening each year and a flooding depth of 0.3 metres.

4.2.47. **Groundwater flooding** occurs when water levels in the ground rise above the ground surface. Flooding of this type tends to occur after long periods of sustained heavy rainfall and can last for weeks or even months. The areas at most risk are often low-lying areas where the water table is more likely to be at a shallow depth and flooding can be experienced through water rising up from the underlying aquifer or from water flowing from springs.

4.2.48. The Suffolk Preliminary Flood Risk Assessment has identified areas susceptible to groundwater flooding across the county; this information will be used to assist with the prioritisation of flood risk areas.

4.2.49. **River flooding**, also known as **fluvial flooding**, occurs when a watercourse cannot accommodate the volume of water that is flowing into it. Rivers are categorised into main rivers and ordinary watercourses. Suffolk has a number of main rivers and associated tributaries including, the Waveney, Blyth, Alde, Ore Deben, Orwell, Stour, Gipping, Lark and River Little Ouse which all pose a threat of river flooding, in addition to the vast network of ordinary watercourses.

4.2.50. **Coastal flooding** usually occurs during storm surges when there is an increased risk of high sea levels causing overtopping or breaching of coastal flood defences leading to flooding inland. The greatest risk of coastal flooding is experienced when there is a combination of high tides and a storm surge, which is when a low pressure system causes a localised rise in sea level and wave height. Many parts of Suffolk's coastline and estuaries are

prone to coastal flooding, as illustrated by the severe floods in 1953.

4.2.51. The factors leading to an increase in flood risk include: The prediction that climate change will lead to more frequent and more severe extreme weather and rising sea levels, and therefore to more extreme floods with more serious consequences; The deterioration in the condition and performance of existing drainage infrastructure and flood defence structures over time will increase future flood risk; New development and changes in land use may lead to an increase in impermeable surfaces and general loss of vegetation cover, therefore causing increased levels of runoff during heavy rainfall events.

4.2.52. It is important to note that tidal flooding represents a significant problem in Suffolk where the consequences are likely to be very serious, albeit infrequent. Suffolk is ranked number 3 in the national list of critical tidal flooding locations. Investigation of the interaction between tidal flooding and surface water flooding is likely to be a key element of the Local Flood Risk Strategy.

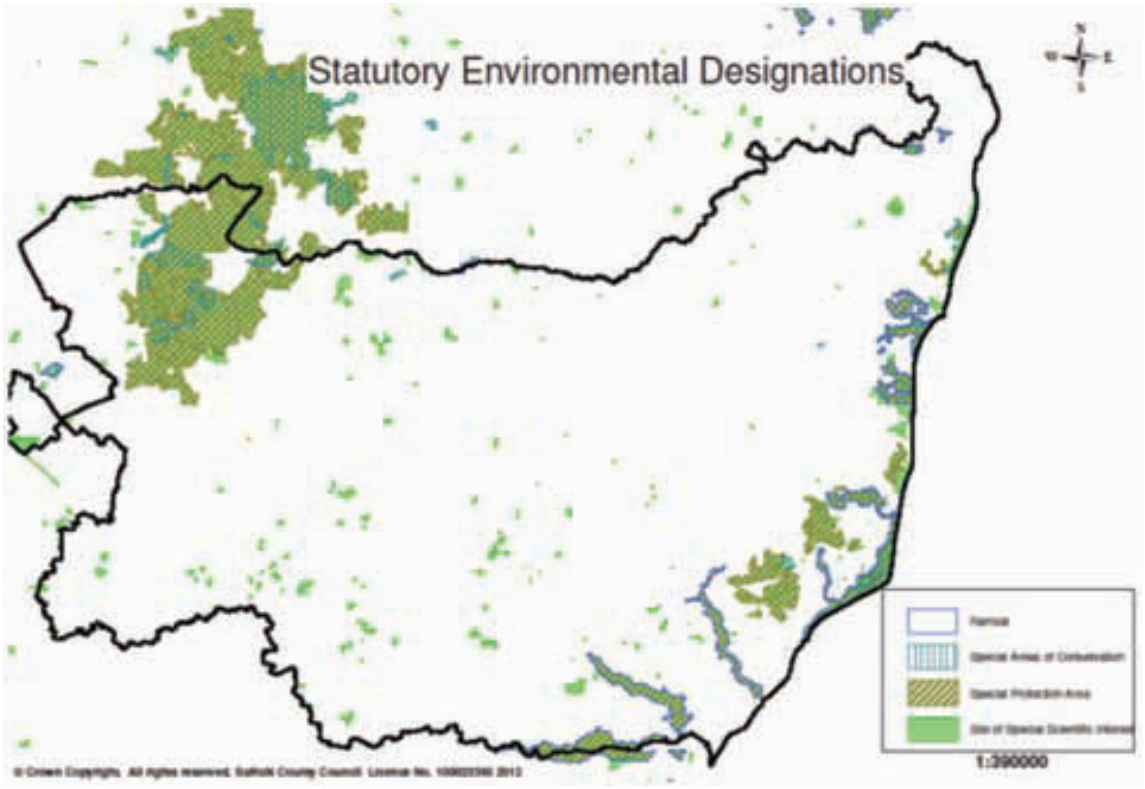
4.2.53. Tidal surges are the major source of flood risk in Suffolk, where rising sea level due to thermal expansion and ice loss is exacerbated by the gradual sinking of the land. Major flood prevention schemes are currently under construction in Ipswich (Tidal Barrier) and Felixstowe (Central). Suffolk is continuing to suffer a net loss of land to the sea, with erosion affecting 54% of its coastline.

4.2.54. In urban areas major surface water flooding events are almost always affected by interactions with sewerage and highway drainage systems. Investigation of these interactions will be an important element of future work, particularly in the urban situation.

**Biodiversity and geodiversity**

4.2.55. Suffolk has a number of nationally and internationally designated environmental sites in addition to locally important ecological areas. Figure 2.6 highlights the major protected areas. For further information and maps see www.natureonthemap.naturalengland.org.uk/ Flood and coastal risk management have the potential to impact on these sites either in a positive or negative way and all activities need to take due consideration of the natural environment, aiming to enhance biodiversity and water.

**Figure 2.6 Map showing main environmental designations in Suffolk**




4.2.56. Suffolk contains 140 designated Sites of Special Scientific Interest (SSSI) covering a total area of 50,531 hectares. Of this more than 47% is currently assessed as in "favourable" condition, 46% as "unfavourable recovering", and less than 2% as "unfavourable no change". Just over 5% of the area is considered "unfavourable declining" or has suffered destruction. Sites are generally in a healthy condition and being managed appropriately to conserve the plant and animal species, or geological features, for which they were designated. However, some shallow marginal water habitats are being adversely affected by "coastal squeeze" (between rising sea level and flood defences or other developments); and others by water abstraction and pollution from agriculture.

4.2.57. Suffolk has 922 designated County Wildlife Sites of which 464 (50%) are now under positive conservation management. A major biodiversity audit of the Breckland area straddling the Suffolk/Norfolk border has recently been completed, revealing it as a haven for almost 30% of the UK's priority species. The Environment Agency has reported increasing signs of deterioration in soil condition across the East of England.

**Archaeology & historic environment**

4.2.58. The County's Historic Environment Record (HER) currently (2010) has 24,484 records relating to 16, 814 archaeological

sites. Of these, 328 are designated as Scheduled Monuments of national importance. The county also contains many buildings of historical or architectural interest, with 16,650 listed buildings and 170 Conservation Areas recorded in 2009/10. The numbers of recorded archaeological sites, listed buildings and conservation areas have all increased in recent years, giving increased protection to Suffolk's heritage. The area of designated historic parkland has also increased in the last five years.

4.2.59. Suffolk's historic landscape makes an outstanding contribution to the county's character and local distinctiveness. A high percentage of the county is deemed to be 'ancient countryside' where the pattern of fields and roads is of medieval or earlier origin. Historic features are a finite resource and cannot be fully replicated.

**Landscapes and townscapes**

4.2.60. Around 12% of Suffolk's landscape is designated as an Area of Outstanding Natural Beauty (AONB). Suffolk's two AONBs are the Suffolk Coast & Heaths and the Dedham Vale. Flooding in these areas could impact the tourism trade.

**Impact of Climate Change**

4.2.61. Climate scenarios from the UK Climate Impacts Programme are that by the 2080 temperatures in Suffolk will be 2-5C higher, summer rainfall will decrease by up to 60% but winter rainfall is predicted to increase, and sea-level will rise by up to 82 cm.

4.2.62. The impact of climate change on local flood risk is poorly understood. Several national flood maps have informed the preliminary assessment report – specifically the Flood Map for Surface Water (surface runoff), Areas Susceptible to Surface Water flooding (surface runoff), Areas Susceptible to Groundwater Flooding (groundwater) and Flood Map (ordinary watercourses). These do not show the impact of climate change on local flood risk.

4.2.63. There was a consensus amongst climate model projections presented in the IPCC fourth assessment report for northern Europe suggesting that in winter high extremes of precipitation are very likely to increase in magnitude and frequency. These models project drier summers with increased chance of intense precipitation – intense heavy downpours interspersed with longer, relatively dry periods.

4.2.64. By 2080 climate change in the East of England is likely to cause a 3.6℃ rise in average summer temperature (a 9℃ increase on

the hottest day); a 20% increase in winter rainfall and similar decrease in summer rainfall; and significantly higher sea level (e.g. by 37 cm at Southwold). Such changes threaten people directly through heat stress, flooding and extreme weather events and indirectly via economic disruption, water shortages and accelerated coastal erosion. Mitigation of these impacts requires a sharp global reduction in the use of fossil fuels, which can in principle be achieved by cutting energy demand and switching generation to renewable and low-carbon sources. Tidal surges are the major source of flood risk in Suffolk, where rising sea level due to thermal expansion and ice loss is exacerbated by the gradual sinking of the land. Major flood prevention schemes are currently under construction in Ipswich (Tidal Barrier) and Felixstowe (Central).

4.2.65. The latest DECC data for CO2 emissions shows total CO2 (Kt) for Suffolk has decreased 10.3% between 2005 and 2008. This compares with falls of 3.8% for the East of England and 4% nationally. In Suffolk 41% of end user emissions were attributed to the industrial and commercial sector (nationally 45%), 31% Domestic (nationally 29%) and 28% to road transport (nationally 26%). The domestic Co2 percentage has increased slightly and road transport reduced slightly in Suffolk compared to 2007.

**Appraisal Guidance**

4.2.66. Current project appraisal guidance provides indicative sensitivity ranges for peak rainfall intensity, for use on small catchments and urban/local drainage sites. These are due to be updated following the UKCP09 projections above. They describe the following changes in peak rainfall intensity; +5% (1990-2025), +10% (2025-2055), +20% (2055-2085) and +30% (2085-2115). This was reviewed by the Met Office in 2008 using UKCP09 models. They suggest that, on the basis of our current understanding, these levels represent a pragmatic but not a precautionary response to uncertainty in future climate impacts. In particular for a 1 in 5 year event, increases in precipitation intensity of 40% or more by the 2080s are plausible across the UK at the local scale.

**Minerals**

4.2.67. The solid geology of Suffolk consists mostly of Cretaceous Chalk deposits, with London Clay, Reading Beds, Thanet Sand and Grag present in the east of the County. The solid geology is largely covered by glacial drift deposits of Boulder Clay, Sand and Gravel. Within the river valleys, reworked Glacial Sand and Gravel forms River Terrace deposits. In the west of the County are found Wind Blown deposits of Sand.

4.2.68. Historically, some exhausted mineral quarries have been used as landfill sites, accepting either inert or municipal/commercial & industrial waste. However, the Environment Agency has indicated that it is unlikely to approve any further non-inert landfill space in the county due to much of Suffolk being overlain Groundwater Source Protection Zones. This means that in future mineral sites may only be used to landfill municipal/C&I wastes provided they are located within a less vulnerable area and they have been subject to a satisfactory quantitative risk assessment to describe the presence of a natural geological boundary.

## 4.3. Key Environmental, social and economic issues identified

**Table 2.4 Sustainability Issues identified**

| Environmental Issues/Sustainability Objective | Implications for Suffolk | Plans and Programmes | Source |
|---|---|---|---|
| **Water quality and resources** (1.To maintain or improve quality of surface water and groundwater)<br><br>(2.To maximise the efficient use of water) | In terms of use of resources daily domestic water consumption averaged 153 litres per person across the East of England in 2008-09: slightly above the national average of 150 litres.<br>There is a limit to the amount of waste water that can be safely returned to our rivers and the sea without having a detrimental impact on the environment. Furthermore, we know that extreme rainfall can overwhelm drains and overtop flood defences. Climate change is bringing fresh challenges as patterns of rainfall are predicted to change, with more intense rainfall events.<br>The Suffolk is already suffering a shortage of water for human consumption and this situation will be exacerbated by climate change and the planned increase in development in the region. The object of water cycle management is to make better use of the water that we have, Even Suffolk, noted as a relatively dry | SCC Preliminary Flood Risk Assessment Report 2011<br>Water Framework Directive (England and Wales) Regulations 2000/60/EC. | Environment Agency State of Suffolk Report 2011<br>Water Cycle Study Guidance – Environment Agency 2009<br>Water Resources Strategy for England and Wales 2009 – Environment Agency |

| | | | |
|---|---|---|---|
| | county, experiences times of rainfall sufficient to cause flooding and what is required is to manage water surplus and shortage effectively. | | |
| Soil (3.To maintain/improve soil quality/resource) | Suffolk is rich in agricultural farmland. About 1% of the county's soils are Grade 1, with grades 2 and 3a each at about 20%; in total, about 45% of the county's soils are classed as "best and most versatile".<br>Different types of soil have different implications for water movement. Compaction of soil reduces agricultural productivity and water infiltration, and increases flood risk through higher levels of run off. | Safeguarding our Soils, A Strategy for England, 2009 | State of Suffolk Report 2011 |
| **Landscapes and townscapes** (4.To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes) | Around 12% of Suffolk's landscape is designated as an Area of Outstanding Natural Beauty (AONB).<br>The area of The Fens located within Suffolk is relatively small but this belies its importance. Water management in this area is critical to maintain flood risk at an acceptable level and, as a consequence, to ensure the continued accessibility to the area for a wide range of human activities including agriculture and tourism. An objective and associated action has been identified in to cover this. It will be important to ensure that lessons learned from surface waster management in the Fens are incorporated into any flood risk proposals in Suffolk. | SCC Preliminary Flood Risk Assessment Report 2011 | Suffolk Coast & Heaths and Dedham Vale AONB project teams<br>CPRE studies into light pollution |

| | | | |
|---|---|---|---|
| **Contributions to climate change and vulnerability to climatic events** (5.To minimise the risk of flooding on existing development and amenity)<br><br>(6.To adapt development to the impacts of climate change)<br><br>(7.To ensure that new development is directed to reasonably available sites at the lowest probability of flooding) | The Environment Agency has estimated the number of properties at risk of surface water flooding in Suffolk to be 32,500 (flooding to a depth of 0.3m from an event with a 1 in 200 annual chance of occurring. This compares to 54,000 in Essex and 35,800 in Norfolk. It is important to note that tidal flooding represents a significant problem in Suffolk where the consequences are likely to be very serious, albeit infrequent. Suffolk is ranked number 3 in the national list of critical tidal flooding locations.<br>Based on current information Suffolk has nearly 32,500 properties predicted to be affected by surface water flooding during an extreme rainfall event with a 0.5 per cent (1 in 200) chance of happening each year and a flooding depth of 0.3 metres.<br><br>The latest DECC data for CO2 emissions shows total CO2 (Kt) for Suffolk has decreased 10.3% between 2005 and 2008. This compares with falls of 3.8% for the East of England and 4% nationally. In Suffolk 41% of end user emissions were attributed to the industrial and commercial sector (nationally 45%), 31% Domestic (nationally 29%) and 28% to road transport (nationally 26%). The domestic Co2 percentage has increased slightly and road transport reduced slightly in Suffolk compared to 2007. | SCC Preliminary Flood Risk Assessment Report 2011 | SCC Traffic monitoring<br>Energy data from District Councils' Home Energy survey and DTi<br>Environment Agency flood risk data |
| **Biodiversity and geodiversity** | Suffolk contains 140 designated Sites of Special Scientific Interest (SSSI) | | Biodiversity Action Plans and Habitat Plans (Suffolk |

| | | | |
|---|---|---|---|
| (8.To protect and enhance biodiversity and geodiversity thought Suffolk) | covering a total area of 50,531 hectares. Of this more than 47% is currently assessed as in "favourable" condition, 46% as "unfavourable recovering", and less than 2% as "unfavourable no change". Suffolk has 922 designated County Wildlife Sites of which 464 (50%) are now under positive conservation management. A major biodiversity audit of the Breckland area straddling the Suffolk/Norfolk border has recently been completed, revealing it as a haven for almost 30% of the UK's priority species. The Environment Agency has reported increasing signs of deterioration in soil condition across the East of England. | | Biodiversity Partnership) Suffolk's Environment (annual) Natural England Suffolk Biological Records Centre (SBRC) |
| **Historical and archaeological importance** (9.To maintain and/or enhance the character of townscapes, cultural heritage and assets within Suffolk) | The County's Historic Environment Record (HER) currently (2010) has 24,484 records relating to 16, 814 archaeological sites. Of these, 328 are designated as Scheduled Monuments of national importance. The county also contains many buildings of historical or architectural interest, with 16,650 listed buildings and 170 Conservation Areas recorded in 2009/10. | | SCC Archaeology service |
| Social Issues | Implications for Suffolk | | |
| **Health** (10.To protect and enhance human health and wellbeing) | In some areas of Suffolk access to healthcare facilities may be limited for those without access to a car. Data show that if travelling by scheduled public transport, 23% of the population are more than 30 minutes from a hospital, and 15% are more than 30 minutes from a GP surgery. Although life expectancy is increasing, inequalities exist | | Open Space Assessments and monitoring through Community Strategies within Suffolk (future sources) Census data (carried out every 10 years) |

| | | | |
|---|---|---|---|
| | between different groups and geographical areas in Suffolk. In 2005-09 life expectancy among males living in the most deprived parts of Suffolk was on average 5.3 years less than males living in the least deprived areas, the gap for females was 4.4 years. | | |
| Economic Issues | Implications for Suffolk | | |
| **Patterns of movement** (11.To ensure the potential impact of flooding on existing and future infrastructure is minimised) | In 2010 traffic levels on Suffolk's roads were 3% less than they were in 2007 when we saw the peak traffic flows nationally and on the County's roads. Traffic levels in 2010 were the same as they were in 2003, despite a 6% increase in population from 2000 to 2009.<br><br>Suffolk has a high car dependency due to its extensive rural areas but monitoring of modes of travel to work shows that since 2005 the percentage travelling to work by car has decreased from 69.7% in 2005 to 63.5% in 2010. This means more are choosing sustainable options – between 2005 and 2010 the trends have been: | Suffolk County Council, Local Transport Plan 2006-2011 | Census |

## 4.4. SA/SEA objectives, targets and indicators

4.4.1. A total of 11 SA/SEA objectives have been derived for the assessment of the LFRMS (See Table 4). They are based on policy advice and guidance and related to the current state of the county. The information in relevant plans and documents was used as a qualitative data together with the baseline data, as quantitative information, to form the SA/SEA Framework with particular relevance to LFRMS. An SA/SEA Framework is an important tool in the SA process that is developed during the scoping phase in line with the Planning Advisory Service's best practice guidance. It provides the context against which the emerging LFRMS can be assessed and sets out the SA/SEA objectives; the key questions that should be asked to decipher

whether the LFRMS adheres to the principles of sustainability; and indicators which can monitor the impact following implementation. Table 3 below shows the link between SEA Directive issues and SA objectives.

**Table 3- Link between SEA Directive Issues and SA objectives**

| SEA Directive Issue | SEA/SA Objectives |
|---|---|
| Material Assets | 2,3,9 |
| Climatic Factors | 4,6,7 |
| Biodiversity | 8 |
| Fauna | 8 |
| Flora | 8 |
| Water | 1,2 |
| Soil | 3 |
| Air | Scoped out |
| Cultural heritage, including architectural and archaeological heritage | 9 |
| Landscape | 4 |
| Population | 7,11 |
| Human health | 10 |

**Table 4- SA Objectives, associated questions & indicators**

| SA objective | Questions | Related Data/ Potential Indicators |
|---|---|---|
| 1. To maintain or improve quality of surface water and groundwater | Will the LFRMS have an adverse impact on water quality?<br>Will the LFRMS have an adverse impact on water quantity? | Water Framework Directive Baseline Data (Environment Agency) |
| 2. To maximise the efficient use of water | Will the LFRMS impact the availability of water resources? | Water use figures from Anglian Water/Essex & Suffolk Water<br>Resource availability status for units of groundwater in Catchment abstraction Management Strategy Areas |
| 3. To maintain/improve soil quality/resources | Will the LFRMS have an adverse impact on the most versatile agricultural land? | Map/data showing soil quality<br>Area/number of incidences where Grade 1,2 or 3 soil is lost due to need for flood defence |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | Will the LFRMS adversely affect the landscape in AONBs and SLAs?<br>Will the LFRMS adversely affect characteristic landscape features as | Changes in landscape (Landscape Character Assessment)<br>Area of designated landscape (SLAs & AONBs)<br>Number of proposed and |

| | | |
|---|---|---|
| | specified through the Landscape Character Assessment? | actual flood mitigation developments to be located within landscapes with a high sensitivity. |
| 5. To minimise the risk of flooding to properties and infrastructure. | Are the objectives for managing local flood risk and the options proposed to achieve them within the LFRMS appropriate and proportionate to the risk in Suffolk? | SFRA results<br>Extent of flood risk zones 1-3 and functional floodplain<br>Incidence of flood alerts and warnings<br>Number of properties/businesses at risk of flooding.<br>Number of SUDS approved SUDS Approval Body. |
| 6. To adapt development to the impacts of climate change | What potential impact will the LFRMS have on the county's vulnerability to the impacts of climate change? | Floodplains and the developments occurring within under climate change scenarios. |
| 7. To ensure that the risk of flooding to new and proposed development is minimised | Does the LFRMS encourage the implementation of Sustainable Drainage Systems (SUDS) within existing legislation?<br>Does the LFRMS provide relevant information to local planning authorities to ensure that new development located and designed appropriately? | Number of developments permitted contrary to EA advice<br>Number and type of new developments permitted in areas of flood risk<br>Number of SUDS approved SUDS Approval Body. |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | Will the LFRMS protect and/or enhance statutory/non-statutory designated sites?<br>Will the LFRMS protect and /or enhance local BAP species and BAP habitats?<br>Will there be enhancement opportunities for biodiversity and geodiversity as a result of the LFRMS?<br>Will there be improvement of the wider environment (i.e non-designated sites)? | Changes in number and condition of designated ecological/geodiversity sites<br>Reported condition of ecological and geodiversity SSSIs<br>Habitat Action Plan targets (progress towards achievement)<br>Species Action Plan ((progress towards achievement)<br>Development proposals affecting BAP habitats and geodiversity sites outside protected areas<br>Chemical and ecological condition of rivers<br>Requirements for habitat compensation arising out of the LFRMS |
| 9. To maintain and/or enhance the character of townscapes, cultural | Does the LFRMS have an adverse impact on local historic assets, historic | Number of listed buildings at risk of flooding events.<br>Area of historic parks & |

| | | |
|---|---|---|
| heritage and historic assets within Suffolk | buildings and archaeological deposits? | gardens<br>Size, condition and number of Conservation Areas |
| 10. To protect and enhance human health and wellbeing | Will the LFRMS have an adverse impact on human health?<br>Will the LFRMS impact on the quality and quantity of footpaths?<br>Will the LFRMS seek to preserve areas with an amenity use? | Area and number of recreational amenity facilities affected by flooding<br>Number of developments permitted contrary to EA advice<br>Number of properties and businesses at risk of flooding |
| 11. To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | Are the objectives for managing local flood risk and the options proposed to achieve them within the LFRMS appropriate and proportionate to the risk in Suffolk? | Number of incidents leading to disruption or damage to transport infrastructure<br>Number of days lost by industry due to access problems<br>Number of incidents leading to disruption or damage to service provision |

# 5. Suffolk LFRMS main strategic options appraisal

## 5.1. Appraisal of strategy objectives

5.1.1. The SA process will show a test of the objectives of the LFRMS against the SA/SEA Objectives. The assessments will be based on a symbol based system which indicates the degree of compatibility between SA/SEA Objectives and objectives of the LFRMS.

Key

| | |
|---|---|
| | Compatible |
| | Neutral |
| | Incompatible |

5.1.2. The consultation version of the LFRMS contains seven overarching objectives which follow the guiding principles for flood risk management in Suffolk. The actions and measures set out in later sections of the LFRMS seek to support these objectives. Further to these is a set of environmental objectives which accord with the ideals of the Flood and Water Management Act with regards to local strategies showing how they will contribute to achieving wider environmental benefits. These have been assessed under the site level management action 'Achieve wider Environmental Benefits' which specifically focuses on their application.

5.1.3. The seven overarching objectives for Suffolk LFRMS are:

- To improve the understanding of flood and coastal risks and ensure everyone understands their roles and responsibilities in reducing the risks.
- To work together (both statutory organisation s and the public) to reduce flood and coastal risks, using all available resources and funds to the greatest benefit.
- To prevent an increase I flood risk as a result of development by preventing additional water entering existing drainage systems wherever possible.
- Take a sustainable and holistic approach to flood and coastal management, seeking to deliver wider environmental and social benefits, climate change mitigation and improvements under the Water Framework Directive.
- Encourage maintenance of privately owned flood defences and ordinary watercourses, and minimise unnecessary constrictions in watercourses.
- To share information on the latest best and best ideas for flood and coastal management.
- To ensure that proposals and policies in this strategy are properly integrated with the rest of Fens area.

## Table 2.6 Impact of LFRMS objectives on SA/SEA objectives

| SA/SEA Objectives | Suffolk LFRMS Objectives | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Objective 1** To improve the understanding of flood and coastal risks and ensure everyone understands their roles and responsibilities in reducing the risks | **Objective 2** To work together (both statutory organisations and the public) to reduce flood and coastal risks, using all available resources and funds to the greatest benefit | **Objective 3** To prevent an increase l flood risk as a result of development by preventing additional water entering existing drainage systems wherever possible | **Objective 4** Take a sustainable and holistic approach to flood and coastal management, seeking to deliver wider environmental and social benefits, climate change mitigation and improvements under the Water Framework Directive | **Objective 5** Encourage maintenance of privately owned flood defences and ordinary watercourses, and minimise unnecessary constrictions in watercourses | **Objective 6** To share information on the latest best and best ideas for flood and coastal management | **Objective 7** To ensure that proposals and policies in this strategy are properly integrated with the rest of Fens area |
| 1. To maintain or improve quality of surface water and groundwater | 0 | 0 | + | + | 0 | + | 0 |
| 2. To maximise the efficient use of water | 0 | 0 | + | + | 0 | + | + |
| 3. To maintain/improve soil quality/resources | 0 | 0 | + | + | + | 0 | 0 |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | 0 | 0 | + | + | + | 0 | 0 |
| 5. To minimise the risk of flooding to properties and infrastructure. | + | 0 | + | + | + | + | 0 |
| 6. To adapt development to the impacts of climate change | 0 | 0 | + | + | 0 | 0 | 0 |
| 7. To ensure that the risk of flooding to new and proposed development is minimised | 0 | 0 | + | + | + | + | 0 |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | 0 | 0 | 0 | + | 0 | 0 | + |
| 9. To maintain and/or enhance the character of townscapes, cultural heritage and assets | + | 0 | + | + | 0 | 0 | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| within Suffolk | | | | | | | |
| 10. To protect and enhance human health and wellbeing | + | + | + | + | + | 0 | 0 |
| 11. To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | + | + | + | 0 | + | + | 0 |

5.1.4. Results presented in Table 2.6 shows that seven LFRMS objectives will have a significantly positive impact on managing the flood risk within Suffolk. Recording all flooding incidents; production of information and advice; and ensuring that everyone is aware of their role will all assist in minimising the risk of flooding. Developing greater understanding of surface water flood risks, increased knowledge of local flood issues and their future impact, particularly with regards to climate change, will also contribute to more informed planning decisions which determine the location of, and mitigation measures required, for new development.

5.1.5. LFRMS objectives are likely positively support human health and wellbeing and the environment in general by stipulating the need for management schemes to have regard to them. They could also lead to improved water quality through the implementation of measures such as Sustainable Drainage Systems (SUDS) and local action to reduce local flooding which is often lined to the pollution of water courses.

5.1.6. Review of the use of resources to manage flood risk should also ensure that the impact on critical infrastructure is minimised however it is important to not that these objectives don't seek to protect all structures and developments from flooding because financial constraints would make t his unattainable.

## 5.2. Comparison of the significant environmental, social and economic effects of the LFRMS Actions

5.2.1. The LFRMS sets out a series of Actions which will be taken forward to meet the objectives and guiding principles for flood risk management in Suffolk. They can be divided into two types:

- County-wide strategic actions
- Site level, specific management actions

5.2.2. Each of the county-wide strategic actions, which inform the management actions, has been put forward with three options (alternatives) that have been considered during the preparation of the LFRMS. At this stage the LFRMS is seeking opinion by consultation on which of the three options are favoured. Our assessment will aim to identify those options which provide the most positive environmental outcomes and these will be put forward in our preferred list of actions in the conclusion.

5.2.3. Four county-wide strategic actions to combat flood risk were identified and put forward for comparison of their significant environmental, social and economic effects. These will from the basis of annual action plans which will contain more detailed information. Each strategic action is supported by additional measures which the Lead Local Flood Authority intends to take to address each action. The three options proposed for each action detail different ways of delivering these measures, and these have all been subjected to SEA below. For the purpose of our assessment the options have been numbered 1 to 3 for ease of reference. Please refer to the relevant sections within the LFRMS report for context surrounding each issues and their associated delivery options.

5.2.4. Testing the LFRMS Actions against the 11 SA/SEA Objectives uses symbol based scoring system and provides a brief commentary explaining and expanding on the scoring. Effects are examined in terms of the short, medium and long-term.

Key

| | |
|---|---|
| ++ | Very positive effect |
| + | Positive effect |
| 0 | Neutral effect |
| - | Negative effect |
| -- | Very negative effect |
| ? | Uncertain |

**County-Wide Strategic Actions Assessment**

**5.3.** To Improve the Understanding of Local Flood Risk

| Options |
|---|
| 1. Do nothing |
| 2. Maintain mechanisms for reporting and recording flood incidents |
| 3. Improve measures and mechanisms for reporting and recording flood incidents |

## Impact on SA/SEA objectives

| Action | **Option 1** Do Nothing | | | | **Option 2** Maintain mechanisms for reporting and recording flood incidents | | | | **Option 3** Improve measures and mechanisms for reporting and recording flood incidents | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SA Objectives | Short term | Medium term | Long term | Comments | Short term | Medium term | Long term | Comments | Short term | Medium term | Long term | Comments |
| 1. To maintain or improve quality of surface water and groundwater | - | - | - | Does not seek to improve current knowledge | 0 | 0 | 0 | Neutral effects | + | + | + | Proactive approach seeks to deliver detailed modelling of surface water which would inform future development |
| 2. To maximise the efficient use of water | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 3. To maintain/improve soil quality/resources | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 5. To minimise the risk of flooding to properties and infrastructure. | 0 | 0 | 0 | Neutral effects | + | + | + | Provides for a repository for flood related data and better approach than currently exists. | + | + | + | Proactive approach seeks to deliver detailed modelling of surface water which would inform future development |
| 6. To adapt development to the impacts of climate change | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 7. To ensure that the risk of flooding to new and proposed development is minimised | - | - | - | Is not aimed at minimising the risk of flooding on new development | + | + | + | Will lead to improved local knowledge on localised flooding | ++ | ++ | ++ | Proactive approach seeks to deliver detailed modelling of surface water which would inform future development |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 9. To maintain and/or enhance the character of townscapes, | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cultural heritage and assets within Suffolk | | | | | | | | | | | |
| 10. To protect and enhance human health and wellbeing | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 11. To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | - | - | - | Likely to hinder the production of informed flood risk assessments and results | + | + | + | Ascertains where further investigations are required to assess if the risk or impacts associated with flooding can be minimised | ++ | ++ | ++ | Proactive approach seeks to deliver detailed modelling of surface water which would inform future development |

5.3.1.1. 'Do nothing' approach showed negative assessment against a number of SA/SEA objectives. Understanding of local level flood risk can assist in minimising the impacts of flooding and the consequences of climate change by enabling more informed decision making. The approach for Option 1 does not seek to improve current knowledge and is therefore more likely to hinder the production of informed flood risk assessments and results in measures, aimed at minimising the impact of flooding, being less effective now and in the future. Strongly negative impacts have not been assessed as there is still existing localised strategies and information which could be utilised.

5.3.1.2. There are positive associations with Option 2 as it provides for a repository for flood related data which represents a better approach than what currently exists. Maintaining mechanisms for producing a database of all incidences will lead to improved local knowledge on localised flooding and ascertain where further investigations are required to assess whether the risk or impacts associated with flooding can be minimised.

5.3.1.3. Option 3 scored better than Option 2 as its proactive approach will seek to deliver detailed modelling of surface water which would inform futures development, and identify site specific mitigation measures so that the impacts of flooding can be reduced. This could strengthen this option's impact on adapting to climate change and minimising flood risk creating significant positives.

### 5.3.2. **Raise Community Awareness**

Options

1. Do nothing

2. Provide information for those aware of their risk of steps that can be taken

3. Improve the flood risk guidance and information, and the ways it is distributed to the public to reduce the flood risk

**Impact on SA/SEA objectives**

| Action | **Option 1** Do nothing | | | | **Option 2** Provide information for those aware of their risk of steps that can be taken | | | | **Option 3** Improve the flood risk guidance and information and the ways it is distributed to the public to reduce the flood risk | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SA Objectives | Short term | Medium term | Long term | Comments | Short term | Medium term | Long term | Comments | Short term | Medium term | Long term | Comments |
| 1. To maintain or improve quality of surface water and groundwater | - | - | - | Negative effects as no attempt at public engagement | 0 | 0 | 0 | Neutral effects | + | + | + | More proactive approach has positive effects on this objective |
| 2. To maximise the efficient use of water | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 3. To maintain/improve soil quality/resources | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 5. To minimise the risk of flooding to properties and infrastructure. | 0 | 0 | 0 | Neutral effects | + | + | + | Informs those who are already aware of flood risk issues | + | + | + | Raise the community awareness, helps to minimise flood risk to properties |
| 6. To adapt development to the impacts of climate change | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 7. To ensure that the risk of flooding to new and proposed development is minimised | - | - | - | | + | + | + | Informs those who are already aware of flood risk issues | ++ | ++ | ++ | Proactively informs people and provides better distribution of information |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 9. To maintain and/or enhance | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| the character of townscapes, cultural heritage and assets within Suffolk | | | | | | | | | | | | |
| 10. To protect and enhance human health and wellbeing | 0 | 0 | 0 | Neutral effects | + | + | + | Informs those who are already aware of flood risk issues | + | + | + | Informs people proactively about the risk of flooding |
| 11. To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | - | - | - | | + | + | + | Informs those who are already aware of flood risk issues | ++ | ++ | ++ | Proactively informs people and provides better distribution of information |

5.3.2.1. There is a clear differentiation between the options, from the negative impact that would be realised from making no attempt at public engagement to the positive impacts of proactively engaging individuals and communities. Public engagement is the key to reducing the impacts of flooding on a localised level as there are steps that can be taken by any individual to aid the safeguarding of their property from flooding.

5.3.2.2. Option 2 is assessed as having a generally positive performance across relevant indicators but this positive impact is slightly weaker than that realised under Option 3. By only informing those who are already aware of their personal flood risk there will be large proportions of the population who will remain uninformed. These unaware residents may still be at the risk of flooding, with a lack of knowledge the result of being either due to them having only recently moved into the area, only being at risk in extreme events, or at risk due to extremely localised flooding caused by property modifications. Given that there are measures that can be implemented by property owners to offset flood risk and/or minimise the impacts of flooding, this stance is agreed with and as such a 'Do nothing' approach is assessed as negative.

5.3.2.3. Option 3 provides a positive impact on a number of SA/SEA objectives. These positive impacts will be further strengthen through the recognised need to communicate information differently to people which is respective to the level of flood risk they will likely experience. As part of the raising of community awareness, informed estimates to the likely evolution of flood risk with respect to climatic factors will be made, whilst a proactive attempt to ensure that local communities have prepared themselves and their properties for flood events will likely reduce the impact

such an event could cause. It is recommended that Options 2 and 3 are combined as they would cumulatively have a strong positive impact on minimising flood risk. Together the actions would raise awareness of flooding to a much greater number of people who are at risk.

### 5.3.3. **Prevent an increase in flood risk as a result of development**

| Options |
|---|
| 1. Do nothing |
| 2. Develop a SuDS guidance and prepare a database of historic and predicted local flood risk for use by planning authorities |

**Impact on SA/SEA objectives**

| Action | **Option** Do nothing | | | | **Option** Develop a SuDS guidance and prepare a database of historic and predicted local flood risk for use by planning authorities | | | |
|---|---|---|---|---|---|---|---|---|
| SA Objectives | Short term | Medium term | Long term | Comments | Short term | Medium term | Long term | Comments |
| 1. To maintain or improve quality of surface water and groundwater | - | - | - | Hinders the effective delivery and adoption of SuDS is not sustainable | ++ | ++ | ++ | Clear guidance on SuDS has positive effects on this objective |
| 2. To maximise the efficient use of water | 0 | 0 | 0 | Neutral effects | + | + | + | Clear guidance on SuDS has positive effects on this objective |
| 3. To maintain/improve soil quality/resources | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | 0 | 0 | 0 | Neutral effects | + | + | + | Clear guidance on SuDS has positive effects on this objective |
| 5. To minimise the risk of flooding to properties and infrastructure. | 0 | 0 | 0 | Neutral effects | + | + | + | Clear guidance on SuDS has positive effects on this objective |
| 6. To adapt development to the impacts of climate change | - | - | - | Fails to have regard to the future impacts of climate change | + | + | + | SuDS will aid in adapting new and existing development to the impacts of climate change |
| 7. To ensure that the risk of flooding to new and proposed development is minimised | - | - | - | Hinders the effective delivery and adoption of SuDS is not sustainable | ++ | ++ | ++ | Specifically deals with minimising the surface water flood risk of new development |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | 0 | 0 | 0 | Neutral effects | + | + | + | Clear guidance on SuDS has positive effects on this objective |
| 9. To maintain and/or enhance the character of townscapes, cultural heritage and assets within Suffolk | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 10. To protect and enhance human health and wellbeing | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 11. To ensure the potential | - | - | - | Hinders the effective | + | + | + | Clear guidance on SuDS |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| economic impact of flooding on existing and future infrastructure is minimised | | | | delivery and adoption of SuDS is not sustainable | | | | has positive effects on this objective |

5.3.3.1. The 'Do nothing' approach would have negative impacts on flood risk management within Suffolk. Strategic Flood Risk Assessments (SPRAs) would continue to include only fluvial and coastal flood risks thereby exclude or have little consideration of important local flood risk. There would also remain no clear local level guidance or co-ordination on the legislative requirements for SuDS which could hinder the effective delivery and adoption of SuD schemes which are considered sustainable measures. This option therefore fails to have regard to the future impacts of climate change at the local level.

5.3.3.2. Option 2, the production of local guidance for SUDS and establishing of mechanisms for co-ordination, would have a positive impact across many of the objectives within this SEA Framework. The commitment to produce a SuDS Design Guide would provide clear local guidance on the design requirements that developers, consultants and designers should follow when creating SuDS. This options specifically deals with minimising the surface water flood risk of new development and consequently has a strong positive impact on SA/SEA objective 7. The new guide will allow for schemes which have multiple benefits to the environment (SA/SEA Objective 8 and will be attractively designed (SA/SEA Objective 4), on top of the benefits which would be realised against mitigating the impacts of flooding (SA/SEA Objective 5 & 11) and preserving water quality (SA/SEA Objective 1), SuDS will also aid in adapting new and existing development to the impacts of climate change (SA/SEA Objective 6).

### 5.3.4. Establish Working Framework with other Risk Management Authorities

Options

1. Disband current partnership arrangements and rely on ad hoc discussions

2. Continue to work in partnership through the Suffolk Flood Risk Management Partnership and the Suffolk Coast Forum.

**Impact on SA/SEA objectives**

| Action | **Option 1**<br><br>Disband current partnership arrangements and rely on as hoc discussions | | | | **Option 2**<br><br>Continue to work in partnership though the Suffolk Flood Risk Management Partnership and the Suffolk Coast Forum | | | |
|---|---|---|---|---|---|---|---|---|
| SA Objectives | Short term | Medium term | Long term | Comments | Short term | Medium term | Long term | Comments |
| 1. To maintain or improve quality of surface water and groundwater | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 2. To maximise the efficient use of water | 0 | 0 | 0 | Neutral effects | + | + | + | Will have positive effects |
| 3. To maintain/improve soil quality/resources | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 5. To minimise the risk of flooding to properties and infrastructure. | - | - | - | No partnerships will have negative effects on this objective | + | + | + | A partnership which includes infrastructure suppliers like water and highways agencies, and national agencies that manage other sources of flood risk would support the SA/SEA objectives seeking to reduce flood risk |
| 6. To adapt development to the impacts of climate change | - | - | - | No partnerships will have negative effects on this objective | + | + | + | A partnership which includes infrastructure suppliers like water and highways agencies, and national agencies that manage other sources of flood risk would support the SA/SEA objectives seeking to reduce flood risk |
| 7. To ensure that the risk of flooding to new and proposed development is minimised | - | - | - | No partnerships will have negative effects on this objective | + | + | + | A partnership which includes infrastructure suppliers like water and highways agencies, and national agencies that manage other sources of flood risk would support the SA/SEA objectives seeking to reduce flood risk |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 9. To maintain and/or enhance the character of townscapes, cultural heritage and assets within Suffolk | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 10. To protect and enhance human health and wellbeing | 0 | 0 | 0 | Neutral effects | 0 | 0 | 0 | Neutral effects |
| 11. To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | - | - | - | No partnerships will have negative effects on this objective | + | + | + | Establishing good communicative work will have positive effects on this objective |

5.3.4.1. Working in partnership will allow the Lead Local Flood Authority to pool knowledge and data between stakeholders, leading to a more efficient co-ordination of time and resources, and a holistic basis on which to form an opinion. Good communicative framework will

also allow stakeholders to be aware of the intended direction of other stakeholders and they would then have an established reporting mechanism through which to highlight how those directions will impact on their own interests. Therefore, disbanding of these partnerships in Option 1 will not allow for the positive impacts described above and as such negative assessments are made regarding its potential impact on minimising flood risk and adapting to climatic change.

5.3.4.2. Option 2 suggests continuing to work in partnership which would have largely positive impacts. The established partnerships and committees ensure the sharing of information to better inform, co-ordinate and manage flood risk across Suffolk. A partnership which includes infrastructure suppliers like water and highways agencies, and national agencies that manage other sources of flood risk would support the SA/SEA objectives seeking to reduce flood risk (Objective 7); protect infrastructure and water sources (Objectives 2 & 5); in addition to ensuring that climate change is mitigated against (Objective 6).

**Site level, Specific Management Actions**

### 5.3.5. Achieve Wider Environmental Benefits

| Action | **Achieve Wider Environmental Benefits** | | | |
|---|---|---|---|---|
| SA Objectives | Short term | Medium term | Long term | Comments |
| 1. To maintain or improve quality of surface water and groundwater | ++ | ++ | ++ | Directly promotes this objective. |
| 2. To maximise the efficient use of water | ++ | ++ | ++ | Directly promotes this objective. |
| 3. To maintain/improve soil quality/resources | 0 | 0 | 0 | Neutral effects |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | + | + | + | Positive effects |
| 5. To minimise the risk of flooding to properties and infrastructure. | + | + | + | Positive effects |
| 6. To adapt development to the impacts of climate change | + | + | + | Includes measures to mitigate the impacts of climate change |
| 7. To ensure that the risk of flooding to new and | + | + | + | Positive effects |

| | | | | |
|---|---|---|---|---|
| proposed development is minimised | | | | |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | ++ | ++ | ++ | Directly promotes this objective. |
| 9. To maintain and/or enhance the character of townscapes, cultural heritage and assets within Suffolk | 0 | 0 | 0 | Neutral effects |
| 10. To protect and enhance human health and wellbeing | + | + | + | Positive effects |
| 11. To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | + | + | + | Positive effects |

5.3.5.1. This action has a clear focus on improving environmental features, therefore scored positively on most of environmental SA/SEA objectives. This action promotes significant positive impacts to various aspects of the natural environment. Most prominent are the impacts on biodiversity and on water, as a resource and in terms of its quality. Further the this action includes measures to mitigate the impacts of climate changes through water cycle managements and multifunctional spaces that will hold flood water, provide space for wildlife and local green space as part of the master planning process. Contributing to the provision of green infrastructure would also benefit SA/SEA objective 5 in addition to improving human health and wellbeing (SA/SEA objective10) by delivering more accessible green space.

5.3.5.2. This action also allows a positive assessment in terms of conserving nationally significant biodiversity and geodiversity sites, and by seeking to enhance all of these features. It is also likely that the quality of the landscape character where these protected sites are will be preserved resulting in a positive impact for SA/SEA objective 4.

### 5.3.6. **Maintenance Methods of New Structures**

| Action | **Maintenance Methods of New Structures** | | | |
|---|---|---|---|---|
| SA Objectives | Short term | Medium term | Long term | Comments |
| 1. To maintain or improve quality of surface water and groundwater | 0 | 0 | 0 | Neutral effects |
| 2. To maximise the efficient use of water | + | + | + | Promotes this objective |
| 3. To maintain/improve soil quality/resources | 0 | 0 | 0 | Neutral effects |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ | 0 | 0 | 0 | Neutral effects |

| | | | | |
|---|---|---|---|---|
| townscapes | | | | |
| 5. To minimise the risk of flooding to properties and infrastructure. | + | + | + | Maintenance of privately owned flood defences and ordinary watercourses will reduce the blocking of watercourses and reduce the likelihood of flooding |
| 6. To adapt development to the impacts of climate change | 0 | 0 | 0 | Neutral effects |
| 7. To ensure that the risk of flooding to new and proposed development is minimised | + | + | + | Has positive effects |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | 0 | 0 | 0 | Neutral effects |
| 9. To maintain and/or enhance the character of townscapes, cultural heritage and assets within Suffolk | 0 | 0 | 0 | Neutral effects |
| 10. To protect and enhance human health and wellbeing | + | + | + | Has positive effects on this objective |
| 11. To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | + | + | + | Recording of assets reduces the flood risk |

5.3.6.1. This action is seeking to provide guidance and administer a process for consenting of new structures and maintenance of existing structures on water courses. It will have positive effects on SA/SEA objectives 5, 7, and 11 as it directly contributes to flood risk minimisation.

5.3.6.2. Maintenance of privately owned flood defences and ordinary watercourses will reduce the blocking of watercourses and reduce the likelihood of flooding wherever it may occur allowing positive effects on the above SA/SEA objectives. Recording of assets and the clarification of maintenance responsibilities should ensure the future up keep and assist in the maintenance of assets which have surroundings that are vulnerable to instances of flood risk such as residential properties thereby reducing their risk and protecting wellbeing and human health.

### 5.2.11. Sharing Information to Aid Local Decision Making

| Action | **Sharing Information to Aid Local Decision Making** | | | |
|---|---|---|---|---|
| SA Objectives | Short term | Medium term | Long term | Comments |
| 1. To maintain or improve quality of surface water and groundwater | 0 | 0 | 0 | Neutral effects |
| 2. To maximise the efficient use of water | + | + | + | Working in partnership will improve data, time and resources, hence has positive effects on this objective |
| 3. To maintain/improve soil quality/resources | 0 | 0 | 0 | Neutral effects |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | 0 | 0 | 0 | Neutral effects |
| 5. To minimise the risk of flooding to properties and infrastructure. | + | + | + | Working in partnership will improve data, time and resources, hence has positive effects on this |

| | | | | |
|---|---|---|---|---|
| | | | | objective |
| 6. To adapt development to the impacts of climate change | + | + | + | Working in partnership will improve data, time and resources, hence has positive effects on this objective |
| 7. To ensure that the risk of flooding to new and proposed development is minimised | + | + | + | Working in partnership will improve data, time and resources, hence has positive effects on this objective |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | 0 | 0 | 0 | Neutral effects |
| 9. To maintain and/or enhance the character of townscapes, cultural heritage and assets within Suffolk | 0 | 0 | 0 | Neutral effects |
| 10. To protect and enhance human health and wellbeing | 0 | 0 | 0 | Neutral effects |
| 11. To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | + | + | + | Working in partnership will improve data, time and resources, hence has positive effects on this objective |

5.3.6.3. This action would likely flow from Establishing Working Framework with other Risk Management Authorities strategic action and as such the assessment made is the same as the most sustainable options associated with that issue.

### 5.3.7. **Management of the Fens Area**

| Action | Management of the Fens Area | | | |
|---|---|---|---|---|
| SA Objectives | Short term | Medium term | Long term | Comments |
| 1. To maintain or improve quality of surface water and groundwater | 0 | 0 | 0 | Neutral effects |
| 2. To maximise the efficient use of water | + | + | + | Likely to have positive effects |
| 3. To maintain/improve soil quality/resources | 0 | 0 | 0 | Neutral effects |
| 4. To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | 0 | 0 | 0 | Neutral effects |
| 5. To minimise the risk of flooding to properties and infrastructure. | + | + | + | Effective communication will help to develop the specialist expertise and reduce flood risk |
| 6. To adapt development to the impacts of climate change | + | + | + | Effective communication will help to develop the specialist expertise and reduce flood risk. |
| 7. To ensure that the risk of flooding to new and proposed development is minimised | + | + | + | Effective communication will help to develop the specialist expertise and reduce flood risk |
| 8. To protect and enhance biodiversity and geodiversity thought Suffolk | + | + | + | Encourages the practitioners involved in water level management within this special area is integrated into overall flood risk strategies. |
| 9. To maintain and/or enhance the character of townscapes, cultural heritage and assets within Suffolk | 0 | 0 | 0 | Neutral effects |
| 10. To protect and enhance human health and wellbeing | 0 | 0 | 0 | Neutral effects |
| 11. To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | + | + | + | Effective communication will help to develop the specialist expertise and reduce flood risk |

5.3.7.1. Working in partnership will allow the Lead Local Flood Authority to pool knowledge and data between stakeholders, leading to a more efficient co-ordination of time and resources, and a holistic basis on which t

from an opinion. Good communicative framework will also allow stakeholders to be aware of the intended direction of other stakeholders and they would then have an established reporting mechanism through which to highlight how those directions will impact on their own interests.

5.3.7.2. This action provides a positive impact on a number of SA/SEA objectives. These positive impacts will be further strengthen through the recognised need to communicate information differently to people which is respective to the level of flood risk they will likely experience.

## 5.4. The preferred option and explanation of choice

5.4.1. The seven overarching objectives for the LFRMS capture and support all the themes within the SA/SEA objectives. By ensuring greater understanding of the risks and promoting more collaboration and sharing of resources, communities and responsible bodies will be better placed to prioritise resources, adopt plans, and implement local measures to effectively minimise the risk. The intention of the strategy is to set out the roles and responsibilities and to improve local flood risk management so as to minimise the impact of flooding on infrastructure, businesses and properties.

5.4.2. The 'Do nothing' approach for all county-wide actions would result in largely negative potential outcomes across the SA/SEA Framework. Understanding local flood risk is vital for collaborative working and appropriate management to be implemented; and for the level of risk to communities, businesses, infrastructure and the environment as a whole to be realised. Such an approach, adopted for all the county-wide actions could result in strong cumulative negative impacts on the SA/SEA objectives, particularly with regards to minimising the impact and risk of flooding. The impact is likely to worsen overtime due to the inability of responsible bodies and communities to incorporate measures within new and existing developments that respond to changes in climate.

5.4.3. The other options put forward for these county-wide actions offer more beneficial outcomes. Option 3 for the actions 'Improve the Understanding of Local Flood Risk' and 'Raise Community Awareness' have potential for providing significant positive impacts when enacted independently. They both strongly support the minimisation of flood risk. The SuDS design guide will deal with the planning, design and delivery of attractive and high quality SuDS schemes which trunk roads and other major

infrastructure would benefit from hereby minimising their potential impact from flooding.

# 6. Conclusions and recommendations

## 6.1. Cumulative effects

6.1.1. This round of assessment has identified which options would produce the most beneficial outcomes in environmental terms and, as such, it is possible to evaluate any potential cumulative and synergistic impacts that may arise if they were adopted. Options 2 and 3 put forward for the county-wide action 'Raise Community Awareness' both seek to provide information to the community, however the former is directed to those who are already aware of the risks while the latter is to those who aren't.

6.1.2. The matrix in Table 5 reports the impacts on the SA/SEA objectives of the preferred options for each action and shows that together these actions effectively address and support all of the SA/SEA objectives.

**Table 5: Matrix showing the impacts of the suggested options for County-Wide Strategic Actions**

| Cumulative Effects | SA Headline Objectives | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | |
| **Suggested Options for Actions** | To maintain or improve quality of surface water and ground water | To maximise the efficient use of water | To maintain /improve soil quality/resources | To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | To minimise the risk of flooding to properties and infrastructure. | To adapt development to the impacts of climate change | To ensure that the risk of flooding to new and proposed development is minimised | To protect and enhance biodiversity and geodiversity thought Suffolk | To maintain and/or enhance the character of townscapes, cultural heritage and assets within Suffolk | To protect and enhance human health and wellbeing | To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | Overall Impact | |
| **To Improve the Understanding of Local Flood Risk (Option 3)** | + | 0 | 0 | 0 | + | 0 | ++ | 0 | 0 | 0 | ++ | 0 | This proactive approach will seek to deliver detailed modelling of surface water which would inform future development, and identify site specific mitigation measures so that the impacts of flooding can be reduced. |
| **Raise Community Awareness (Option 2 + 3)** | + | 0 | 0 | 0 | + | 0 | ++ | 0 | 0 | + | ++ | + | Two options combined would have a strong positive impact on minimising flood risk. Together the actions would raise awareness of flooding to a much greater number of people who are at risk. |
| **Prevent an increase in flood risk as a** | ++ | + | 0 | + | + | + | ++ | + | 0 | 0 | + | + | The production of local guidance for SuDS and establishing of mechanisms for co-ordination, would |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **result of development (Option 2)** | | | | | | | | | | | | | have a positive impact across many of the objectives within this SA/SEA Framework. |
| **Establish Working Framework with other Risk Management Authorities (Option 2)** | 0 | + | 0 | 0 | + | + | + | 0 | 0 | 0 | + | 0 | The established partnerships and committees ensure the sharing of information to better inform, co-ordinate and manage flood risk across Suffolk. |

**Table 6: Matrix showing the impacts of the suggested options for Site Level, Specific Management Actions**

| Cumulative Effects | SA Headline Objectives | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | |
| **Suggested Options for Actions** | To maintain or improve quality of surface water and ground water | To maximise the efficient use of water | To maintain /improve soil quality/resources | To maintain/ improve the quality and local distinctiveness of landscapes/ townscapes | To minimise the risk of flooding to properties and infrastructure. | To adapt development to the impacts of climate change | To ensure that the risk of flooding to new and proposed development is minimised | To protect and enhance biodiversity and geodiversity thought Suffolk | To maintain and/or enhance the character of townscapes, cultural heritage and assets within Suffolk | To protect and enhance human health and wellbeing | To ensure the potential economic impact of flooding on existing and future infrastructure is minimised | Overall Impact | |
| **Achieve Wider Environmental Benefits** | ++ | ++ | 0 | + | + | + | + | ++ | 0 | + | + | + | Promotes significant positive impacts to various aspects of the natural environment. |
| **Maintenance Methods of New Structures** | 0 | + | 0 | 0 | + | 0 | + | 0 | 0 | + | + | 0 | Maintenance of privately owned flood defences and ordinary watercourses will reduce the blocking of watercourses and reduce the likelihood of flooding wherever it may occur allowing positive effects on the SA/SEA objectives. |
| **Sharing Information to Aid Local Decision** | 0 | + | 0 | 0 | + | + | + | 0 | 0 | 0 | + | 0 | Working in partnership will allow to pool knowledge and data between stakeholders, leading to a more |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Making** | | | | | | | | | | | | | efficient coordination of time and resources, and a holistic basis on which to form an opinion. |
| **Management of the Fens Area** | 0 | + | 0 | 0 | + | + | + | + | 0 | 0 | + | + | Insures that the specialist expertise that the practitioners involved in water level management within this special area is properly integrated into overall flood risk strategies. |

6.1.3. The appraisal of the site level options has identified a number of significant positive impacts that may arise following their implementation. The action to 'Achieve Wider Environmental Benefits' focuses on improving environmental features which promotes significant positive impacts on water, as a resource and in terms of its quality by adhering to the Water Framework Directive targets. It strongly supports the protection of biodiversity and geodiversity of local and national importance with a number of environmental objectives specifically related to their conservation. Further, one of the environmental objectives specifically recognises the need to mitigate the impacts of climate change through measures to manage flood risk.

6.1.4. The local level actions will cumulatively have a strong contribution to minimising the risk and impacts of local flooding. Improving resilience at an individual and community level, together with the implementation of maintenance methods of new structures and greater sharing of information to aid local decision making raises the profile of local flood prevention and ensures that measures are adopted to minimise it impact.

## 6.2. Proposed mitigation measures

6.2.1. The policies and objectives that have been devised, selected and assessed and refined as a result of assessments and consultation representations will be monitored. Monitoring, reviewing and updating this Local Strategy will be essential both to ensure it continues to be 'fit for purpose' but also as a way of demonstrating success in delivering reduced flood risks to the people of Suffolk.

6.2.2. The assessment of the objectives and actions has identified a number of areas where the LFRMS could be strengthened to promote a more sustainable approach. The recommendations will help inform further stages in preparation of the LFRMS. They are detailed below:

6.2.3. Reinforce the positive impacts associated with SA/SEA objectives in the assessment of the strategy's overarching objectives by referring to the natural and built environment in Strategy Objective 4.

6.2.4. Combine Option 2 and 3 of the county-wide action 'Raise Community Awareness' to strengthen its impact on minimising flood risk. Together the actions would raise awareness of flooding to a much greater number of people who are at risk.

6.2.5. It is important to recognise the value of the historic and built environmental within the site level action 'Achieve Wider Environmental Benefits', by ensuring that flood defences are in keeping with the existing townscape and, where appropriate, to ensure the protection of built heritage.

## 6.3. Monitoring suggestions

6.3.1. The significant sustainability effects of implementing this Strategy must be monitored in order to identify unforeseen adverse effects and to be able to undertake appropriate remedial action. Table 4 of this Report contains suggested indicators in order to monitor each of the SA/SEA Objectives, however these may not all be collected due to limited resources and difficulty in data availability or collection.

# 7. Next Steps

**7.1.** This SA/SEA Report will be subject to public consultation for 6 weeks alongside the Suffolk Local Flood Risk Management Strategy. All comments on the content of this Report should be sent to:

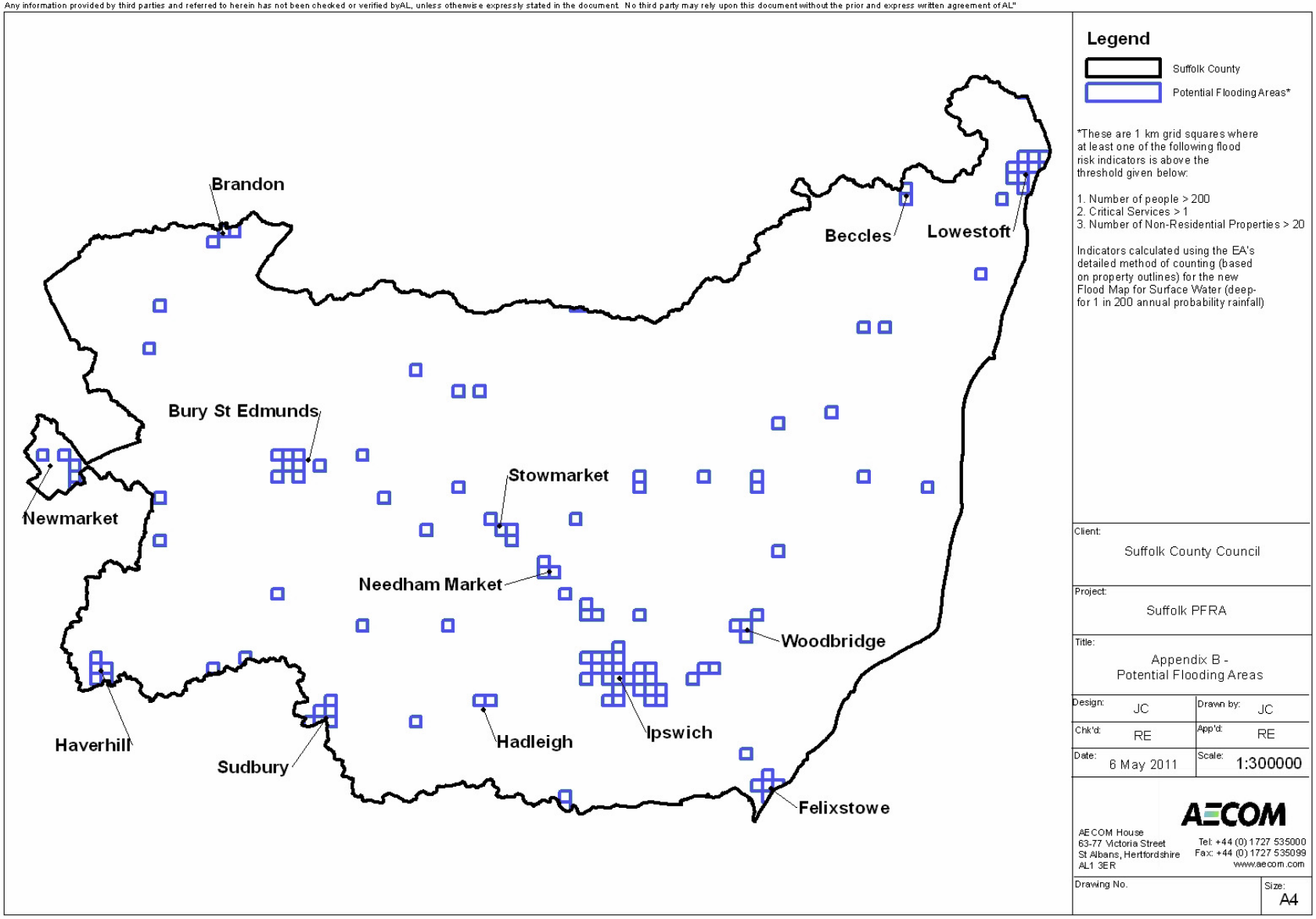
by e-mail to: floods@suffolk.gov.uk or

post to:
Jane Burch,
Suffolk County Council
Endeavour House
Russell Road
Ipswich IP1 2BX

All responses received will be reviewed and taken into consideration for the next stage of appraisal process. This will involve a SA/SEA being undertaken on the final iteration of the Suffolk Local Flood Risk Management Strategy.

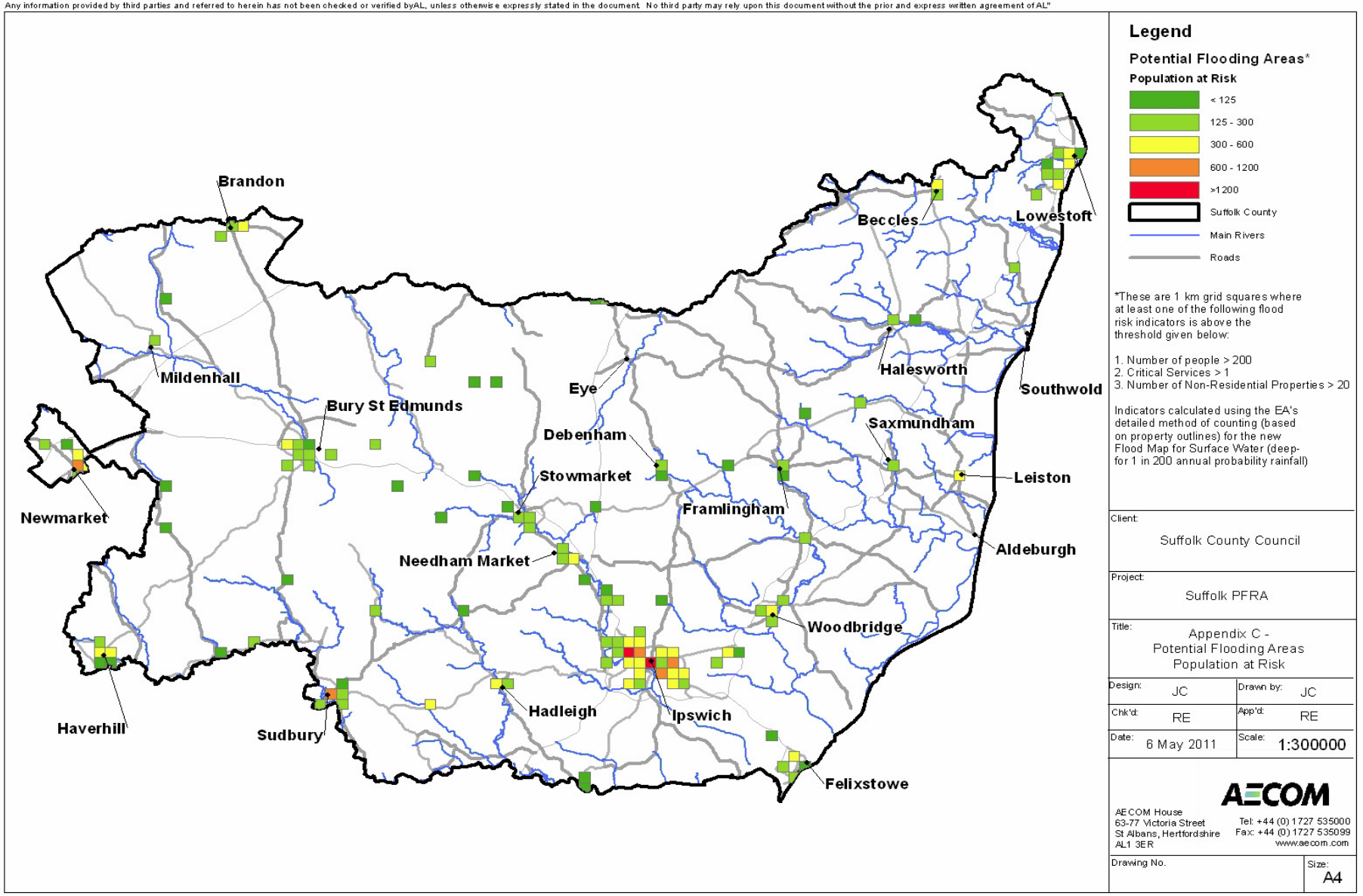
# Appendix A: Potential flooding areas

Any information provided by third parties and referred to herein has not been checked or verified byAL, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AL"



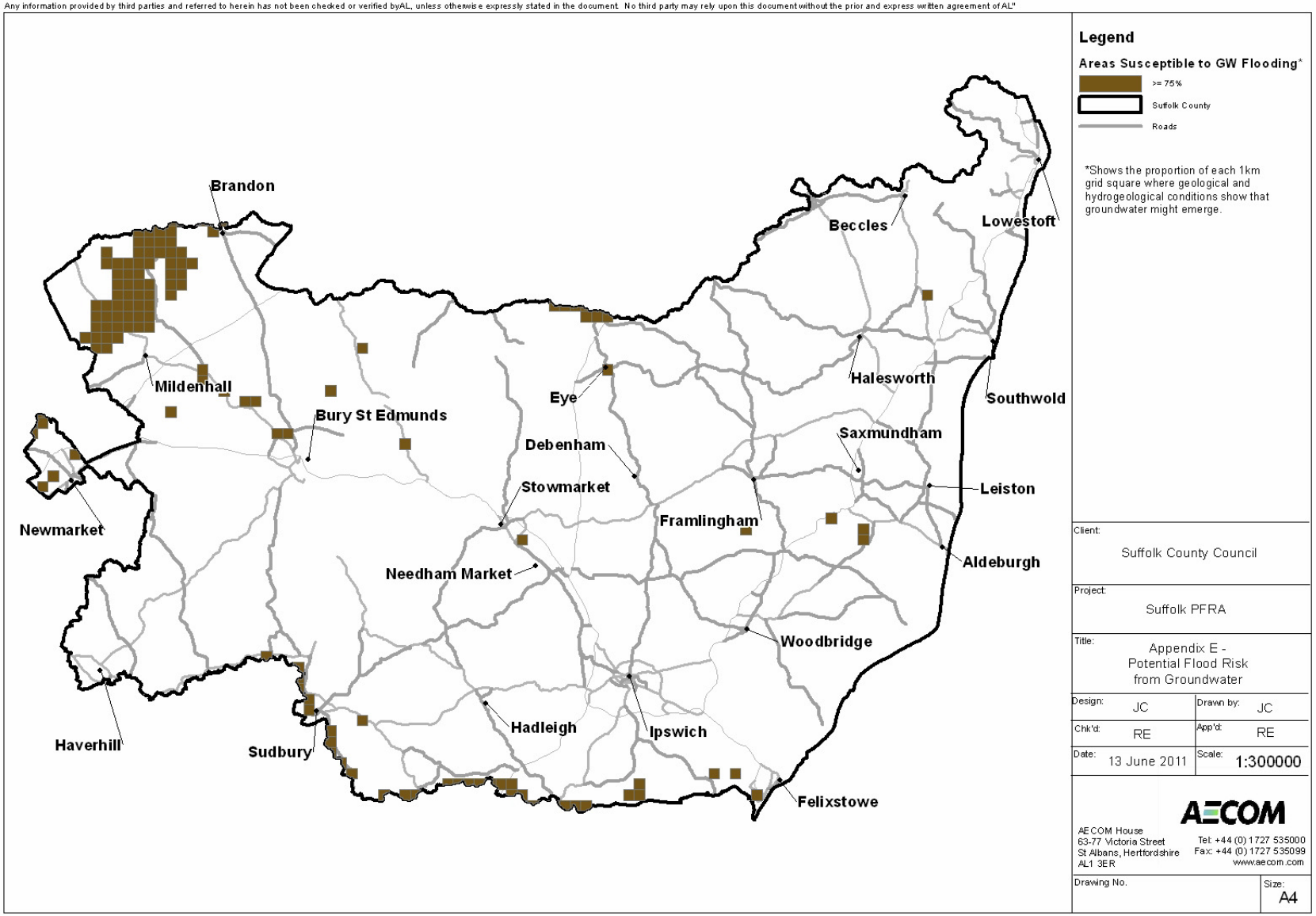
# Appendix B: Population at risk in potential flooding areas

Any information provided by third parties and referred to herein has not been checked or verified byAL, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AL"



# Appendix C: Potential Flood Risk from Groundwater

Any information provided by third parties and referred to herein has not been checked or verified byAL, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AL"



# Appendix D: Statutory Consultees' Comments

## English Heritage

From: CHAPPELL, Helen [mailto:Helen.Chappell@english-heritage.org.uk]
Sent: 30 May 2012 16:06
To: Jane Burch
Subject: Consultation on Sustainability Appraisal Scoping Report for Suffolk Local Flood Risk Management Strategy

Hi Jane,

All emails on this can come to me.

I only have a couple of small comments. In Table 4, point 9, I would refer to assets as 'Heritage Assets' rather than 'Historic Assets' as there is plenty of pre-history in Suffolk. In the Indicators section I would say add 'number of Scheduled Monuments at risk of flooding' as well as listed buildings. I would also suggest looking at the Heritage at Risk Register to see if any of those monuments/buildings that are deemed to be at risk of flooding already appear on the register for other reasons.

Hope that's helpful.

Best wishes,

Helen

Dr Helen Chappell
Science Advisor (East of England)
English Heritage
24, Brooklands Avenue,
Cambridge.
CB2 8BU

# Natural England

Date: 18 June 2012
Our ref: 53275 Sustainability Appraisal Scoping Suffolk FRMS
Your ref: Click here to enter text.

**BY EMAIL ONLY**

Natural England
Consultation Service
Hornbeam House
Electra Way
Crewe Business Park
CREWE
CW1 6GJ

T: 0300 060 3900

Dear Irina

**Case name:** 53275 Sustainability Appraisal Scoping Suffolk FRMS

Natural England are providing advice to Suffolk County Council under the Strategic Environmental Assessment (SEA) European Directive 2001/42/EC

**General Comments**

We welcome the efforts made by Suffolk County Council in preparing the draft scoping report. We are satisfied at present that the Sustainability Appraisal of the Local Flood Risk Management Plan is proceeding in a proper, logical and comprehensive manner.

**Approach to the Sustainability Appraisal**

The scoping of the SEA is a critical stage which sets out the methodology and scope of tests against which the emerging Flood Risk Management plan will be assessed. It also sets out the most up-to-date wider policy context and identifies key environmental issues, characteristics and predicted problems

The document clearly sets out the method that will be used in the SEA/SA process and recognises that landscape and nature conservation and countryside recreation are important issues as well as climate change, geological and natural processes, fluvial and coastal flooding / erosion

Natural England is satisfied that the proposed SEA objectives are appropriate. Natural England believes that the objectives cover the key sustainability issues in Suffolk and are relevant to the landscape and nature conservation issues associated with flood risk.

The scoping document does make reference to the monitoring of the effects of the implementation of the LFRMS, however it would be helpful to obtain more detail on the appropriate indicators proposed to cover monitoring relevant to the landscape and nature conservation issues.

Section 3.4.1 states that the consultation of the preferred options of the LFRMS documents and the SA reports will be in June 2012, I have not seen these consultations, have the consultations commenced, or will this follow on from the scoping stage?

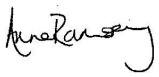
Natural England
Foundry House
3 Millsands
Riverside Exchange
Sheffield S3 8NH

www.naturalengland.org.uk

For any correspondence or queries relating to this consultation only, please contact Anne Ramsay on 0300 060 4941. For all other correspondence, please contact consultations@naturalengland.org.uk.

We really value your feedback to help us improve the service we offer. We have attached a feedback form to this letter and welcome any comments you might have about our service.

Yours sincerely



Anne Ramsay

Lead Advisor

Land Use - Operations unit

Natural England
**Direct telephone: 0300 060 4941**

anne.ramsay @naturalengland.org.uk

www.naturalengland.org.uk