Norfolk County Council

Norfolk Minerals and Waste Local Plan

Silica Sand Review of the Minerals Site Specific Allocations DPD

Review of the Minerals and Waste Core Strategy and Development Management Policies DPD

Sustainability Appraisal Report – Part A -Scoping

October 2015
Norfolk County Council
Community and Environmental Services

Norfolk Minerals and Waste Local Plan

Silica Sand Review of the Minerals Site Specific Allocations DPD

Review of the Minerals and Waste Core Strategy and Development Management Policies DPD

Sustainability Appraisal Report – Part A - Scoping

October 2015

T. McCabe - Executive Director
Community and Environmental Services
Norfolk County Council
Martineau Lane
Norwich
NR1 2SG

www.norfolk.gov.uk

IN TRAN
communication for all

If you need this report in large print, audio, Braille, an alternative format or a different language please contact Norfolk County Council on 0344 800 8020 or 0344 8008011 (textphone) and we will do our best to help.

Contents

Abbreviations

Acronyms and other abbreviations used in this report are listed below:

AONB Area of Outstanding Natural Beauty
AQMA Air Quality Management Area
BERR Department for Business, Enterprise and Regulatory Reform
BGS British Geological Survey
BMV Best and Most Versatile (Agricultural Land Classification)
BREEAM Building Research Establishment Environment Assessment Methodology
CO_2 Carbon dioxide
CWS County Wildlife Site
DCLG Department of Communities and Local Government
DCMS Department for Culture, Media and Sport
DECC Department of Energy and Climate Change
DEFRA Department of Environment, Food and Rural Affairs
DfT Department for Transport
DPD Development Plan Document
EA Environment Agency
EU European Union
GNDP Greater Norwich Development Partnership
GOS Government Office for Science
HRA Habitats Regulations Assessment
IPCC Intergovernmental Panel on Climate Change
JNCC Joint Nature Conservancy Council
LNR Local Nature Reserve
LSOA Lower Super Output Area
MMO Marine Management Organisation
MSSA Minerals Site Specific Allocations
NCC Norfolk County Council
NMWDF Norfolk Minerals and Waste Development Framework
NNR National Nature Reserve
NPPF National Planning Policy Framework
NPPG National Planning Practice Guidance
SA Sustainability Appraisal
SAC Special Area of Conservation
SEA Strategic Environmental Assessment
SPA Special Protection Area
SPD Supplementary Planning Document
SSSI Site of Special Scientific Interest
SWMP Surface Water Management Plan
UN United Nations
UNECE United Nations Economic Commission for Europe
UNESCO United Nations Educational, Scientific and Cultural Organisation
WCS Water Cycle Study
WSSA Waste Site Specific Allocations

Non-Technical Summary

Background

The principles of the planning system for England are set out in the Planning and Compulsory Purchase Act 2004 (as amended by the Localism Act 2010), the National Planning Policy Framework, National Planning Policy for Waste and the National Planning Practice Guidance.

The adopted Norfolk Minerals and Waste Development Framework (NMWDF) consists of the Core Strategy and Minerals and Waste Development Management Policies Development Plan Document (DPD), the Minerals Site Specific Allocations DPD and the Waste Site Specific Allocations DPD which together contain the policies for the development and use of land for minerals extraction and associated development and waste management facilities in Norfolk. These documents form the Local Plan for mineral and waste planning in Norfolk up to the end of 2026.

Under the Planning and Compulsory Purchase Act, there is a requirement for local planning authorities to undertake a Sustainability Appraisal (SA) on its Local Plan. Additionally, in July 2004 an assessment of the effects of certain plans and programmes on the environment, known as Strategic Environmental Assessment (SEA), became a requirement under European Directive 2001/42/EC. This Directive also applies to Local Plans.

In accordance with the Act, the Directive, and Government guidance, a combined SA/SEA was undertaken on the Development Plan Documents within Norfolk's adopted Minerals and Waste Development Framework.

There is a requirement within the NMWDF for a process of annual monitoring and a five yearly review of all the Development Plan Documents. There is also a requirement for a Silica Sand Single Issue Review of the Minerals Site Specific Allocations DPD to be undertaken. An SEA/SA will be undertaken of each review. This Scoping Report is the first stage in this process.

The SA/SEA process follows the requirements of the SEA Directive and Regulations and the National Planning Practice Guidance. This SEA/SA Scoping Report builds on the previous SEA/SA for the Minerals and Waste Site Specific Allocations and Minerals and Waste Core Strategy, to provide an up to date assessment for the Silica Sand Review and the review of the Minerals and Waste Core Strategy in 2016.

This Scoping Report provides an updated outline of the baseline information, key issues, relevant plans and programmes and SA/SEA framework. This report includes the following information:

- Statutory context;
- Influences of other plans and programmes;
- Sustainability baseline information;
- Issues for sustainable development; and
- Sustainability Appraisal Framework.

The purpose of the scoping consultation is twofold, to receive feedback from the relevant environmental bodies and also to inform them as to our SA/SEA activities. Consultation comments will be addressed as much as possible through subsequent stages of both the SA and the development of the Silica Sand Review and the review of the Minerals and Waste Core Strategy.

Policy, Plans and Programmes Review

A review of relevant European, national, regional and local planning policy has been undertaken as part of the SA/SEA process. The review highlights how the Silica Sand Review and the review of the Minerals and Waste Core Strategy can contribute to delivering wider national, regional and local sustainability objectives, whilst ensuring that key environmental protection objectives (such as the EU Wild Birds Directive and EU Habitats Directive) are respected.

The key issues that were identified in the review of relevant policies, plans and programmes included:

- Climate change mitigation and adaption: Reducing contributions to climate change through reduced landfilling, reducing road transportation where practicable, encourage energy efficient buildings and energy from renewable or low carbon sources.
- Improving health and well-being: Ensuring minerals and waste developments do not adversely affect residential amenity through their location and operations. Take into account cumulative impacts. Consider the potential to provide enhancements to public open space, public rights of way and recreation through restoration schemes.
- Protection and enhancement of landscape, the built environment and the historic environment: Ensuring minerals and waste developments are not located in areas that could adversely affect landscape, townscape or heritage assets. Provide enhancement through restoration schemes;
- Protection and enhancement of biodiversity, geodiversity and the natural environment: Ensuring minerals and waste developments and waste management facilities are not located in areas that could adversely affect biodiversity, geodiversity, water quality and soil quality. Provide enhancement through restoration schemes;
- Sustainable resource use: Ensuring minerals and waste resources are used efficiently. Providing sufficient facilities to enable waste to be managed as high up the waste hierarchy as practicable. Consider the location of minerals and waste developments in relation to the markets for the goods and services provided and the suitability of the road network.
- Minimisation of flood risk: Ensuring minerals and waste developments do not increase flood risk and are not situated in areas of high flood risk. Use restoration opportunities to reduce the causes and impacts of flood risk; and
- Supporting local economic growth: Providing a steady and adequate supply of minerals to the economy to support the planned house building, jobs growth and associated infrastructure. Providing sufficient waste management facilities, including waste water treatment capacity to meet the needs of the population and businesses. Plan for a steady and

adequate supply of silica sand. Safeguard known locations of mineral resources and mineral infrastructure.

Sustainability Baseline

The environmental, social and economic baseline for Norfolk was gathered in order to provide a base to predict future baseline evolution, and assess the effects of the Silica Sand Review and the review of the Minerals and Waste Core Strategy. Baseline information collection was based on specific indicators included in the monitoring and implementation framework of the adopted Norfolk Minerals and Waste Plans. Analysis of trends and targets was used to help predict how the baseline might evolve without the implementation of the Silica Sand Review and the review of the Minerals and Waste Core Strategy.

Sustainability Problems and Opportunities

A number of problems and issues were identified from a review of the baseline information which could affect Norfolk and its sustainable development in the future. Key problems and issues included:

Climate change

- Norfolk is predicted to have warmer, drier, summers and wetter warmer winters. Sea level is predicted to rise.
- Carbon dioxide and methane emissions should be reduced from minerals extraction and associated development and waste management facilities by reducing the quantity of biodegradable waste landfilled, reducing road transportation, encouraging energy efficient buildings and the provision of low carbon or renewable energy sources.

Air quality

- Air quality Management Areas are designated in King's Lynn and Norwich due to traffic congestion.
- Minimise air pollution emissions from minerals extraction and associated development and waste management facilities and associated transportation.

Population

- Deprivation is higher in the urban areas of Norwich, Great Yarmouth, King's Lynn and Thetford.
- Increasing population requiring additional housing and associated facilities.
- Need to ensure that minerals and waste developments do not adversely affect the amenity of local communities, through their location and operations, including transport impacts and cumulative impacts.

Historic Environment

- Potential for minerals extraction and associated development and waste management facilities to affect the setting of heritage assets.
- Need to protect and enhance heritage assets through appropriate location and design of minerals and waste developments and restoration schemes.

Biodiversity, flora and fauna

- Problems of land take for development, water pollution affecting nature conservation designations and the loss of finite geodiversity resources.
- Need to protect and enhance habitats, species and geodiversity features as part of minerals and waste development planning, including through restoration schemes.

Landscape

- Gradual loss of countryside, landscape and tranquillity to development.
- The potential for minerals and waste development to impact on the AONB and Heritage Coast as well as landscape character
- Need to protect and enhance the landscape through appropriate location and design of minerals and waste developments, including through restoration schemes.

Human health

- High levels of health deprivation in the urban areas of Norwich, King's Lynn and Great Yarmouth.
- Poor housing quality in parts of Norwich, North Norfolk, King's Lynn and West Norfolk and Breckland.
- Need to ensure that minerals and waste facilities do not exacerbate health deprivation and take into account cumulative impacts.
- Provide enhancement to public open space, public rights of way and recreation through restoration schemes.

Water, soil

- Only a small percentage of the rivers in Norfolk have been classified as good status or better status by the Environment Agency.
- A significant proportion of the county is covered by Groundwater Protection Zones
- Need to preserve Norfolk's best and most versatile (grades 1, 2, or 3a) agricultural land
- Need to ensure that minerals and waste development do not negatively affect surface water quantity or quality or groundwater quantity or quality
- Need to ensure that minerals and waste development does not permanently reduce the proportion of high quality agricultural land.

Material Assets

- Need sufficient facilities to enable waste to be managed as high up the waste hierarchy as practicable and especially reduce the quantity of waste disposed of to landfill.
- Need sufficient facilities to enable waste to be disposed of or, in the case of mixed municipal waste from households, recovered, in line with the proximity principle
- Variable production of recycled and secondary aggregates
- Declining production of sand and gravel since 2007
- Increasing production of silica sand
- Crushed rock for road building is mainly imported to Norfolk through one railhead in Norwich
- Need to safeguard mineral resources, extraction sites and infrastructure from being sterilised or prejudiced by non-mineral development
- Need to safeguard existing significant waste management facilities from being prejudiced by non-waste development

SA/SEA Framework

The SEA Directive does not specifically require the use of objectives or indicators, but they are a recognised way in which environmental, social and economic effects can be described, analysed and compared. Objectives and indicators were developed based on the development framework objectives; local planning and sustainability objectives, and review of the baseline and key issues for Norfolk.

The 13 sustainability objectives used in the assessment of the three adopted Norfolk Minerals and Waste Development Plan Documents are:

1. To mitigate the effects of climate change by reducing greenhouse gas emissions
2. To improve air quality in line with the National Air Quality Standards
3. To minimise noise, vibration and visual intrusion
4. To improve accessibility and reduce social exclusion
5. To maintain and enhance the character of the townscape and cultural heritage
6. To protect and enhance Norfolk's biodiversity and geodiversity
7. To promote innovative solutions for the restoration and after-use of minerals and waste sites
8. To protect and enhance the quality and distinctiveness of the countryside and landscape
9. To contribute to improved health and amenity of local communities in Norfolk
10. To protect and enhance water and soil quality in Norfolk
11. To promote sustainable use of minerals and waste resources
12. To reduce the risk of current and future flooding at new and existing development
13. To encourage employment opportunities and promote economic growth

These sustainability objectives have been reviewed and it is considered that the minor changes should be made to the objectives for use in the assessment of the Silica Sand Review of the Minerals Site Specific Allocations DPD and the review of the Minerals and Waste Core Strategy. In response to the consultation comments received to the Scoping Report, the following changes will be made to objectives SA1, SA4 and SA5:

1. To adapt to and mitigate effects of climate change by reducing contributions to climate change.

4. To improve accessibility to jobs, services and facilities and reduce social exclusion.

5. To maintain and enhance the character of the townscape and historic environment.

Factors, to be used in scoring each proposed site, area and policy against each SA Objective have been proposed of use in the Silica Sand Review and the Minerals and Waste Core Strategy Review.

Alternatives

Development of the **Silica Sand Review** will go through a number of stages, including a 'Call for Sites', Preferred Options and Draft Plan. Following the publication of the Initial Consultation document, the responses from the public consultation were assessed, and a Call for Sites undertaken in June 2015. Sufficient suitable sites to meet the shortfall were not submitted. Therefore, as proposed in the Initial Consultation document, Norfolk County Council has defined proposed Areas of Search for future silica sand extraction instead and these areas will be subject to Sustainability Appraisal. In deciding on the methodology used to define the areas of search, alternatives were considered regarding which land should be excluded from areas of search. The alternative options used to define the areas of search were consulted on in the Initial Consultation and have also been subject to Sustainability Appraisal.

At the Preferred Options stage the initial assessments of the potential site and the Areas of Search were published for consultation. The initial assessments included a preliminary conclusion regarding the acceptability of the proposed Specific Site or Areas of Search for inclusion in the Silica Sand Review for future silica sand extraction.

The consultation responses from the Preferred Options stage were used to refine the conclusions on which sites would be submitted to the Secretary of State as draft specific site allocations, or areas of search. The draft Silica Sand Review will be published for representations on soundness and legal compliance prior to its submission to the Secretary of State, for examination by an independent Planning Inspector. On adoption, the sites or areas included in the Silica Sand Review for future silica sand extraction will form part of the Minerals Site Specific Allocations Plan.

The **Minerals and Waste Core Strategy Review** will go through a number of stages, including consultation on the preparation of the Review and a formal representations period on the Pre-Submission version of the Minerals and Waste Core Strategy Review. All evidential data supporting the Core Strategy will be reviewed to understand if any changes to policy are required as the result of changing circumstances. A review of wider policy including the National Planning Policy and Planning Practice Guidance for both minerals and waste will also be undertaken.

The consultation responses from the preparation stage will be used to refine the policies to be included in the Pre-Submission version of the document for submission to the Secretary of State. The Minerals and Waste Core Strategy Review will then be published for representations of soundness and legal compliance prior to its submission to the Secretary of State for examination by an Independent Planning Inspector.

Consultation

In accordance with the SEA Directive, Norfolk County Council has carried out a scoping consultation on the Silica Sand Review, and the Minerals and Waste Core Strategy Review with statutory environmental bodies and other key stakeholders, for a six week period in March-April 2015. Consultation comments have been addressed as much as possible through subsequent stages of both the SA/SEA and the development of the Silica Sand Review and will be addressed the Minerals and Waste Core Strategy review.

The Initial Sustainability Appraisal Report -Part A and Part B accompanied the Preferred Options version of the Silica Sand Review for a six-week period of consultation. Comments received in response to this consultation will be taken into account and addressed through the development of the Draft Silica Sand Review, which will form part of the Mineral Site Specific Allocations Plan when adopted.

The Draft Sustainability Appraisal Report will accompany the Draft Silica Sand Review, for a six-week period of consultation. The documents will be sent out to the three statutory consultees; Historic England, Environment Agency, and Natural England, and to other stakeholders and the public. Comments received will be documented, along with a commentary on how these comments were taken on board in relation to modifications to the draft Plan if required.

A separate Initial Sustainability Appraisal Report will accompany the plan preparation stage of the Minerals and Waste Core Strategy Review for a six week period of consultation. Comments received in response to this consultation will be taken into account and addressed through the development of the Pre-Submission version of the Minerals and Waste Core Strategy Review.

A Draft Sustainability Appraisal Report will accompany the Pre-Submission version of the Minerals and Waste Core Strategy Review, for a six week period of consultation. The documents will be sent to the three statutory consultees; Historic England, Environment Agency, and Natural England, and to other stakeholders and the public. Comments received will be documented, along with a commentary on how these comments were taken on board in relation to modifications to the Pre-Submission version of the Minerals and Waste Core Strategy Review if required.

1. Introduction

1.1 Terms of Reference

Under the European Directive 2001/42/EC, on the assessment of the effects of certain plans and programmes on the environment (also known as the 'Strategic Environmental Assessment (SEA) Directive'), and the resulting Environmental Assessment of Plans and Programmes Regulations 2004, a SEA is required to ensure that the environmental effects of the Silica Sand review of the Minerals Site Specific Allocations DPD, and the review of the Minerals and Waste Core Strategy are considered.

Under the Planning and Compulsory Purchase Act and the Town and Country Planning (Local Planning) (England) Regulations 2012, there is also a requirement for local planning authorities to undertake a Sustainability Appraisal (SA) on their Local Plan. This Scoping Report is the first stage in the SEA/SA process.

1.2 Purpose of the Scoping Stage and Scoping Report

The aim of the Scoping Report was to set the context and scope for the SEA/SA of the Norfolk Silica Sand Review of the Minerals Site Specific Allocations Plan and the review of the Norfolk Minerals and Waste Core Strategy. Specifically it aims to:

- Review relevant policies, plans and programmes and their implications for the Silica Sand Review and the Minerals and Waste Core Strategy Review;
- Establish the baseline environmental information and key issues for Norfolk;
- Set the context and objectives of the SEA/SA; and
- Decide on the scope for the SEA/SA, ensuring that it covers all the significant environmental, social and economic effects of the Silica Sand Review and the Minerals and Waste Core Strategy Review.

The Scoping Report was issued for formal consultation to the three statutory consultees (Environment Agency, Natural England and Historic England) and other local stakeholders, and comments made have been incorporated into this report.

1.3 Links with wider studies

Habitats Regulations Assessment

Under the European Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora (also known as the 'Habitats Directive'), the resulting Conservation of Habitats and Species Regulations 2012, a Habitat Regulations Assessment (HRA) is required where a plan may give rise to significant effects on European designated sites, known as Natura 2000 sites.

Natura 2000 sites consist of Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites, and also include potential SPA (pSPA) and candidate SAC (cSAC). Within Norfolk there are a number of SPAs and

SACs, and therefore a HRA may be required. A HRA Stage 1 'Test of Likely Significance' will be undertaken for the Silica Sand Review and the Minerals and Waste Core Strategy Review to determine whether there are likely to be any significant effects on Natura 2000 sites. If significant effects are determined then a Stage 2 'Appropriate Assessment' will be required. The HRA process will be undertaken in parallel with the SEA/SA and the Silica Sand Review and Minerals and Waste Core Strategy Review processes and will feed into each other.

1.4 Limitations of the Scoping Exercise

Norfolk County Council relied on published data and information provided by others (as well as data obtained by NCC) in the production of the Scoping Report. The information presented in this report is the result of a desk-based review and no formal requests for records have been made.

The baseline information collected in this Scoping Report is the most up-to-date information currently available, however it is possible that conditions described in this report may change over time. It is likely that this dataset will be up-dated throughout the SEA/SA process and for post-adoption monitoring requirements as new information becomes available or other information presents itself. The consultation process aims to identify additional information required to ensure all potential environmental effects have been considered with regard to the Silica Sand Review and the Minerals and Waste Core Strategy Review.

1.5 Structure of the Scoping Report

The Scoping Report is set out as follows:

- Section 1 of this report provides an introduction including background, purpose of the SA Report and SA/SEA limitations;
- Section 2 outlines the legislative context and requirements of SA and SEA and summarises the approach to be taken for the SA/SEA process;
- Section 3 describes the Norfolk Minerals and Waste Development Framework, or Local Plan;
- Section 4 presents the review of relevant plans and programmes and implications for the Silica Sand Review, the review of the Minerals and Waste Core Strategy and SA/SEA (SA/SEA Task A1);
- Section 5 describes the sustainability baseline conditions for Norfolk, and also details the likely evolution of the baseline without the implementation of the Silica Sand Review and the review of the Minerals and Waste Core Strategy (SA/SEA Tasks A2);
- Section 6 details the key problems and issues for Norfolk identified during the baseline review (SA/SEA Task A3);

1.6 Consultation

Previous Consultation Stages

Norfolk County Council's Environment, Development and Transport Committee agreed at its meeting on 16 January 2015 for the Initial Consultation on the Silica Sand Review and the Sustainability Appraisal Scoping Report to be published for a consultation period of six weeks.

The consultee comments and the responses to these made by Norfolk County Council planning officers are contained in the 'Initial Consultation Feedback Report 2015'. This can be found on the County Council's website at: http://www.norfolk.gov.uk/view/ncc166849

Norfolk County Council's Environment, Development and Transport Committee agreed at its meeting on 16 October 2015 for the Preferred Options of the Silica Sand Review and the Initial Sustainability Appraisal Report Part A and Part B to be published for a consultation period of six weeks.

The consultee comments and the responses to these made by Norfolk County Council planning officers are contained in the 'Preferred Options Consultation Feedback Report (January 2016). This document can be found on the County Council's website at: http://www.norfolk.gov.uk/nmwdf

2. Strategic Environmental Assessment and Sustainability Appraisal Legislative Requirements and Approach

2.1 Legislative Requirements

Under the Planning and Compulsory Purchase Act and the Town and Country Planning (Local Planning) (England) Regulations 2012, there is a requirement for local planning authorities to undertake a Sustainability Appraisal (SA) on their Local Plan. In July 2004, Strategic Environmental Assessment (SEA), became a statutory requirement in accordance with EU Directive 2001/42/EC. The objective of the SEA Directive is to provide a high level of protection to the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development. The SEA also works to inform the decision-making process through the identification and assessment of the cumulative significant effects a plan or programme will have on the environment at the strategic level.

In accordance with the Directive, the SEA Regulations and National Planning Practice Guidance, a combined SA/SEA will be undertaken on the Silica Sand Review and the Minerals and Waste Core Strategy review. Guidance on carrying out this SA/SEA will be taken from:

- National Planning Practice Guidance;
- A Practical Guide to the Strategic Environmental Impact Assessment Directive (DCLG, 2006);
- Environmental Assessment of Plans and Programmes Regulations 2004.

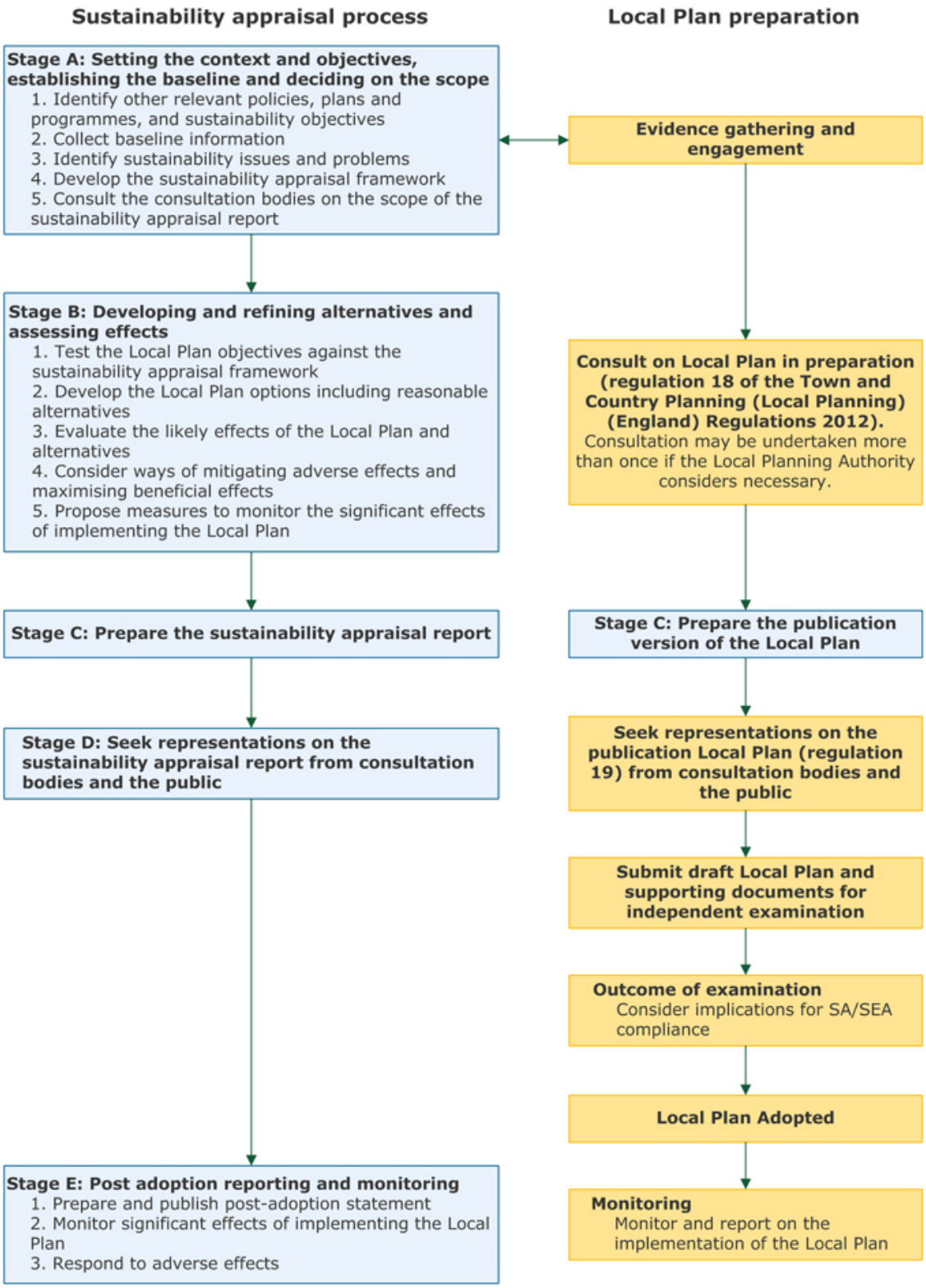
2.2 Approach to the SA/SEA Process

In applying SA/SEA to the Silica Sand Review of the Minerals Site Specific Allocations DPD and the Minerals and Waste Core Strategy Review, Norfolk County Council aims to:

- Identify alternative options for delivering sustainable minerals development in Norfolk;
- Identify alternative options for delivering sustainable waste management facilities in Norfolk;
- Further enhance positive environmental, social and economic effects of the plan; and
- Reduce and minimise the negative environmental, social and economic effects that may result from the implementation of the plan.

To ensure that the SA/SEA is robust and complies with current legislation and best practice, it will follow Stages A-E, identified in the National Planning Practice Guidance:

Figure 2-1: SA/SEA Process



SA/SEA stage	SA/SEA Task	Task Purpose
Stage A **Setting the context and objectives, establishing the baseline and deciding on the scope**	**A1: Identifying other relevant plans, programmes and environmental protection objectives**	**To establish how the plan is affected by outside factors and suggest ideas for how any constraints can be addressed and to help identify SA objectives.**
	A2: Collecting baseline information	**To provide an evidence base for sustainability problems, prediction of effects, and monitoring; to help in the development of SA objectives**
	A3: Identifying environmental problems	**To help focus the SA and streamline the subsequent stages, including baseline information analysis, setting of the SA objectives, predicting of effects and monitoring**
	A4: Developing SA objectives	**To provide a means by which the performance of the plan and alternatives can be assessed**
	A5: Consulting on the scope of the SA/SEA	**To ensure that the SA covers the likely significant effects of the plan**
Stage B **Developing and refining alternatives and assessing effects**	**B1: Testing the plan objectives against the SA/SEA objectives**	**To identify potential synergies or inconsistencies between objectives of the plan and SA objectives and help in developing alternatives**
	B2: Developing strategic alternatives	**To develop and refine strategic alternatives**
	B3: Predicting the effects of the draft plan including alternatives	**To predict the significant effects of the plan and alternatives**
	B4: Evaluating the effects of the draft plan, including alternatives	**To evaluate the predicted effects of the plan and its alternatives and assist in the refinement of the plan**

SA/SEA stage	SA/SEA Task	Task Purpose
	B5: Considering ways of mitigating adverse effects	**To ensure that adverse effects are identified and potential mitigation measures are considered**
	B6: Proposing measure to monitor the effects of plan implementation	**To detail the means by which the performance of the plan can be assessed**
Stage C **Preparing the Sustainability Appraisal Report**	**C1: Preparing the Sustainability Appraisal Report**	**To present the predicted effects of the plan, including alternatives, in a form suitable for public consultation and use by decision-makers**
Stage D **Consulting on the draft plan and the Sustainability Appraisal Report**	**D1: Consulting on the draft plan and Sustainability Appraisal Report**	**To give the public and consultation bodies an opportunity to express their opinions on the findings of the SA report and to use it as a reference point in commenting on the plan. To gather more information through the opinions and concerns of the public**
	D2: Assessing significant changes	**To ensure that the sustainability implications of any significant changes to the draft plan at this stage are assessed and taken into account**
	D3: Decision making and providing information	**To provide information on how the SA Report and consultees' opinions were taken into account in deciding the final form of the plan to be adopted**
Stage E **Monitoring implementation of the plan**	**E1: Developing aims and methods for monitoring**	**To track the effects of the plan to show whether they are as predicted; to help identify adverse effects**
	E2: Responding to adverse effects	**To prepare for appropriate responses where adverse effects are identified**

2.3 Components of the Environmental Report that make up the Sustainability Appraisal Report

The Sustainability Appraisal Reports which will be published alongside the draft Silica Sand Review and the draft Minerals and Waste Core Strategy Review will incorporate the requirements for an Environmental Report, as set out in the National Planning Practice Guidance Ref 11-019-20140306. Table 1 below indicates where specific requirements of the Strategic Environmental Assessment (SEA) Directive will be met.

Table 1: SEA Directive Requirements Checklist

Environmental Report Requirements	Section of this Report
An outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes	Scoping Report – section 3
The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme	Scoping Report – section 5
The environmental characteristics of areas likely to be significantly affected	Scoping Report - sections 5 and 6
Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC	Scoping Report - Section 6
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	Scoping Report - section 4 and Sustainability Appraisal Report- Part B for the relevant draft plan
The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors	Sustainability Appraisal Report- Part B for the relevant draft plan
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	Sustainability Appraisal Report- Part B for the relevant draft plan
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 of know-how) encountered in compiling the required information	Sustainability Appraisal Report- Part B for the relevant draft plan
A description of the measures envisaged concerning monitoring in accordance with Article 10	Sustainability Appraisal Report for the relevant draft plan
A non-technical summary of the information provided under the above headings	Start of the Scoping Report and start of Sustainability

Environmental Report Requirements	Section of this Report
	Appraisal Report-Part B for the relevant draft plan

2.4 Stage A - Scoping

This report covers Stage A of the SEA process, known as the scoping stage. Stage B for the Silica Sand Review is covered by the Initial Sustainability Appraisal-Part B. Stage B for the Minerals and Waste Core Strategy, and Stages C to D will be covered in the Sustainability Appraisal Reports accompanying the draft Silica Sand Review and the draft Minerals and Waste Core Strategy Review, and Stage E (Monitoring) will be carried out by Norfolk County Council as part of its annual monitoring of the Minerals and Waste Local Plan.

3. Norfolk Minerals and Waste Development Framework Context

3.1 Norfolk Minerals and Waste Development Framework

County councils and unitary authorities have responsibility for minerals and waste planning matters. Norfolk County Council produced a Local Development Framework, known as the Norfolk Minerals and Waste Development Framework (NMWDF). This framework consists of four Planning Policy documents which comprise the minerals and waste planning spatial strategy for the county and form the Minerals and Waste Local Plan.

3.2 Norfolk Core Strategy and Minerals and Waste Development Management Policies Development Plan Document (DPD)

The Core Strategy was the first DPD Norfolk County Council produced as part of the NMWDF. It sets out the vision for minerals and waste development planning in Norfolk for 17 years (from 2010 to 2026) and also contains measurable objectives to enable successful monitoring. The Objectives of the Minerals & Waste Core Strategy are set out overleaf. The Vision for the Minerals & Waste Core Strategy describes how the Council aims to fulfil its responsibility for providing minerals, and managing waste, within the county whilst at the same time taking into account social, economic and environmental sustainability considerations.

The policies contained in the Core Strategy are for use in making decisions on planning applications for mineral extraction and associated development and for waste management development, and in the selection of the Specific Site Allocations, Preferred Areas and Areas of Search for these developments in Norfolk.

The Core Strategy was accompanied by a SEA/SA Report which assessed the negative and positive impacts that the policies may have and proposed mitigation measures where considered appropriate. The Sustainability Appraisal findings formed part of the Examination in Public of the Core Strategy, which was found to be sound and legally compliant in 2011. The Core Strategy was adopted in September 2011. The Core Strategy will be reviewed five years after adoption, in 2016.

The **Minerals and Waste Core Strategy Review** will go through a number of stages, including consultation on the preparation of the Review and a formal representations period on the Pre-Submission version of the Minerals and Waste Core Strategy Review. All evidential data supporting the Core Strategy will be reviewed to understand if any changes to policy are required as the result of changing circumstances. A review of wider policy including the National Planning Policy and Planning Practice Guidance for both minerals and waste will also be undertaken.

The consultation responses from the preparation stage will be used to refine the policies to be included in the Pre-Submission version of the document for submission to the Secretary of State. The Minerals and Waste Core Strategy Review will then be published for representations of soundness and legal compliance prior to its submission to the Secretary of State for examination by an Independent Planning Inspector.

An Initial Sustainability Appraisal Report will accompany the plan preparation stage of the Minerals and Waste Core Strategy Review for a six week period of consultation. Comments received in response to this consultation will be taken into account and addressed through the development of the Pre-Submission version of the Minerals and Waste Core Strategy Review.

A Draft Sustainability Appraisal Report will accompany the Pre-Submission version of the Minerals and Waste Core Strategy Review, for a six week period of consultation. The documents will be sent to the three statutory consultees; Historic England, Environment Agency, and Natural England, and to other stakeholders and the public. Comments received will be documented, along with a commentary on how these comments were taken on board in relation to modifications to the Pre-Submission version of the Minerals and Waste Core Strategy Review if required.

3.3 The Minerals Site Specific Allocations DPD

The Minerals Site Specific Allocations Plan (MSSA) allocates specific sites which are available and acceptable in principle for mineral extraction (sand & gravel, carstone and silica sand) and associated development, to meet the requirements of Core Strategy Policy CS1 until the end of 2026.

The MSSA was accompanied by a SEA/SA Report which assessed the negative and positive impacts that individual sites may have and proposed mitigation measures where considered appropriate. The Sustainability Appraisal findings formed part of the Examination in Public of the MSSA, which was found to be sound and legally compliant in 2013. The MSSA was adopted in October 2013.

The MSSA will be reviewed in full five years from adoption, in 2018. However, there is also a requirement to carry out an early single issue Silica Sand Review of the MSSA. The Silica Sand Review is required because there is a shortfall in the amount of silica sand resource contained within allocated sites compared with the target in Core Strategy Policy CS1. The first consultation stage in the Silica Sand Review process will take place in 2015.

Development of the **Silica Sand Review** will go through a number of stages, including a 'Call for Sites', Preferred Options and Draft Plan. All sites which are submitted by landowners, agents and mineral operators as potential specific site allocations, preferred areas or areas of search will be assessed by officers in consultation with relevant stakeholders and Norfolk County Council's relevant specialist officers (including landscape, ecology, highways and archaeology). Following the publication of the Initial Consultation document, the responses from the public consultation were assessed; and a Call for Sites undertaken in June 2015. Sufficient suitable sites to meet the shortfall were not submitted.

Therefore, as proposed in the Initial Consultation document, Norfolk County Council has defined proposed Areas of Search for future silica sand extraction instead and these areas will be subject to Sustainability Appraisal.

At the current stage (Preferred Options) the initial assessments of the potential Specific Site and the Areas of Search have been published for consultation. The initial assessments include a preliminary conclusion regarding the acceptability of the proposed specific site or Areas of Search for inclusion in the Silica Sand Review for future silica sand extraction.

The consultation responses from the Preferred Options stage were used to refine the conclusions on which sites would be submitted to the Secretary of State as draft specific site allocations, or areas of search. The draft Silica Sand Review will be published for representations on soundness and legal compliance prior to its submission to the Secretary of State, for examination by an independent Planning Inspector. On adoption, the sites or areas included in the Silica Sand Review for future silica sand extraction will form part of the Minerals Site Specific Allocations Plan.

In accordance with the SEA Directive, Norfolk County Council carried out a scoping consultation on the Silica Sand Review, and the Minerals and Waste Core Strategy Review with statutory environmental bodies and other key stakeholders. Consultation comments have been addressed as much as possible through subsequent stages of both the SA/SEA and the development of the Silica Sand Review and the Minerals and Waste Core Strategy review.

The Initial Sustainability Appraisal Report Part A and Part B accompanied the Preferred Options version of the Silica Sand Review for a six-week period of consultation. Comments received in response to this consultation were taken into account and addressed through the development of the Draft Silica Sand Review, which will form part of the Mineral Site Specific Allocations Plan when adopted.

The Draft Sustainability Appraisal Report will accompany the Draft Silica Sand Review, for a six-week period of consultation. The documents will be sent out to the three statutory consultees; Historic England, Environment Agency, and Natural England, and to other stakeholders and the public. Comments received will be documented, along with a commentary on how these comments were taken on board in relation to modifications to the draft Plan if required.

3.4 The Waste Site Specific Allocations DPD

The Waste Site Specific Allocations Plan (WSSA) allocates specific sites which are available and acceptable in principle for waste management facilities, to meet the requirements of Core Strategy Policy CS4, until the end of 2026.

The WSSA was accompanied by an SEA/SA Report which assessed the negative and positive impacts that individual sites may have and proposed mitigation measures where considered appropriate. The Sustainability Appraisal findings formed part of the Examination in Public of the WSSA which was found to be sound and legally compliant in 2013. The WSSA was adopted in October 2013. The WSSA will be reviewed five years from adoption, in 2018.

3.5 Policies Map (previously referred to as a Proposals Map) – accompanies the adopted plans and is designed to act as a visual aid in interpreting the policies in the adopted Plans.

Monitoring these Norfolk Minerals and Waste planning documents is carried out as part of the Norfolk Minerals and Waste Sustainability Appraisal Monitoring Framework, but also through the compliance of planning conditions and potential enforcement cases. The Monitoring Framework will be reviewed as part of the Sustainability Appraisal process for the Silica Sand Review and the Minerals and waste Core Strategy Review.

Table 2: NMWDF Objectives in the adopted Core Strategy

LDF1	Ensure steady and adequate provision of primary, and increasingly recycled and secondary, minerals to meet requirements
LDF2	Increase the proportion of waste recycling, composting and energy recovery
LDF3	Minimise the amount of waste sent to landfill
LDF4	Ensure mineral working takes place as close as reasonably possible to where these resources are used, and that waste is treated as close as reasonably possible to where it is generated
LDF5	Increase the use and availability of sustainable transport in accessing waste and minerals facilities
LDF6	Minimise the adverse traffic impacts of material extraction and associated development and waste management facilities
LDF7	Minimise the impact of mineral extraction and associated development and waste management facilities on the environment by promoting opportunities to enhance and protect biodiversity, landscape and geodiversity, water supply, the wider countryside, and cultural heritage
LDF8	Minimise soil and water contamination and flood risk arising from minerals and waste activities
LDF9	Reduce methane and carbon dioxide emissions from mineral extraction and associated development and waste management facilities
LDF 10	Contribute to the Renewables Obligation and regional targets for renewable energy by increasing the proportion of energy recovery from waste
LDF 11	Improve employment opportunities, particularly for those most in need
LDF 12	Ensure that mineral extraction and associated development and waste management facilities and associated transportation do not lead to Air Quality Management Areas and that emissions are reduced
LDF 13	Mitigate adverse impacts on amenity resulting from mineral extraction and associated development and waste management facilities

4. Task A1: Relationship with Other Relevant Policies, Plans, Programmes and Sustainability Objectives

4.1 Policy Review

A list of relevant policies, plans, programmes and environmental objectives was compiled and analysed for relevance to the Silica Sand Review and the Review of the Minerals and Waste Core Strategy. This analysis allowed the County Council planning officers to take on board how the Silica Sand Review and the Minerals and Waste Core Strategy Review could contribute to delivering wider international, national and local environmental, social and economic objectives.

This chapter of the Scoping Report contains:

- A table of relevant international and European plans, programmes and strategies
- A table of relevant national plans, programmes and strategies
- A table of relevant local plans, programmes and strategies, including plans covering the East of England, Norfolk, local planning authorities in Norfolk and adjacent to Norfolk, minerals and waste planning authorities within the East of England, and mineral plans from minerals planning authorities containing a silica sand resource of glass-sand quality
- A review of the key messages in the relevant international, European, national and local plans, programmes and strategies and an assessment of whether a review of the existing sustainability objectives is required based on the review
- Key issues identified in the review of relevant plans, programmes and strategies that should be taken into account in the Silica Sand Review, the Minerals and Waste Core Strategy Review and in the SA/SEA.

Table 3: International and European Plans, Programmes and Strategies						
Ramsar Convention on Wetlands of International Importance (1971)	UN Framework Convention on Climate Change Copenhagen Accord (2010)	UNECE Convention on Access to information, public participation in decision-making and access to justice in Environmental matters (Aarhus Convention) (1998)	UNESCO World Heritage Convention (1972)	Kyoto Climate Change Protocol (2005) Doha amendment (2012)	Bern Convention on the Conservation of Migratory Species of Wild Animals (1979, amended 1985, 1988)	UNECE Convention on long-range trans-boundary air pollution (1979) as amended by the Gothenburg Protocol to abate acidification, eutrophication and ground-level ozone (1999)
Bern Convention on Conservation of European Wildlife & Natural Habitats (1979)	EU Wild Birds Directive (2009)	UN Convention on Biological Diversity (1992)	UN Millennium Declaration (2000)	Rio+20 'Future we want' (2012)	Johannesburg Summit on Sustainable Development (2002)	
EU Seventh Environmental Action Plan (2014)	EU Strategic Environmental Assessment Directive 2001/42/EC (2001)	EU Environmental Impact Assessment (2011)	EU Directive on the Assessment and Management of Environmental Noise 2002/49/EC (2002)	EU Biodiversity Strategy to 2020 (2011)	EU Directive on the Conservation of Natural Habitats of wild Flora & Fauna 92/43/EEC (1992)	EU Directive on the Protection of Groundwater (2006)
EU Floods Directive (2007)	EU Bathing water Directive (2006)	EU Renewables Directive (2009)	EU Waste Framework Directive 2008/98/EC (2008)	EU Landfill Directive (1999/31/EC) (1999)	EU Directive on the Management of Waste from the Extractive Industries 2006/21/EC (2006)	EU Air Quality Framework Directive – on ambient air quality and management 1996/62/EC
EU Transport White Paper (2011)	EU Nitrates Directive (1991)	EU Urban Waste Water Directive (1991)	EU Convention on the Protection of Archaeological Heritage (1972, revised 1992)	EU Sustainable Development Strategy (2006)	EU Spatial Development Perspective (1997)	Council Directive on Ambient Air Quality Limits 1999/30/EC

EU Water Framework Directive 2000/60/EC (2000)	EU Marine Strategy Framework Directive (2008)	EU Directive on Ambient Air Quality & Cleaner Air for Europe (2008)	EU Directive on the Incineration of Waste (2000)	EU Directive on the Energy Performance of Buildings (2002)	EU Landscape Convention (Florence Convention) (2004)	EU Clean Air Policy Package (2013)
EU Integrated Pollution Prevention & Control Directive 2008/1/EC (2008)	Proposal for a Directive Establishing a Framework for the Protection of Soil (2006)	IPCC's Fifth Assessment report on Climate Change (2013)	EU 2030 Framework for climate and energy (2014)	The Convention on the Protection of Archaeological Heritage of Europe (1985)		

Table 4: National Plans, Programmes and Strategies						
Wildlife & Countryside Act (1981)	Climate Change Act (2008)	Planning Act (2008)	Localism Act (2011)	Countryside & Rights of Way Act (2000)	Control of Pollution Act (1974) as amended	The Extractive Industries – 6th Report (Select Committee for BIS, 2014)
Flood & Water Management Act (2010)	Marine & Coastal Act (2009)	Environment Act (1995)	Environmental Protection Act (1990)	Natural Environment & Rural Communities Act (2006)	Planning and Compulsory Purchase Act (2004)	UK Air Quality Standard Regulations (2010)
National Planning Policy Framework (DCLG, 2012)	National Planning Practice Guidance (DCLG, 2014)	Conservation of Habitats & Species Regulations (2010)	Water Environment Regulations (2003)	UK Marine Policy Statement (2011)	Environmental Permitting Regulations (2010, amended 2012)	Government Forestry and Woodlands Policy Statement (DEFRA, 2013)
The Waste Regulations (2011, amended 2012)	The Hazardous Waste Regulations (2005, amended	Ancient Monuments & Archaeological Areas Act (1979)	The UK Post 2010 Biodiversity Framework, (DEFRA, 2012)	The Wetland Vision for England (EA, 2008)	Groundwater Protection: Policy & Practice (EA, 2012)	The Government's Statement on the Historic Environment for England (DCMS, 2010)
Healthy Lives, Healthy People: strategy for Public Health in England (Dept. of Health, 2010)	Government Review of Waste Policy in England (DEFRA, 2011)	UK Sustainable Development Strategy (ODPM, 2005)	Mainstreaming Sustainable Development (DEFRA, 2011)	Agricultural Waste Regulations (2006)	Anaerobic Digestion strategy and Action Plan (DEFRA, 2011)	National Infrastructure Plan (HM Treasury, 2014)
Rural Statement (DEFRA, 2012)	Safeguarding our Soils (DEFRA, 2011)	The Natural Choice – Securing the Value of Nature (DEFRA, 2011)	National Adaptation Programme (DEFRA, 2012)	Biodiversity 2020 (DEFRA, 2011)	New Anglia: Growth Deal (ODPM, 2014)	Groundwater Protection: Policy and Practice (EA, 2013)

Government Forestry & Woodlands Policy Statement (DEFRA, 2013)	The Carbon Plan (DECC, 2011)	Good Practice Guide for Tourism (DCLG, 2006)	English National Parks & the Broads (DEFRA, 2010)	Waste Prevention Programme for England (2013)	East Inshore and East Offshore Marine Plan (MMO, 2013)	Historic Environment GPA in Planning Note 1: The Historic Environment in Local Plans (Historic England, 2015)
Biodiversity Indicators in Your Pocket (DEFRA, 2010)	UKNEA National Ecosystem Assessment (2011)	Model Procedures for the Management of Contaminated Land (DEFRA/EA, 2004)	England Biodiversity Strategy Climate Change Adaptation Principles (DEFRA, 2008)	Climate Change & biodiversity Adaption (Natural England, 2009)	The Air Quality Strategy for England, Scotland, Wales and Northern Ireland) 2007, 2011)	Historic Environment GPA Note 2: Managing Significance in Decision-taking (Historic England, 2015)
Climate Change Risk Assessment (DEFRA, 2012)	Carbon Budget Order (DECC, 2011)	The renewable energy roadmap update (DECC, 2012)	Energy Act (2013)	Microgeneration Strategy (DECC, 2011)	UK Bioenergy Strategy (DECC, 2012)	Historic Environment GPA Note 3: The Setting of Heritage Assets (Historic England, 2015)
National Planning Policy for Waste (DCLG, 2014)	UK Bioenergy Strategy (DECC, 2012)	Heritage protection for the 21st Century (DCMS, 2007)	Creating Growth, Cutting Carbon, making Sustainable transport happen (DfT, 2011)	Expanding and Improving the Rail Network (DfT, 2012)	The Broads Act (1988)	Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural Land (Natural England, 2012)
Low Emissions Strategies: Using the Planning System to reduce transport emissions (DEFRA, 2010)	Geological conservation review (JNCC, 1977 onwards)	Strategy for the Management of solid LLRW from the Non-Nuclear Industry (DECC, 2010)	Low Carbon Transport: A Greener Future (DfT, 2009)	Managing Aggregates Supply in England (OR/08/042) (BGS, 2008)	Strategy for Sustainable Construction (BERR, 2008)	The Future of Food & Farming: Challenges and Choices for Global Sustainability (GOS, 2011)

Civil Engineering Environmental Quality Assessment Award Scheme	Building Research Establishment Assessment Method	World Class Places: The Government's Strategy for Improving Quality of Places (2009)	National and regional Guidelines for Aggregates Provision in England 2005-2020 (DCLG, 2009)	By all Reasonable Means: Inclusive Access to the Outdoor for Disabled People (Countryside Agency, 2005)	Red Tape Challenge – Environment Theme Proposals (DEFRA, 2012)	Waste Management Plan for England (2013)
Climate Change Adaptation by Design (Town & Country Planning Association, 2007)	Planning for Climate Change (Town & Country Planning Association, 2012)	England's statutory landscape designations: a practical guide to your duty of regard (Natural England, 2010)	Fracking UK shale: planning permission and communities (DECC, 2014)	Shale Gas: made simple (DECC, 2014)	Developing Onshore Shale Gas and Oil – Facts about 'Fracking' (DECC, 2013)	Fracking UK shale: climate change (DECC, 2014)
Fracking UK shale: local air quality (DECC, 2014)	Fracking UK shale: regulation and monitoring (DECC, 2014)	Fracking UK shale: safety from design to decommissioning (DECC, 2014)	Fracking UK shale: understanding earthquake risk (DECC, 2014)	Fracking UK shale: water (DECC, 2014)	Background note on shale gas and hydraulic fracturing (DECC, 2014)	Onshore oil and gas exploration in the UK: regulation and best practice (DECC, 2013)
Planning (Listed Buildings and Conservation Areas) Act (1990)	Conservation Principles, Policy and Guidance (Historic England, 2008)					

Table 5: Local Plans, Programmes and Strategies						
Breckland Council						
Breckland Core Strategy (2009)	Breckland Site Specific Policies and Proposals DPD (2012)	Thetford Area Action Plan DPD (2012)	Breckland Integrated Delivery Document 2010	Breckland Stage 1 Water Cycle Study (2008)	Breckland Water Cycle Study Stage 2 (2010)	Water Cycle Study Stage 2 – Attleborough Findings (2010)
Breckland Council – Strategic Flood Risk Assessment (June 2005) Breckland SFRA 2007 Update (Feb 2008)	Breckland Core Strategy Infrastructure Study (Attleborough Findings) (2008)	Attleborough Strategic Masterplan, 2011	Breckland District, Landscape Character Assessment, May 2007 (Land Use Consultants)	Breckland Environment Strategy 2008-2013	Securing Biodiversity in Breckland: First Report of the Breckland Biodiversity Audit (2010)	Further assessments of the relationship between buildings and stone curlew distribution (2013)
Broadland District Council						
Broadland District Council - Development Management DPD (2015)	Broadland District Council - Site Allocations DPD *(submitted 2014)*	Broadland District Council - Growth Triangle Area Action Plan *(submitted 2015)*	Broadland landscape Character Assessment SPD (2013)	Broadland Rivers Catchment Flood Management Plan (Environment Agency) (2009)	Norwich Clinical Commissioning Group Health and Wellbeing Strategy 2013-2018 *(covers Norwich & part of Broadland)*	
Broads Authority						
Broads Authority Core Strategy DPD (2007)	Broads Development Management Policies DPD (2011)	Broads Site Specifics Local Plan (2014)	Broads Authority Development and Flood Risk SPD (2008)	Broads Authority Biodiversity Action Plan and Framework (2009)	Broads Landscape Character Assessment (2006) updated 2012	Broads Authority Strategic Flood Risk Assessment (2007)
Broads Landscape Sensitivity Study for Renewables and Infrastucture (2012)	The Broads Plan (2011)					

Greater Norwich Development Partnership						
Greater Norwich Development Partnership Joint Core Strategy for Broadland, Norwich, and South Norfolk (2011 & 2014)	GNDP Green infrastructure Strategy (2007) and Delivery Plan (2009)	GNDP Greater Norwich Economic Strategy (2009-2014)	Partnership of Norfolk Authorities SFRA (2008) (Broadland, Norwich City, South Norfolk, Broads Authority, North Norfolk)	Norwich Urban Area Surface Water Management Plan (2011) (NCC, Norwich City, Broadland, South Norfolk)	Norwich Area Transportation Strategy (NCC) (2006)	Norwich Area Transportation Strategy Implementation Plan update (NCC) (2013)
Great Yarmouth Borough Council						
Great Yarmouth Borough Core Strategy Local Plan (2015)	Great Yarmouth Borough-wide Local Plan 'saved' policies (2001)	Great Yarmouth and Waveney Water Cycle Scoping Study (2009)	Great Yarmouth landscape character assessment (2008)	Essex and Suffolk Water – Water Resources Management Plan 2015-2040 (2014)	Great Yarmouth Strategic Flood Risk Assessment (2009)	Great Yarmouth Borough Surface Water Management Plan (NCC, GYBC) (2014)
Borough Council of King's Lynn and West Norfolk						
King's Lynn and West Norfolk Core Strategy (2011)	King's Lynn and West Norfolk Site Allocations and Development Management Policies *(Submitted 2015)*	Strategic Flood Risk Assessment (BC KL&WN) 2007 (addendum 2009)	Infrastructure Study (BC KL&WN) (2015)	Green Infrastructure Study and Management Plan (BC KL&WN) (2009)	Gaywood Clock Air Quality Management Area (2009)	Railway Road Air Quality Management Area (2007)
Outline Water Cycle Study Phase One (BC KL&WN) (2009)	Water Cycle Study Phase Two (BC KL&WN) (2011)	Great Ouse Catchment Flood Management Plan (EA, 2009)	Economic Strategy (BC KL&WN) (2009)	The Wash Shoreline Management Plan (2010)	King's Lynn Settlements Surface Water Management Plan (NCC, BCKLWN) (2015)	

North Norfolk District Council						
North Norfolk Core Strategy incorporating Development Control Policies (2009)	North Norfolk Site Allocations DPD (2011)	North Norfolk landscape Character Assessment SPD	North Norfolk Shoreline Management Plan (2011)	North Norfolk Design Guide SPD (2008)	Kelling to Lowestoft Ness Shoreline Management Plan (2010)	
Norwich City Council						
Norwich City Development Management Policies Local Plan (2014)	Norwich City Site Allocations and site specific policies Local Plan (2014)	A New Vision for Norwich - The Sustainable Community Strategy 2008-2020 (City of Norwich Partnership)	Norwich City Council Environmental strategy 2011-2014	Norwich City Council Local Air Quality Management – Detailed Assessment 2012	Norwich City Council Strategic Flood Risk Assessment Level 2 (2010)	Biodiversity Action Plan for the City of Norwich (2002)
South Norfolk Council						
South Norfolk Development Management Policies Document (2015)	South Norfolk Site Specific Allocations and Policies Document (2015)	Wymondham Area Action Plan (2015)	Long Stratton Area Action Plan (examined in 2015)	South Norfolk place-Making Guide SPD (Sept 2012)	South Norfolk Landscape Assessment 2001	South Norfolk Local Landscape Designations Review (2012)

Norfolk Adopted Neighbourhood Plans						
Acle (2015)	Great Plumstead, Little Plumstead and Thorpe End Garden Village (2015)	Sprowston (2014)	Strumpshaw (2014)	Cringleford (2014)	Brancaster Neighbourhood Plan (2015)	South Wootton Neighbourhood Plan (2015)
Local Listing of Heritage Assets						
Local Listed Heritage Assets (North Norfolk District Council)	Local Listed Heritage Assets (Norwich City Council)	Local Listed Heritage Assets (Broads Authority)	Conservation Area Appraisals (Borough Council of King's Lynn and West Norfolk)	Conservation Area Appraisals (Broadland District Council)		

Norfolk Wide plans						
Delivering Economic Growth in Norfolk – the strategic Role for Norfolk County Council 2012-2017	Norfolk Ambition - Sustainable Community Strategy for Norfolk 2003-2023	Norfolk's Earth Heritage – valuing our Geodiversity (Norfolk Geodiversity Partnership) (2010)	Norfolk Geodiversity Action Plan 2011-2016 (Norfolk Geodiversity Partnership)	Biodiversity Supplementary Planning Guidance for Norfolk (NCC, 2004)	Tomorrows Norfolk, Today's Challenge – A climate change strategy for Norfolk (2008)	Connecting Norfolk, Norfolk's Transport Plan for 2026 (LTP3) NCC 2011
Norfolk Rural Development Strategy 2013-2020 (NCC & Norfolk Rural Development Strategy Steering Group) (2013)	Norfolk Infrastructure Plan (Norfolk CC) (2012)	Norfolk Geodiversity Partnership site audit (2009)	Joint Municipal Waste Management Strategy for Norfolk 2006-2020	Norfolk Biodiversity Partnership – habitats and Species Action Plans	Norfolk Coast AONB Management Plan Strategy 2014-2019 (Norfolk Coast Partnership)	Connecting Norfolk Implementation Plan 2011-2015 (NCC) (2011)
Norfolk Core Strategy and Minerals and Waste Development Management Policies DPD 2010-2026 (2011)	Norfolk Waste Site Specific Allocations DPD (2013)	Norfolk Minerals Site Specific Allocations DPD (2013)	Water Resources Management Plan 2015 (Anglian Water, 2014)	Local Economic Assessment for Norfolk – Sept 2013 update (NCC)	Norfolk's Local Flood Risk Management Strategy (NCC) (2015)	

East of England Plans						
Realising the benefits of trees, woods and forests in the East of England - A Woodland for life Publication (2011)	Water for life and livelihoods. River Basin management Plan, Anglian River basin District (DEFRA and EA 2009)	Water resources strategy: regional action plan for the Anglian Region (Environment Agency) (2009)	New Anglia Local Enterprise Partnership for Norfolk and Suffolk: Strategic Economic Plan (2014)	Greater Cambs/ Greater Peterborough Enterprise Partnership: Strategic Economic Plan (2014)	Heritage Counts 2014 –East of England (English Heritage)	East of England Aggregate Working Party – Annual Monitoring Report 2012 (2013)
East of England Authorities' Minerals and Waste Plans & adjacent Minerals and Waste Plans						
Essex Minerals Local Plan (2014)	Essex County Council & Southend-on-Sea Waste Local Plan (2001)	Thurrock Core Strategy and Policies for Management of Development (2011)	Hertfordshire Waste Core Strategy and Dev. Management Policies Document (2012)	Hertfordshire Minerals Local Plan (2007)	Hertfordshire Waste Site Allocations (2014)	Suffolk County Council - Minerals Core Strategy DPD (2008)
Suffolk County Council - Minerals Site Specific Allocations DPD (2009)	Suffolk County Council - Waste Core Strategy (2011)	Cambridgeshire and Peterborough Minerals and Waste Core Strategy (2011)	Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals Plan (2012)	Bedford, Luton & Central Beds Authorities - Minerals & Waste Local Plan: Strategic Sites and Policies (2014)	Bedford, Luton & Central Beds Authorities - Minerals T.E.P. 4: silica sand reserves and recent production (2011)	Minerals Technical Evidence Paper 2: Bedfordshire Silica Sand Study 2006/7 (Cuesta Consulting Limited) (2008)
Bedfordshire & Luton Minerals and Waste Local Plan 'saved' policies (2005)	Lincolnshire Minerals Local Plan 'saved' policies (1991)	Lincolnshire Waste Local Plan (2006)				

Note that the following relevant plans have not reached the pre-Submission Publication stage and therefore are NOT currently included in the SA table: Essex CC & Southend-on-Sea Replacement Waste Local Plan – *currently at plan preparation stage in 2014*

Adjacent to Norfolk - District Councils' Plans						
Forest Heath Core Strategy (2010)	Forest Heath and St Edmundsbury Joint Dev Management Policies Document *(at examination stage Nov 2014)*	Fenland Local Plan (2014)	East Cambridgeshire Core Strategy (2009)	Local Plan for East Cambs (in examination in Nov 2014)	The approach to future development in Waveney -Core Strategy (2009)	Waveney District Council - Site Specific Allocations (2011)
Waveney District Council - Development Management Policies (2011)	South Holland Local Plan (saved policies) (2006)					
Silica sand authorities located outside of the East of England						
Surrey Minerals Plan Core Strategy DPD and Primary Aggregates DPD (2011)	Cheshire West and Chester Local Plan (Part one)(2015)	Cheshire County Council – Replacement Minerals Local Plan 'saved' policies (1999)	North Yorkshire Minerals Local Plan 'saved' policies (1997)	North Lincolnshire Local Plan 'saved' policies (2003)	Cheshire East Local Plan *(at examination October 2015)*	Lincolnshire Minerals and Waste Local Plan – Core Strategy and Development Management Policies (*at examination October 2015)*

Glass silica sand only – other authorities with non-glass silica sand resources are not included

- Note that the following relevant plans have not reached the pre-Submission Publication stage and therefore are NOT currently included in the SA table: Cheshire West and Chester Local Plan (part 2) Land allocations and detail policies *(SA scoping update –Oct 2015)*
- North Lincolnshire Minerals and Waste DPD *(at plan preparation stage - no published documents by October 2015)*
- North Yorkshire CC, City of York & North York Moors National Park Minerals & Waste Joint Plan *(Preferred Options Nov 2015)*
- Lincolnshire Minerals & Waste Local Plan (Site Locations) *(at preparation stage in 2015)*
- South East Lincolnshire Local Plan (Boston Borough & South Holland) *(in preparation October 2015)*
- Forest Heath -Single Issue Review and Site Specific Allocations *(Further Issues and Options Consultation August 2015)*

Table 6: Key messages in the review of policies, plans and programmes linked to existing SA and LDF objectives

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
LDF9: Reduce methane and carbon dioxide emissions from mineral extraction and associated development and waste management facilities	SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change	Reduce contribution to climate change and ensure people, the built and natural environments can adapt to the changing climate. Move to a low carbon future through encouraging: - Energy efficient buildings - New development to provide a decentralised energy supply unless it can be demonstrated to not be feasible or viable - promote energy from renewable and low carbon sources	• Kyoto Climate Change Protocol • UN Framework Convention on Climate Change Copenhagen Accord • Climate Change Act 2008 • EU Sixth Environmental Action Programme • The Carbon Budget Order 2009 • The Carbon Plan • Planning for Climate Change – Guidance for Local Authorities • The Natural Choice: Securing the Value of Nature • Mainstreaming Sustainable Development – the Government's Vision and What this Means in Practice • England Biodiversity Strategy Climate Change Adaptation Principles • Climate Change and Biodiversity Adaptation: The Role of the Spatial Planning System • Climate Change Risk Assessment • Climate Change Adaptation by Design • National Adaptation Programme • The Future of Food and Farming: Challenges and Choices for Global Sustainability • Low Carbon Transport: A Greener Future • Tomorrows Norfolk, Today's Challenge – A climate change strategy for Norfolk (2008) • Realising the benefits of trees, woods and forests in the East of England - A Woodland for life Publication (2011) • Norwich City Council Environmental strategy 2011-2014 • Breckland Environment Strategy 2008-2013 • Fracking UK shale: climate change (DECC, 2014)

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
		Reduce emissions to air from transport through using sustainable modes of transport, such as rail for bulk minerals and waste movements where practicable. Protect existing infrastructure (rail heads and wharfs) that enable alternative transport to be used. Assess the capacity of existing and potential transport infrastructure to ensure new development does not increase traffic congestion.	• Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen, • Low Carbon Transport: A Greener Future, • Low Emissions Strategies, • Expanding and Improving the Rail Network, • Norwich Area Transportation Strategy (NCC) (2006) • Norwich Area Transportation Strategy Implementation Plan update (NCC) (2013) • Long Stratton Area Action Plan (pre-submission in October 2014) • Connecting Norfolk, Norfolk's Transport Plan for 2026 (LTP3) NCC 2011 • Connecting Norfolk Implementation Plan 2011-2015 (NCC) (2011) • Norwich City Council Local Air Quality Management – Detailed Assessment 2012 • Gaywood Clock Air Quality Management Area (2009) • Railway Road Air Quality Management Area (2007) The Local Plans and DPDs produced by Local Planning Authorities and listed under SA Objective SA13 also contain policies regarding climate change.
LDF12: Ensure that mineral extraction and associated development and waste management facilities and associated transportation do not lead to Air Quality Management	SA2: To improve air quality in line with the National Air Quality Standards	Ensure development proposals do not result in unacceptable air pollution. Minimise emissions to air from minerals extraction and associated development and waste management facilities and associated transportation. Ensure that no new Air Quality Management Areas are declared as a result of minerals extraction and associated development or waste management facilities.	• Directive on Ambient Air Quality and Cleaner Air for Europe (2008/50/EC) • EU Integrated Pollution and Prevention and Control (IPPC) Directive (2008/1/EC) • NPPF • Environmental Permitting Regulations 2010 • Control of Pollution Act 1974 (as amended) • Fracking UK shale: local air quality (DECC, 2014) • Environmental Protection Act, 1990 • Environment Act 1995 • The Air Quality Strategy for England, Scotland, Wales, and Northern Ireland • Gaywood Clock AQMA, King's Lynn (2009) • Railway Road Air Quality Management Area, King's Lynn (2007)

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
Areas and that emissions are reduced			• Norwich City Council Local Air Quality Management – Detailed Assessment 2012 • Norwich City Council Environmental strategy 2011-2014 • Norwich Area Transportation Strategy (NCC) (2006) • Norwich Area Transportation Strategy Implementation Plan update (NCC) (2013) • Long Stratton Area Action Plan (pre-submission in October 2014) • Connecting Norfolk, Norfolk's Transport Plan for 2026 (LTP3) NCC 2011 • Connecting Norfolk Implementation Plan 2011-2015 (NCC) (2011) The Local Plans and DPDs produced by Local Planning Authorities and listed under SA Objective SA13 also contain policies regarding air quality.
LDF6 Minimise the adverse traffic impacts of material extraction & waste management facilities **LDF13** Mitigate adverse impacts on amenity resulting from mineral extraction & waste management facilities	SA3: To minimise noise, vibration and visual intrusion	Limit the impacts of minerals and waste development on amenity through appropriate site locations, site operations and management. Taking into account the location of sensitive receptors and suitable mitigation measures. Take into account cumulative effects of multiple impacts from individual sites and/or a number of sites in the locality.	• Rio + 20 'Future we Want' • NPPF • National and regional guidelines for aggregates provision in England • Norfolk Core Strategy and Minerals and Waste Development Management Policies DPD 2010-2026 (2011) • Norfolk Waste Site Specific Allocations DPD (2013) • Norfolk Minerals Site Specific Allocations DPD (2013) • South Norfolk Landscape Assessment 2001 • South Norfolk Local Landscape Designations Review (2012) • Breckland District, Landscape Character Assessment, May 2007 (Land Use Consultants) • Broadland landscape Character Assessment SPD (2013) • Broads Landscape Character Assessment (2006) updated 2012 • Great Yarmouth landscape character assessment (2008) • North Norfolk landscape Character Assessment SPD • North Norfolk Design Guide SPD (2008) • South Norfolk place-Making Guide SPD (Sept 2012) • Norfolk Coast AONB management strategy 2009-2014 (Norfolk Coast Partnership)

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
LDF11 Improve employment opportunities, particularly for those most in need	SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion	Protect open space for community benefit. Consider the potential for public use and access in restoration proposals for mineral extraction sites. Protect and enhance public rights of way. Ensure safe and suitable transport access to minerals and waste sites can be achieved for employees and customers Take into account cumulative effects of multiple impacts from individual sites and/or a number of sites in the locality.	• NPPF • Healthy Lives, Healthy People: Our strategy for public health in England (2010) • Natural Choice: Securing the Value of Nature • English National Parks & the Broads 2010 • Good Practice Guide for Tourism 2006 • Realising the benefits of trees, woods and forests in the East of England - A Woodland for life Publication (2011) • A New Vision for Norwich - The Sustainable Community Strategy 2008-2020 (City of Norwich Partnership) • Norwich Area Transportation Strategy (NCC) (2006) • Norwich Area Transportation Strategy Implementation Plan update (NCC) (2013) • Long Stratton Area Action Plan (pre-submission in October 2014) • Connecting Norfolk, Norfolk's Transport Plan for 2026 (LTP3) NCC 2011 • Connecting Norfolk Implementation Plan 2011-2015 (NCC) (2011) The Local Plans and DPDs produced by Local Planning Authorities and listed under SA Objective SA13 also contain policies regarding accessibility and social exclusion.
LDF7: Minimise the impact of mineral extraction and associated development and waste management facilities on the environment	SA5: To maintain and enhance the character of the townscape and historic environment	Protect and enhance historic and archaeological features to conserve the historic environment and maximise the economic impact of heritage. Take into account the contribution made by the setting of the heritage asset to the significance of that heritage asset. Engage people in assets of historical, architectural interest and townscapes, including world heritage sites, listed buildings,	• EU Convention for the Protection of the Archaeological Heritage of Europe (Granada Convention, Valetta Convention), • UNESCO World Heritage Site Convention, • European Landscape Convention (Florence Convention) • Heritage Protection for the 21st Century • Ancient Monuments and Archaeological Areas Act 1979, • NPPF • Historic Environment GPA in Planning Note 1 (Historic England) • Historic Environment GPA in Planning Note 2 (Historic England) • Historic Environment GPA in Planning Note 3 (Historic England) • South Norfolk Place-Making Guide SPD (Sept 2012) • Heritage Counts 2014 – East of England (English Heritage)

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
by promoting opportunities to enhance and protect biodiversity, landscape and geodiversity, water supply, the wider countryside, and cultural heritage		conservation areas, archaeologically important locations and historically important landscapes.	The Local Plans and DPDs produced by Local Planning Authorities and listed under SA Objective SA13 also contain policies regarding design, the protection and enhancement of the townscape and cultural heritage.
	SA6: To protect and enhance Norfolk's biodiversity and geodiversity	Protect and enhance biodiversity, including sites of nature conservation importance designated at a European, national and local level and protected species. Protect coastal landscapes and biodiversity. Avoid fragmentation of priority habitats and seek to enhance the permeability of land cover for species movement at a landscape scale. Halt the loss of biodiversity and create better habitat networks. Deliver a net-gain in biodiversity. Protect and enhance geological diversity. Recognise and enhance the natural capital provided by natural, semi natural and managed habitats and ecosystems to maintain flows of ecosystem services, such as food, water, flood control and recreation. Allocate land with the least	• Ramsar Convention • UN Convention on Biological Diversity • Bern Convention on the conservation of • European Wildlife and Natural Habitats, Bonn Convention on the Conservation of Migratory Species and Wild Animals • EU Sixth Environmental Action Plan • European Sustainable Development Strategy • EU Habitats Directive (92/43/EEC) and EU Birds Directive (2009/147/EC) • Rio + 20 'Future we Want' • Wetlands Vision for England, • Biodiversity Indicators in your Pocket • Natural Environment and Rural Communities Act 2006, • National Ecosystem Assessment • Conservation of Habitats and Species Regulations 2010 • Wildlife and Countryside Act 1981 • The Natural Choice: Securing the Value of Nature • Biodiversity 2020 • England Biodiversity Strategy • Climate Change Adaptation Principles • National Parks Circular • NPPF • Mainstreaming Sustainable Development – the Government's Vision and What this Means in Practice • UK Post-2010 Biodiversity Framework • Climate Change and Biodiversity Adaptation • Geological Conservation Review • East Inshore and East Offshore Marine Plan 2013, • UK Marine Policy Statement 2011,

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
		environmental value.	• The wetland Vision for England 2008, • Government Forestry and Woodlands Policy Statement 2013 • Biodiversity Action Plan for the City of Norwich (2002) • Securing Biodiversity in Breckland: Guidance and Recommendations for Conservation and Research: First Report of the Breckland Biodiversity Audit (2010) • Further assessments of the relationship between buildings and stone curlew distribution (2013) • Norfolk's Earth Heritage – valuing our Geodiversity (Norfolk Geodiversity Partnership) (2010) • Norfolk Geodiversity Action Plan 2011-2016 (Norfolk Geodiversity Partnership) • Norfolk Geodiversity Partnership site audit (2009) • Biodiversity Supplementary Planning Guidance for Norfolk (NCC, 2004) • Norfolk Biodiversity Partnership – Habitats and Species Action Plans • Water for life and livelihoods. River basin management Plan, Anglian River basin District (DEFRA and Environment Agency 2009) • Realising the benefits of trees, woods and forests in the East of England - A Woodland for life Publication (2011) • Norwich City Council Environmental strategy 2011-2014 • GNDP Green Infrastructure Strategy (2007) and Delivery Plan (2009) • Borough Council of King's Lynn and West Norfolk - Green Infrastructure Study and Management Plan (2009) The Local Plans and DPDs produced by Local Planning Authorities and listed under SA Objective SA13 also contain policies regarding the protection and enhancement of Norfolk's biodiversity and geodiversity.
LDF7 Minimise the impact of mineral extraction and associated development	SA7: To promote innovative solutions for the restoration and afteruse of minerals sites and waste sites	Protect and enhance public rights of way and access. Use opportunities to reduce the causes and impacts of flood risk. Provide high quality restoration and aftercare, including for agriculture, geodiversity,	• Government Review of Waste Policy in England 2011, • NPPF, • NPPG, • Aarhus Convention, • New Anglia: Growth Deal (2014), • Localism Act, • Mainstreaming Sustainable Development,

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources

and waste management facilities on the environment by promoting opportunities to enhance and protect biodiversity, landscape and geodiversity, water supply, the wider countryside, and cultural heritage		biodiversity, native woodland, the historic environment and recreation.
		
		Develop strong, attractive and thriving neighbourhoods and societies and encourage public participation in the development of the local area.
			• By all Reasonable Means: Inclusive access to the outdoors for disabled people,
			• Countryside and Rights of Way Act (2000),
			• Healthy Lives, Healthy People: Our Strategy for Public Health in England,
			• National Planning Policy for Waste
			  • Securing Biodiversity in Breckland: Guidance and Recommendations for Conservation and Research: First Report of the Breckland Biodiversity Audit (2010)
			  • Norfolk's Earth Heritage – valuing our Geodiversity (Norfolk Geodiversity Partnership) (2010)
			  • Norfolk Geodiversity Action Plan 2011-2016 (Norfolk Geodiversity Partnership)
			  • Norfolk Geodiversity Partnership site audit (2009)
			  • Biodiversity Supplementary Planning Guidance for Norfolk (NCC, 2004)
			  • Norfolk Biodiversity Partnership – Habitats and Species Action Plans
			  • Water for life and livelihoods. River basin management Plan, Anglian River basin District (DEFRA and Environment Agency 2009)
			  • Realising the benefits of trees, woods and forests in the East of England - A Woodland for life Publication (2011)
			  • Norwich City Council Environmental strategy 2011-2014
			  • Biodiversity Action Plan for the City of Norwich (2002)
			  • GNDP Green Infrastructure Strategy (2007) and Delivery Plan (2009)
			  • Borough Council of King's Lynn and West Norfolk - Green Infrastructure Study and Management Plan (2009)

LDF7 Minimise the impact of mineral extraction	SA8: To protect and enhance the quality and distinctiveness of the countryside and	Conserve and improve local environmental quality, and landscapes, including the Broads Authority Executive Area, AONBs, and coastal landscapes.	• EU Landscape Convention, • Climate Change and Biodiversity Adaptation: The Role of the Spatial Planning System, • Natural Environment and Rural Communities Act 2006, • English National Parks and the Broads,

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
and associated development and waste management facilities on the environment by promoting opportunities to enhance and protect biodiversity, landscape and geodiversity, water supply, the wider countryside, and cultural heritage	landscape	Require a high quality design of development which respects landscape character. Where applications for unconventional hydrocarbons represent major development planning permission should be refused in the Broads and AONBs except in exceptional circumstances and where it can be demonstrated that they are in the public interest.	• NPPF, • National Planning Policy for Waste 2014, • Government Forestry and Woodlands Policy Statement 2013 • South Norfolk Landscape Assessment 2001 • South Norfolk Local Landscape Designations Review (2012) • Breckland District, Landscape Character Assessment, May 2007 (Land Use Consultants) • Broadland landscape Character Assessment SPD (2013) • Broads Landscape Character Assessment (2006) updated 2012 • Great Yarmouth landscape character assessment (2008) • North Norfolk landscape Character Assessment SPD • North Norfolk Design Guide SPD (2008) • South Norfolk place-Making Guide SPD (Sept 2012) • Norfolk Coast AONB management strategy 2009-2014 (Norfolk Coast Partnership) • Realising the benefits of trees, woods and forests in the East of England - A Woodland for life Publication (2011) • GNDP Green Infrastructure Strategy (2007) and Delivery Plan • Borough Council of King's Lynn and West Norfolk - Green Infrastructure Study and Management Plan (2009) The Local Plans and DPDs produced by Local Planning Authorities and listed under SA Objective SA13 also contain policies regarding protection of the countryside and landscape.
LDF6 Minimise the adverse traffic impacts of material extraction and associated development and waste	SA9: To contribute to improved health and amenity of local communities in Norfolk	Protect open space for community benefit. Limit the impacts of minerals extraction and waste management development on amenity. Take into account cumulative effects of multiple impacts from individual sites and/or a number of	• NPPF, • NPPG, • Localism Act, • Natural Choice: Securing the Value of Nature, • Rio + 20 'Future we Want', • National and regional guidelines for aggregates provision in England, • Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural Land, • By all Reasonable Means: Inclusive access to the outdoors for disabled people,

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources

management facilities
LDF13
Mitigate adverse impacts on amenity resulting from mineral extraction and associated development and waste management facilities
		sites in the locality.
		Seek to safeguard and improve the health and wellbeing of communities and improve inclusive access to services, facilities and the countryside.
		
		Protect and enhance public rights of way and access.
		
		Develop strong, attractive and thriving neighbourhoods and societies and encourage public participation in the development of the local area.
		
		Provide high quality restoration and aftercare, including for recreation.
			• Countryside and Rights of Way Act (2000),
			• Healthy Lives, Healthy People: Our Strategy for Public Health in England,
			• National Planning policy for Waste,
			• National Policy Statement for waste water,
			• National Policy Statement for hazardous waste
			  • A New Vision for Norwich - The Sustainable Community Strategy 2008-2020 (City of Norwich Partnership)
			  • GNDP Green Infrastructure Strategy (2007) and Delivery Plan (2009)
			  • Borough Council of King's Lynn and West Norfolk - Green Infrastructure Study and Management Plan (2009)
			  • Norwich Clinical Commissioning Group Health and Wellbeing Strategy 2013-2018
			  • Norwich Area Transportation Strategy (NCC) (2006)
			  • Norwich Area Transportation Strategy Implementation Plan update (NCC) (2013)
			  • Long Stratton Area Action Plan (pre-submission in October 2014)
			  • Connecting Norfolk, Norfolk's Transport Plan for 2026 (LTP3) NCC 2011
			  • Connecting Norfolk Implementation Plan 2011-2015 (NCC) (2011)
			
			The Local Plans and DPDs produced by Local Planning Authorities and listed under SA Objective SA13 also contain policies regarding health and amenity of local communities.

LDF8 Minimise soil and water contamination and flood risk arising from minerals and waste activities	SA10: To protect and enhance soil and water quality in Norfolk	Enhance waterways and wetlands and recognise the impact that flood and water management works and pollution may have on the chemical, geomorphological, hydromorphological and ultimately, ecological status of waterways and wetlands.	• Ramsar Convention, • European Nitrates Directive (91/676/EEC), • EU Groundwater Directive (2006/118/EC), • EU Urban Waste Water Directive (91/271/EEC), • EU Water Framework Directive (2000/60/EC), • EU SEA Directive (2001/42/EC), • Groundwater Protection: Policy and Practice, • NPPF, • NPPG,

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
		Protect the best and most versatile agricultural land and fertile soils. Ensure development proposals do not result in unacceptable air, water or land pollution. Protect and enhance ground and surface waters; prevent deterioration and achieve overall good status of ground and surface waters.	• Proposal for a Directive Establishing a Framework for the Protection of Soil (2006/0086), • Safeguarding our Soils, Protecting our Water, Soil and Air, • Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural Land, • EU Nitrates Directive (91/676/EEC), • EU Bathing Water Directive (2006/7/EC), • Marine Strategy Framework Directive (2008/56/EC), • Directive on Ambient Air Quality & Cleaner Air (2008/50/EC) • EU Integrated Pollution Prevention & Control Directive (2008/1/EC), • Control of Pollution Act 1974 and Amending Act, 1989, • Environmental Protection Act, 1990, Environment Act 1995, • Fracking UK shale: water (DECC, 2014) • The Air Quality Strategy for England, Scotland, Wales, & NI • Breckland Stage 1 Water Cycle Study (2008) • Breckland Water Cycle Study Stage 2 (2010) • Water Cycle Study Stage 2 – Attleborough Findings (2010) • Great Yarmouth and Waveney Water Cycle Scoping Study (2009) • Outline WCS Phase 1 – BC King's Lynn & West Norfolk (2009) • Water Cycle Study Phase 2 – BC King's Lynn & West Norfolk (2011) • Water resources strategy: action plan for the Anglian Region (Environment Agency) (2009) • Water for life and livelihoods. River basin management Plan, Anglian River basin District (DEFRA and Environment Agency 2009) • Realising the benefits of trees, woods and forests in the East of England - A Woodland for life Publication (2011) • Norwich City Council Environmental strategy 2011-2014 • Essex and Suffolk Water – Water Resources Management Plan 2015-2040 (2014) • Anglian Water - Water Resources Management Plan 2015

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
LDF2 Increase the proportion of waste recycling, composting and energy recovery **LDF3** Minimise the amount of waste sent to landfill **LDF10** Contribute to Renewables Obligation and regional targets for renewable energy by increasing the proportion of energy recovery from waste	SA11: To promote sustainable use of minerals and waste resources	Ensure that waste is managed as high up the waste hierarchy as practicable, recognising the need for a mix of types and scale of facilities, and that adequate provision must be made for waste disposal. Plan for the disposal of waste and the recovery of mixed municipal waste in line with the proximity principle, recognising that new facilities will need to serve catchment areas large enough to secure the economic viability of the plan. Ensure environmental limits are not breached. Ensure high quality design of built infrastructure. Support a low carbon economy.	• Government Review of Waste Policy in England 2011, • NPPF, • NPPG, • National Planning Policy for Waste 2014, • Waste Regulations 2012, • Hazardous Waste Regulations 2009, • Waste Management Plan for England 2013, • Agricultural Waste Regulations • EU Transport White Paper, • European Sustainable Development Strategy, • The Carbon Plan, • New Anglia: Growth Deal 2014, • Carbon Budget Order 2011, • UK Renewable Energy Roadmap, • UK Bioenergy Strategy, • Microgeneration Strategy, • Energy Bill, • Strategy for Sustainable Construction, • UK Sustainable Development Strategy, • Mainstreaming Sustainable Development, • Sustainable Communities: A shared vision, a shared agenda. • Natural Choice: Securing the Value of Nature, • Planning for Climate Change –Guidance for Local Authorities, • Rio + 20 ‘Future we Want’, • Safeguarding our Soils, • Water White Paper, • Groundwater Protection : Policy and Practice,

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
LDF1 Ensure steady and adequate provision of primary, and increasingly recycled and secondary, minerals to meet requirements	SA11: To promote sustainable use of minerals and waste resources	Plan for a steady and adequate supply of aggregates in Norfolk. Make provision for the extraction of mineral resource of local and national importance in Norfolk. Do not identify new sites or extensions for peat extraction. Take into account the contribution that substitute or secondary and recycled material and minerals waste would make to the supply of materials before considering extraction of landwon minerals. Safeguard known locations of mineral resources of local and national importance so they are not needlessly sterilised by non-mineral development. Safeguard mineral infrastructure (such as rail heads and wharfage for bulk transport, concrete and recycled aggregate activities).	• UK Marine Policy Statement, • Protecting our Water, Soil and Air, • Air Quality Standard Regulations, • Air Quality Strategy for England, Scotland, Wales and Northern Ireland, • Climate Change Act, • Control of Pollution Act, • Environmental Permitting Regulations, • Environmental Protection Act, • EU Directive on Energy Performance of Buildings (2002/91/EC), • Strategy for Sustainable Construction, • BREEAM, • CEEQuAAL, • World Class Places: The Government's Strategy for Improving the Quality of Places, • EU Landfill Directive (99/31/EC), • EU Waste Framework Directive (2008/98/EC), • NPPF, • NPPG, • National Planning Policy for Waste 2014, • Waste Regulations 2012, • Hazardous Waste Regulations 2009, • Waste Management Plan for England 2013, • Agricultural Waste Regulations, • Anaerobic Digestion Strategy and Action Plan, • Strategy for the Management of Solid Low Level Radioactive Waste from the Non-Nuclear Industry, • National Policy Statement for waste water,

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
	SA11: To promote sustainable use of minerals and waste resources	Maintain a landbank of at least 7 years for sand and gravel and at least 10 years for crushed rock. Plan for a steady and adequate supply of silica sand. Provide a stock of at least 10 years of permitted reserves to support investment in processing plant and equipment. The exploratory, appraisal or production phase of hydrocarbon extraction can only take place where DECC have issued a Petroleum Licence. Norfolk does not currently (December 2014) have any areas currently under licence. The 14th onshore round of licensing by DECC in 2014, included the northern half of Norfolk as one of the areas under offer for applications for licences. The outcome of this licensing round is expected in 2015.	• National Policy Statement for hazardous waste • Fracking UK shale: planning permission and communities (DECC, 2014) • Shale Gas: made simple (DECC, 2014) • Developing Onshore Shale Gas and Oil – Facts about 'Fracking' (DECC, 2013) • Fracking UK shale: climate change (DECC, 2014) • Fracking UK shale: local air quality (DECC, 2014) • Fracking UK shale: regulation and monitoring (DECC, 2014) • Fracking UK shale: safety from design to decommissioning (DECC, 2014) • Fracking UK shale: understanding earthquake risk (DECC, 2014) • Fracking UK shale: water (DECC, 2014) • Background note on shale gas and hydraulic fracturing (DECC, 2014) • Onshore oil and gas exploration in the UK: regulation and best practice (DECC, 2013) • Essex Minerals Local Plan (2014) • Essex County Council & Southend-on-Sea Waste Local Plan (2001) • Thurrock Core Strategy and Policies for Management of Development (2011) • Hertfordshire Waste Core Strategy and Development Management Policies Document (2012) • Hertfordshire Minerals Local Plan (2007) • Hertfordshire Waste Site Allocations (2014) • Suffolk County Council - Minerals Core Strategy DPD (2008) • Suffolk County Council - Minerals Site Specific Allocations DPD (2009)

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
	SA11: To promote sustainable use of minerals and waste resources		• Suffolk County Council - Waste Core Strategy (2011) • Cambridgeshire and Peterborough Minerals and Waste Core Strategy (2011) • Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals Plan (2012) • Bedford Borough, Luton Borough & Central Bedfordshire Authorities - Minerals and Waste Local Plan: Strategic Sites and Policies (2014) • Bedfordshire & Luton Minerals and Waste Local Plan 'saved' policies (2005) • Bedford Borough, Luton Borough & Central Bedfordshire Authorities -Minerals Technical Evidence paper 4: silica sand reserves and recent production (2011) • Minerals Technical Evidence Paper 2: Bedfordshire Silica Sand Study 2006/7 (Cuesta Consulting Limited) (2008) • Lincolnshire Minerals Local Plan 'saved' policies (1991) • Lincolnshire Waste Local Plan (2006) • Surrey Minerals Plan Core Strategy DPD and Primary Aggregates DPD (2011) • Cheshire West and Chester Local Plan (Part one) (at examination in 2014) • Cheshire County Council – Replacement Minerals Local Plan 'saved' policies (1999) • North Yorkshire Minerals Local Plan 'saved' policies (1997) • North Lincolnshire Local Plan 'saved' policies (2003) • Norfolk Core Strategy and Minerals and Waste Development Management Policies DPD 2010-2026 (2011) • Norfolk Waste Site Specific Allocations DPD (2013) • Norfolk Minerals Site Specific Allocations DPD (2013) • Joint Municipal Waste Management Strategy for Norfolk 2006-2020 (2006) • East of England Aggregate Working Party – Annual Monitoring Report 2012 (2013) • Norwich City Council Environmental strategy 2011-2014

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
LDF4: Ensure mineral working takes place as close as reasonably possible to where these resources are used, & that waste is treated as close as reasonably possible to where it is generated **LDF 5:** Increase the use and availability of sustainable transport in accessing waste and minerals facilities	SA11: To promote sustainable use of minerals and waste resources	Consider the suitability of the road network and the extent to which access would require reliance on local roads, the rail network and transport links to ports. Use sustainable modes of transport, such as rail for bulk minerals and waste movements where practicable. Protect existing infrastructure (rail heads and wharfs) that enable alternative transport to be used. Assess the capacity of existing and potential transport infrastructure to ensure new development does not increase traffic congestion. Consider the location of mineral extraction and associated development and waste management facilities in relation to the markets for the goods and services provided.	• Low Carbon Transport: A Greener Future, • Low Emissions Strategies, • Expanding and Improving the Rail Network, • Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen, • Norwich Area Transportation Strategy (NCC) (2006) • Norwich Area Transportation Strategy Implementation Plan update (NCC) (2013) • Long Stratton Area Action Plan (pre-submission in October 2014) • Connecting Norfolk, Norfolk's Transport Plan for 2026 (LTP3) NCC 2011 • Connecting Norfolk Implementation Plan 2011-2015 (NCC) (2011) • Norwich City Council Local Air Quality Management – Detailed Assessment 2012 • Gaywood Clock Air Quality Management Area (2009) • Railway Road Air Quality Management Area (2007) • A New Vision for Norwich - The Sustainable Community Strategy 2008-2020 (City of Norwich Partnership)
LDF8 Minimise soil and water contamination and flood risk arising from minerals and	SA12: To reduce the risk of current and future flooding at new and existing development	Recognise the impact of flooding on new and existing development and also the impact this development can have on exacerbating the risk of flooding elsewhere, taking into account the impacts of climate change.	• EU Floods Directive (2007/60/EC) • EU Water Framework Directive (2000/60/EC) • Flood and Water Management Act 2010 • NPPF • NPPG • Marine Strategy Framework Directive (2008/56/EC) • Marine and Coastal Access Act

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
waste activities		Ensure that development does not increase flood risk. Consider opportunities to reduce flood risk through better management of surface water, provision for conveyance and of storage of flood water. New developments should incorporate sustainable drainage systems. Avoid inappropriate development in areas vulnerable to coastal change.	• UK Marine Policy Statement • Natural Choice: Securing the Value of Nature • Norfolk's Local Flood Risk Management Strategy (2015) • Partnership of Norfolk Authorities SFRA (2008) (Broadland, Norwich City, South Norfolk, Broads Authority, North Norfolk) • Norwich City Council SFRA Level 2 (2010), • Norwich Urban Area Surface Water Management Plan (2011) • Breckland Council – Strategic Flood Risk Assessment (June 2005) • Breckland SFRA 2007 Update (Feb 2008) • Broadland Rivers Catchment Flood Management Plan (Environment Agency) (2009) • Broads Authority Development and Flood Risk SPD (2008) • Broads Authority Strategic Flood Risk Assessment (2007) • Great Yarmouth Strategic Flood Risk Assessment (2009) • Great Yarmouth Borough Surface Water Management Plan (NCC, GYBC) (2014) • King's Lynn & West Norfolk SFRA 2007 (addendum 2009) • Great Ouse Catchment Flood Management Plan (Environment Agency, 2009) • The Wash Shoreline Management Plan (2010) • Kelling to Lowestoft Ness Shoreline Management Plan (2010) • North Norfolk Shoreline Management Plan (2011) The Local Plans and DPDs produced by Local Planning Authorities and listed under SA Objective SA13 also contain policies regarding flood risk.
LDF1 Ensure steady and adequate provision of primary, and increasingly recycled and secondary,	SA13: To encourage employment opportunities and promote economic growth	Provide a steady and adequate supply of minerals to the economy. Ensure continued economic viability and access to services for rural areas. Across Norfolk as a whole, between 2013 and 2026, the	• Rio + 20 'Future we Want', • NPPF • NPPG • National and regional guidelines for aggregates provision in England • New Anglia: Growth Deal 2014 • Defra Rural Statement • Localism Act 2011 • Norfolk Infrastructure Plan (NCC), • New Anglia LEP: Strategic Economic Plan,

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
minerals to meet requirements **LDF11** Improve employment opportunities, particularly for those most in need		Local Planning Authorities plan to deliver 65,000 dwellings and around 60,000 jobs. The Greater Norwich City Deal commits Broadland, Norwich and South Norfolk districts to deliver 13,000 more jobs than the Joint Core Strategy target and bring forward 3,000 dwellings from the period after 2026. The scale of growth should reflect a location's ability to provide jobs, services and sustainable transport. Therefore growth in Norfolk, in terms of additional dwellings, is concentrated in and around urban areas, selected market towns and well-located villages with local services. The planned housing development will also require associated infrastructure. Additional transport infrastructure included in Norfolk's 3rd Local Transport Plan includes the Norwich Northern Distributor Road, Bus Rapid Transit for the Norwich area, Junction improvements at Postwick, Longwater and Thickthorn, Norwich city centre enhancements. A Third River Crossing is required at Great Yarmouth to enhance access to	• Greater Cambridgeshire & Greater Peterborough LEP: Strategic Economic Plan • GNDP Greater Norwich Economic Strategy (2009-2014) • Borough Council of King's Lynn and West Norfolk Economic Strategy (2009) • Delivering Economic Growth in Norfolk – the strategic Role for Norfolk County Council 2012-2017 • Local Economic Assessment for Norfolk – Sept 2013 update • Realising the benefits of trees, woods and forests in the East of England - A Woodland for life Publication (2011) • A New Vision for Norwich - The Sustainable Community Strategy 2008-2020 (City of Norwich Partnership) • Breckland Core Strategy (2009) • Breckland Site Specific Policies and Proposals DPD (2012) • Thetford Area Action Plan DPD (2012) • Breckland Core Strategy Infrastructure Study (Attleborough Findings) (2008) • Attleborough Strategic Masterplan, 2011 • Broadland District Council Development Management DPD • Broadland District Council – Site Allocations DPD • Broadland District Council – Growth Triangle Area Action Plan • Broads Authority Core Strategy (2007) • Broads Development Management Policies DPD (2011) • Broads Site Specifics Local Plan (2009) • Greater Norwich Development Partnership Joint Core Strategy for Broadland, Norwich and South Norfolk (2011 & 2014) • Great Yarmouth Borough Core Strategy Local Plan • Great Yarmouth Borough-wide Local Plan 'saved' policies (2001) • King's Lynn and West Norfolk Core Strategy (2011) • King's Lynn and West Norfolk Site Allocations and Development Management Policies • King's Lynn and West Norfolk Infrastructure Study (2015) • North Norfolk Core Strategy incorporating Development Control Policies (2009)

LDF Objectives	SA Objectives	Key Messages in sources	Main Sources
		the port and remove freight traffic from the town centre. Improvements are also required to the A47. This planned new housing, jobs and related infrastructure development will require aggregate minerals for its construction and waste management facilities, including sufficient waste water treatment capacity, to meet the needs of the population and businesses. Minerals and waste management operations also provide local employment. Prioritise the location of waste management facilities to enable the reuse of previously developed land, sites identified for employment uses, and redundant agricultural and forestry buildings and their curtilages. Important role of waste management in the circular economy to reduce waste and drive greater resource productivity.	• North Norfolk Site Allocations DPD (2011) • Norwich City Development Management Policies Local Plan (2014) • Norwich City Site Allocations and Site Specific Policies Local Plan (2014) • South Norfolk Development Management Policies Document • South Norfolk Site Specific Allocations and Policies Document • Wymondham Area Action Plan • Long Stratton Area Action Plan • Norfolk Ambition – Sustainable Community Strategy 2003-2023 • Norfolk Rural Development Strategy 2013-2020 • Norfolk Core Strategy and Minerals and Waste Development Management Policies DPD 2010-2026 (2011) • Norfolk Waste Site Specific Allocations DPD (2013) • Norfolk Minerals Site Specific Allocations DPD (2013) • Connecting Norfolk, Norfolk's Transport Plan for 2026 (LTP3) NCC 2011 • Connecting Norfolk Implementation Plan 2011-2015 (NCC) (2011) • Forest Heath Core Strategy (2010) • Forest Heath and St Edmundsbury Joint Development Management Policies Document • Fenland Local Plan (2014) • East Cambridgeshire Core Strategy (2009) • Local Plan for East Cambridgeshire • The approach to future development in Waveney -Core Strategy (2009) • Waveney District Council - Site Specific Allocations (2011) • Waveney District Council - Development Management Policies (2011) • South Holland Local Plan 'saved' policies (2006)

4.2 Implications of the review of relevant policies, plans and programmes

During the policies, plans and programmes review, a number of key issues were identified that should be taken into account in the Silica Sand Review and the Minerals and Waste Core Strategy Review and in the SA/SEA. These included:

- Climate change mitigation and adaption: Reducing contributions to climate change through reduced landfilling, reducing mineral and waste road transportation where practicable, encourage energy efficient buildings and energy from renewable or low carbon sources.
- Improving health and well-being: Ensuring mineral extraction and associated development and waste management facilities do not adversely affect residential amenity through their location and operations, including air quality, noise, vibration, odour and transport impacts. Take into account cumulative impacts. Consider the potential to provide enhancements to public open space, public rights of way and recreation through restoration schemes.
- Protection and enhancement of landscape, the built environment and historic environment: Ensuring mineral extraction and associated development and waste management facilities are not located in areas that could adversely affect landscape, townscape or heritage assets. Promote good design. Provide enhancement through restoration schemes;
- Protection and enhancement of biodiversity, geodiversity and the natural environment: Ensuring mineral extraction and associated development and waste management facilities are not located in areas that could adversely affect biodiversity, geodiversity, water quality and soil quality. Provide enhancement through restoration schemes;
- Sustainable resource use: Ensuring minerals and waste resources are used efficiently. Ensuring sufficient facilities for waste re-use, recycling, composting and recovery to enable waste to be managed as high up the waste hierarchy as practicable. Consider the location of minerals extraction and waste management facilities in relation to the markets for the goods and services provided and the suitability of the road network.
- Minimisation of flood risk: Ensuring minerals extraction and associated development and waste management facilities do not increase flood risk and are not situated in areas of high flood risk. Use restoration opportunities to reduce the causes and impacts of flood risk; and
- Supporting local economic growth: Providing a steady and adequate supply of minerals to the economy to support the planned house building, jobs growth and associated infrastructure. Providing sufficient waste management facilities, including waste water treatment capacity to meet the needs of the population and businesses. Plan for a steady and adequate supply of silica sand. Safeguard known locations of mineral resources and mineral infrastructure.

5. Task A2: Baseline Conditions

5.1 Introduction

The establishment of a sustainability baseline helps develop a basis for forecasting and monitoring the effects the Silica Sand Review and the Minerals and Waste Core Strategy Review may have on the environment, society and economy. It also helps to identify existing and potential future environmental, social and economic problems and issues. In order to establish sustainability baseline conditions for Norfolk, existing sustainability data were collected from a wide range of sources including:

- Norfolk County Council
- Environment Agency
- Historic England
- Natural England
- www.magic.gov.uk (Multi-Agency Geographic Information for the Countryside - a web-based interactive map service)
- The adopted Minerals and Waste Development Framework

Both qualitative and quantitative indicators have been developed and extracted from the above data and documents. This information, coupled with an examination of thresholds, trends, and existing targets will be used to describe the current state of the environment and the likely evolution of the environment without implementation of the plan, or the “do nothing” scenario, as required by the SEA Directive.

As much of the SA process is iterative, the baseline will be continually reviewed in the light of consultation responses and changing circumstances.

Indicators will be selected mainly on the basis that they should be:

- Measurable
- Able to track progress against sustainability objectives at the Norfolk scale
- Available on an annual basis, to feed into Annual Monitoring Report, where possible
- Using data which is already collected wherever possible without significant resource implications for Norfolk County Council

Consideration will be given as to whether enough information on each indicator is available to answer the following questions:

- How good or bad is the current situation? Do trends show that it is getting better or worse?
- How far is the current situation from any established thresholds or targets?
- Are particularly sensitive or important elements of the economy, physical environment or community affected?

- Are the problems reversible or irreversible, permanent or temporary?
- How difficult would it be the offset or remedy any damage?
- Have there been significant cumulative or synergistic effects over time?
- Are there expected to be such effects in the future?

Section 5.1 summarises the relationship between the SA objectives, indicators, baseline, as well as the trends and targets. This information will be used to describe the baseline scenario against which the effects of the Silica Sand Review and the Minerals and Waste Core Strategy Review will be assessed. The sustainability baseline is described in detail in the following sub-sections.

Table 7: Sustainability Baseline Summary

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
Climate	SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change	Methane emissions from landfill sites in the UK (kt) % used in power generation % emitted into the atmosphere Carbon Dioxide emissions by Local Authority area	2,390 kt generated 59% captured 52% used in power generation 7% flared 4% residual methane oxidised 37% methane emitted 7,153 kt generated in Norfolk (2005) 6,559 kt generated in Norfolk (2013)	UK methane emissions in the waste sector have decreased by 55% from 1990 to 2012 due to increased implementation of methane recovery systems at landfill sites. This trend is likely to continue as all new landfill sites are required to have these systems and many existing sites may have systems retrofitted. (UK GHG inventory 1990-2012 (April 2014) Ricardo AEA for DECC (Table A 3.7.2) Carbon Dioxide emissions for Norfolk have decreased over the period 2005-2013. However, individual Local Authority's performance has varied. All Authorities have recorded a decrease except for King's Lynn and West Norfolk which increased. (DECC Local Authority carbon dioxide emissions: 2005-2013 (2015))	2012

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
Air, Human Health	SA2: To improve air quality in line with the National Air Quality Standards	Area of AQMAs in Norfolk	282 hectares	Area increased this year in Norwich, as a result of the amalgamation of three separate AQMAs. AQMA in rural Breckland removed this year.	2014
Population	SA3: To minimise noise, vibration and visual intrusion	Number of complaints about the adverse impacts from minerals and waste	39	Increase from 2012/13 (33 complaints, however a decrease from 55 recorded in 2010/11	2013/14
	SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion	Index of Multiple Deprivation: % lower super output areas in the 20% most deprived nationally	9.6%	Decrease from 10.6% in 2007	2010
		Employment Deprivation: % lower super output areas in the 10% most deprived nationally	6.4%	Increase from 6.2% in 2007	2010
Historic Environment	SA5: To maintain and enhance the character of the townscape and historic environment	% of listed buildings at risk % scheduled ancient monuments at risk	100 (0.95%) 22 (5%)	England: 2,433 listed buildings, 2,720 scheduled monuments, Suffolk: 40 listed buildings, 22 scheduled monuments, Cambridgeshire: 22 listed buildings, 55 scheduled monuments (2014)	2014 2014
		Number of registered historic parks and gardens	51	England:1,632, East of England: 213, Suffolk: 23, Cambridgeshire: 34 (2014)	2014
		Number of Conservation Areas and Conservation Area Appraisals	304	Local increase	2014

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
		Number of planning permissions granted contrary to historic environment objections from statutory consultees	Nil	Nil	2014
Biodiversity, flora and fauna	SA6: To protect and enhance Norfolk's biodiversity and geodiversity	Sites of Special Scientific Interest (SSSI): ▪ Number ▪ Area (ha) ▪ % in favourable or unfavourable recovering condition	162 39,205 94.69%	95.99% of SSSIs in England were in favourable or unfavourable recovering condition in 2014. 93.8% of SSSIs in the East of England were in favourable or unfavourable recovering condition in 2014.	2014
		Number and area (ha) of Local Nature Reserves	27 899.18	England 1,558, Suffolk 36, Cambridgeshire 27 (2014)	2014
		Number of non-statutory geodiversity sites such as County Geodiversity Sites	5	No change since 2008	2014
		Change in Norfolk BAP species throughout the county	419	National list of all BAP species - 1164	2009
		Number of County Wildlife Sites	1326	Number increasing	2015
		Number of planning permissions granted contrary to biodiversity or geodiversity objections from	Nil	Nil	2014

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
		statutory consultees			
		Number of planning permissions granted with restoration schemes providing biodiversity or geodiversity benefits	2	2	2013/14
Biodiversity Landscape	SA7: To promote innovative solutions for the restoration and afteruse of minerals sites	Planning permissions granted for minerals extraction requiring progressive restoration schemes	All new permissions	All new permissions granted for mineral extraction in Norfolk will require a progressive restoration scheme. Two new permissions were granted in 2013/14	2013/14
Landscape	SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape	% Woodland area land cover	9.8%	National: 8.6% East of England: 7.3%	2002
		Number of planning permissions for mineral and waste sites granted within or adjacent to (within 100m of) the AONB	3	Two mineral workings are located within the AONB, both of which were established prior to the AONB being designated. One site adjacent to the AONB was granted in 2014	2014
		Number of planning permissions for mineral and waste sites granted within or adjacent to (within 100m of) the Heritage Coast Area	Nil	Nil	2014

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
		Number of planning permissions for minerals and waste sites granted within or adjacent to (within 100m of) the Broads Authority Executive Area	5	2 Mineral workings and 3 Waste management facilities are within 100m of the Broads Authority Executive Area	2014
		Number of planning permissions granted within or adjacent to (within 100 m of) Conservation Areas	6	3 Mineral workings and 3 Waste management facilities are located within 100m of a Conservation Area. 2 of the mineral workings and 2 of the waste management facilities were in existence prior to the designation of the Conservation Area.	2014
		Number of planning permissions granted contrary to landscape objections from statutory consultees	Nil	Nil	2014
Human Health	SA9: To contribute to improved health and amenity of local communities in Norfolk	% lower super output areas in Norfolk in the 10% most health deprived nationally	2.45%	Increase from 1.8% in 2007	2010
		% lower super output areas in Norfolk in the 10% most living environment deprived	3.0%	Decrease from 3.4% in 2007	2010

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
Water, Soil	SA10: To protect and enhance water and soil quality in Norfolk	% of Biological River Quality classified as good or very good	18% (Anglian region)	National: 73% in 2009 (increase from 72% in 2008)	2009
		% of Chemical River Quality classified as good or very good		National: 73% in 2009 (increase from 72% in 2008)	2009
		Number of permissions granted contrary to Environment Agency advice on water quality grounds	Nil	Nil	2014
Material Assets	SA11: To promote sustainable use of minerals and waste resources	Household waste per head of population – kilograms	437	Slight increase in Norfolk for 2013/14 following reductions since 2008/09 Average 482kg per head of population in the UK in 2008/9 National figure for 2012/13 was 423Kg per head compared with 433Kg per head in Norfolk. (Norfolk population estimate is 870,100)	2013/14
		Household waste arising - tonnes	379,873	Slight increase on previous two years when arisings were under 376,000 tpa.	2013/14
		% of household waste:			
		▪ recycled	23.7%	Decrease on percentage recycled in recent years. In 2009/10, 2010/11 and 2011/12 over 27% of household waste was recycled.	2013/14

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
		▪ composted	18.8%	Slight continued increase on percentage composted in recent years. (15.6% in 2009/10, 17.2% in 2010/11, 17.8% in 2011/12)	2013/14
		▪ incinerated with energy recovery	8.2%	Lower percentage than in 2012/13 (9%) but higher percentage than all other previous years.	2013/14
		▪ sent for refuse derived fuel	3.8%	No waste sent for RDF until 2011/12. Increase on % sent in previous two years.	2013/14
		▪ landfilled	44.9%	Slight increase in percentage landfilled in 2012/13 (44.28%) but decrease compared to all other previous years (e.g. 52% in 2011/12)	2013/14
		% tonnage of waste recycled, composted and reused through households waste recycling centres (HWRCs)	64.28%	2013/14 shows a reduction in the percentage recycled etc in recent years. For example, in 2012/13 73% of waste at HWRCs was recycled etc. (42,357 tonnes recycled, composted & reused in 2013/14 out of a total of 65,890 tonnes received)	2013/14
		Municipal Waste Arising - tonnes	396,740	Slight increase on recent years. However, arisings continue to be	2013/14

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
				lower than all years prior to 2009/10.	
		Inert waste input (tonnes) ▪ Inert landfill/ quarry restoration ▪ Inert waste received at non-hazardous landfills ▪ Recovered	270,000 102,171 407,000	Increase in waste to inert landfills & quarry restoration compared to 2012/13 (247,000t), but general decrease since 2009/10. Likely to be due to reduced construction and mineral extraction. Decrease in quantity recovered compared to 2012/13, but greater than 2011/12 and 2010/11. Quantity of inert waste recovered reduced significantly from 2006/7 to 2010/11 likely due to reduced construction.	2013/14
		Non-hazardous waste input (tonnes): ▪ Landfilled ▪ Recovered	257,500 825,000	Reduction in non-hazardous waste to landfill compared to previous year. Continued general trend of a reduction in non-hazardous waste to landfill over the previous 10 years. Increase in waste recovered compared to all previous years. However, this is partly due to one large facility (100,000 tpa) reporting their figures where they had not done so before. Also a general increase in recycling and composting figures at existing sites compared to the previous two years.	2013/14

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
		Sand & gravel Production – tonnes 10 years' sales average - tonnes Permitted reserves – tonnes Landbank - years	 1,114,935 1,705,088 13,335,398 7.8	Decrease of 1.5% from 2012 figure, which itself was a decrease of 12% from 2011 production. Lower than the average for the last 20 years (2.21 million tonnes)	 2013 2004-2013 31/12/2013 31/12/2013
		Carstone: Production – tonnes 10 years sales average – tonnes Permitted reserves – tonnes Landbank - years	 37.193 123,306 1,841,470 14.9	Decrease of 68% from the 2012 figure, which was an increase of 90% from 2011 production. Lower than the average for the last 20 years (206,000 tonnes)	 2013 2004-2013 31/12/2013 31/12/2013
		Silica sand: 3 year sales average – tonnes 10 years' sales average – tonnes Permitted reserves – tonnes Landbank - years	 790,100 636,500 3,500,000 5.5	Increase of 1.7% from the three year average from 2011-2013, which was a increase of 19% from the 2010-2012. Increased production as other similar sites in England have closed at the end of their working lives.	 2012-2014 2005-2014 31/12/2014 31/12/2014
Climate, Water	SA12: To reduce the risk of current and future flooding at new and existing development	Number of minerals and waste planning permissions granted contrary to the advice of the Environment Agency or Norfolk County Council as Lead Local Flood Authority on flood risk grounds	0	Continued position that minerals and waste permissions have not been granted in Norfolk contrary to an objection from the Environment Agency on flood risk grounds.	2013/14

SEA Topic Area	SA Objective	Indicator	Baseline	Comparators (Benchmark, trend or target)	Year
Population	SA13: To encourage employment opportunities and promote economic growth	Unemployment Rate in Norfolk	6.7%	England 7.6%. The national figure is are a small decrease on the 2010/11 figures, the Norfolk figure is an increase on the 2010/11 figure	Dec 2012 – Dec 2013

5.2 Description of the Current Sustainability Baseline

5.2.1 Climate change

Emissions of greenhouse gases have been identified as a world-wide problem as evidenced by the international treaty on climate change, the Kyoto Protocol. It is commonly recognised that emissions of greenhouse gases can contribute to climate change. Judged by overall impact, carbon dioxide (CO_2) is the most important greenhouse gas in the UK, with methane the second most important. The major sources of methane are landfilled biodegradable waste, agriculture, natural gas distribution and coal mining. Methane emissions arise from landfill sites and also contribute significantly to climate change as they have a very high global warming potential (molecule for molecule, about 20 times that of CO_2).

Carbon dioxide, the most common greenhouse gas, is also cause for concern as emissions arise from the use of energy in the production processes at minerals and waste facilities, and are also emitted through the transport of minerals and waste.

5.2.2 Air

Air quality throughout the county and in the East of England is generally good, and problems arise only on a localised basis. Norfolk currently (2014) contains three Air Quality Management Areas (AQMAs) - one in Norwich and two in King's Lynn which have all been declared for exceeding limits of nitrogen dioxide (NO_2) from traffic sources.

5.2.3 Population

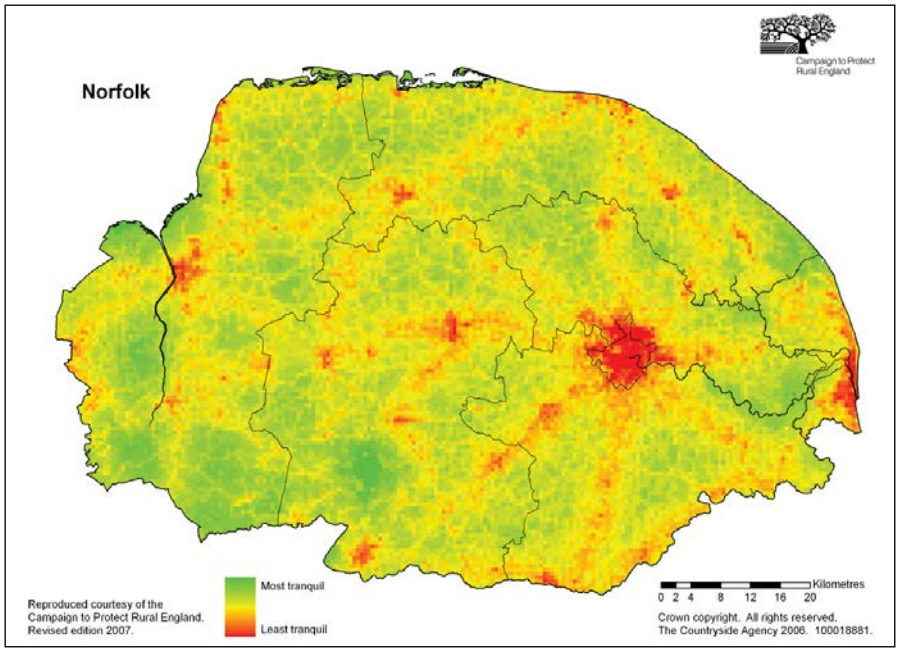
There were 870,100 people living in Norfolk in 2013 (Population estimates based on Census data on www.norfolkinsight.org.uk) of whom about 317,000 lived in urban areas of Norwich (210,000), Great Yarmouth (63,000) and King's Lynn (44,000). The Norfolk population increased by around 7.1% from 2001-2011. The county's population density is 1.6 people per hectare.

Norfolk has an ageing population, with larger proportions of ages of 45 and older, and lower proportions of ages below 44, than is seen in the East of England or England as a whole. To illustrate, in 2011 48.7% were aged 45 or over in Norfolk, compared with 43.7% for the East of England and 41.8% in England as a whole.

Issues which could affect Norfolk's population include amenity problems such as noise, dust, odour, birds, litter, visual intrusion and vibration, as well as accessibility and social exclusion. Complaints which arise from minerals and waste sites can be used as a proxy through which to measure general amenity issues, as they are typically complaints of noise nuisance, dust, etc. The number of complaints about minerals and waste facilities received by Norfolk County Council was 39 in 2013-14 and 33 in 2012/13, a significant reduction from the 55 recorded in 2010-2011. This general downward trend has been evident for a number of years with complaints falling steadily from a high of 220 in 2002-2003.

Loss of tranquillity from noise and light pollution is also an issue in Norfolk, and tranquil areas can be viewed in Figure 5-1.

Figure 5-1: Tranquillity in Norfolk



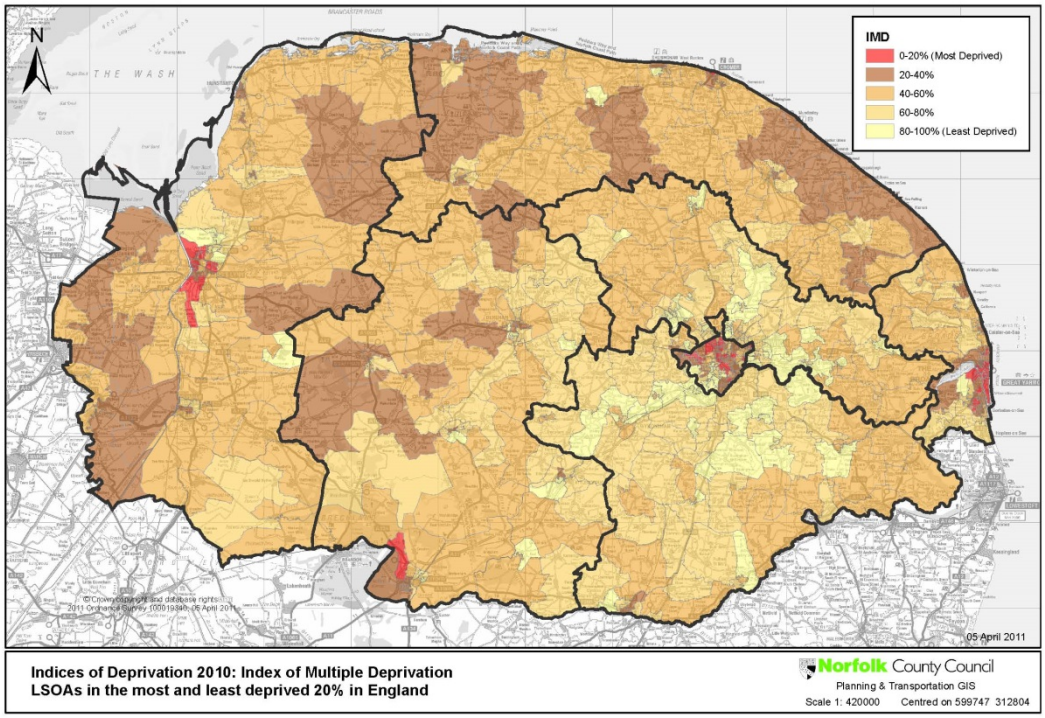
Source: http://www.cpre.org.uk/campaigns/landscape/tranquillity/national-and-regional-tranquillity-maps/county-tranquillity-map-norfolk

The Index of Multiple Deprivation is often used to highlight those areas most likely to suffer from social exclusion. It is important to note that not everybody who lives in a deprived area is deprived and vice versa that not everyone who is deprived lives in a deprived area. The Indices of Multiple Deprivation are described by DCLG (2010) as follows "The model of multiple deprivation… is based on the idea of distinct domains of deprivation which can be recognised and measured separately. These domains are experienced by individuals living in an area. People may be counted in one or more of the domains, depending on the number of types of deprivation they experience." Seven distinct domains of deprivation are combined in the Index of Multiple Deprivation. The seven domains are: income deprivation, employment deprivation, health deprivation and disability, education skills and training deprivation, barriers to housing and services, living environment deprivation and crime.

In Norfolk, in 2007, 56 (or 10.6%) of lower super output areas (groupings of Census Output Areas with a minimum population size of 1,000 persons and nested within Census Ward boundaries) were ranked among the 20% most deprived nationally. These areas are predominantly located in urban areas, centred on Norwich, Great Yarmouth, and King's Lynn, as can be seen in Figure 5-2.

In 2010 the situation had changed slightly with 51 LSOAs (or 9.6%) ranked among the 20% most deprived nationally. The Indices of Deprivation study (DCLG) indicated that nearly 47,400 Norfolk residents live in an area classified as being within the ten percent most deprived areas in England. Norfolk is the most deprived county in the East of England based on most indicators. Great Yarmouth has the highest proportion of its residents living in an area measured as being within the most deprived ten percent in the country, at 22%; the figure for Norwich is 9% and King's Lynn is just under 8%.

Figure 5-2: Index of Multiple Deprivation in Norfolk

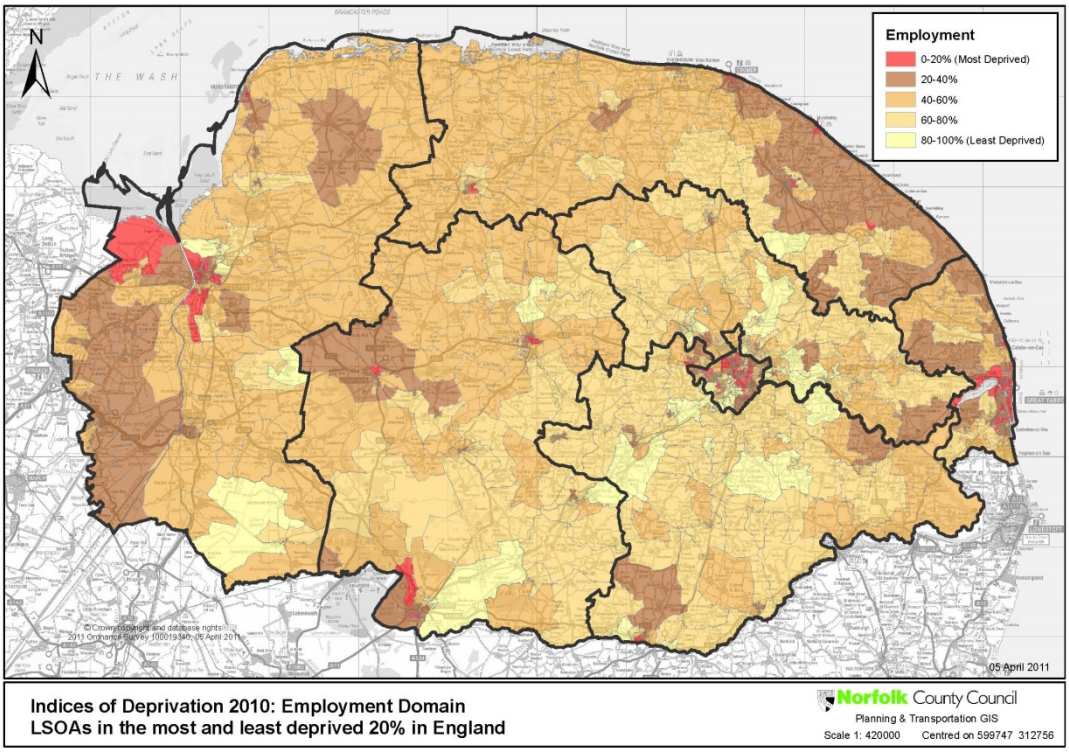


Norfolk has been described as the most self-contained employment area in the East of England. Norfolk is a rural county and agriculture is the dominant land use. However, the majority of jobs in Norfolk are located in urban areas, with agriculture only accounting for half a percent. The mining, quarrying and utilities sector, accounts for just over 1% of the jobs in Norfolk, with construction employing a further 6.1%.

In Norfolk, in 2007, 6.2% of the LSOAs were in the 10% most employment deprived nationally and is centred on urban areas as seen in Figure 5-3. This figure had changed to 6.4% (or 34 LSOAs) in 2010.

The unemployment rate for Norfolk in the period between April 2012 and March 2013 was an estimated 5.5% of the working age population. This compared favourably with a regional unemployment rate of 6.6% and a national unemployment rate of 7.8%. Youth unemployment is a significant feature in Norfolk with the 16-24 age group accounting for 44% of the unemployment totals despite only making up 13% of the working age population.

Figure 5-3: Employment Deprivation in Norfolk



5.2.4 Historic Environment

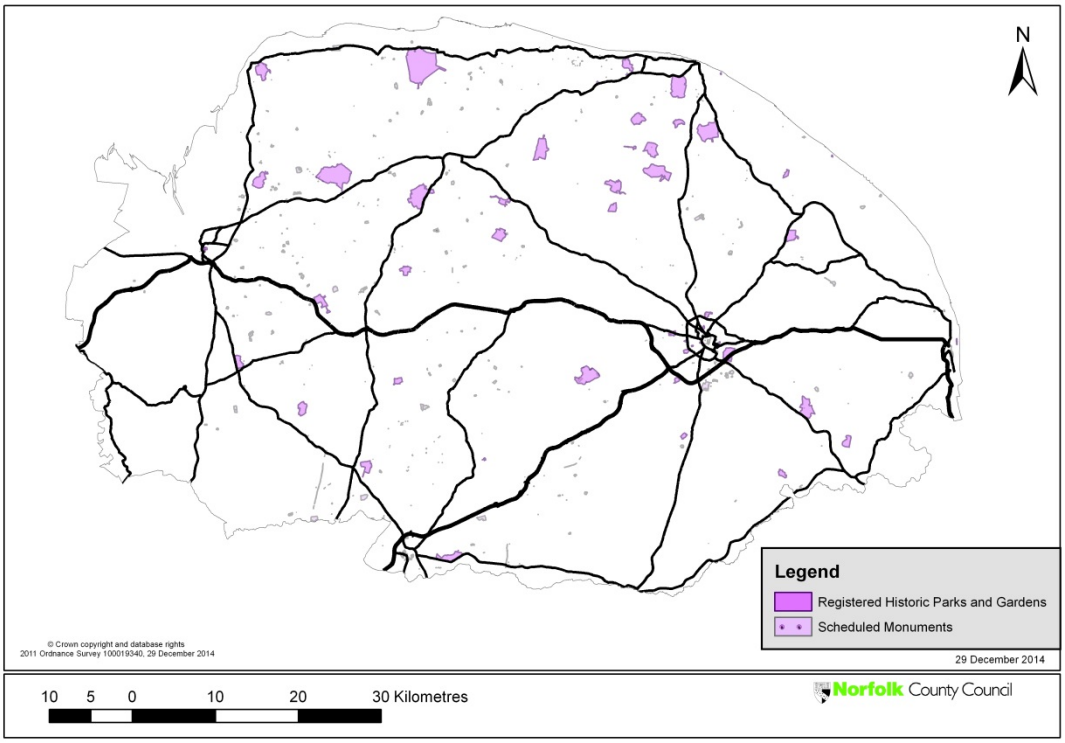
Norfolk is rich in cultural heritage which dates from the Palaeolithic period (before 10,000 BC), through prehistoric, Roman, Anglo-Saxon and Medieval times to the present day. From earliest times humans have influenced the appearance of the landscape leaving a rich heritage of historic domestic and industrial buildings, monuments and defensive structures.

Norfolk is an area of historical importance and has a rich and diverse history and culture, which can be enjoyed through its numerous architectural and archaeological sites. The spatial distribution of heritage environment designations can be viewed in Figure 5-4. Currently, 0.4% of listed buildings and 4.9% of scheduled monuments in Norfolk are at risk. Table 8 summarises the number and area of historic environment designations in Norfolk. Norfolk also contains a large number of areas in which either undesignated heritage assets or archaeological assets occur. Archaeological assets may either be known or unknown where the potential of assets is high but no field studies have been carried out. The Drainage Mills in the Broads and Fens are particularly important in these areas, and the Broads Authority Executive Area is identified as an area of Exceptional Waterlogged Archaeology.

Table 8: Historic Environment Designations

Type	Number
Listed Buildings	10,569 (2014)
Scheduled Monuments	432 (2014)
Registered Historic Parks and Gardens	51 (2014)
Conservation Areas	304 (2014) (note: includes 21 Conservation Areas in Broads Authority Executive Area which are shared with other Local Authorities)
Source: http://list.english-heritage.org.uk/ for listed buildings, Scheduled Monuments and Historic Parks and Gardens. Local Authorities in Norfolk for Conservation Areas	

Figure 5-4: Historic Environment in Norfolk



5.2.5 Biodiversity, flora and fauna, and geodiversity

Norfolk is one of the most important counties in England for its biodiversity, with a wide range of habitats including grasslands, woodlands, heathland, rivers and wetlands, farmland and coastal waters. The wider countryside also supports a considerable number of sites of local importance and has potential for habitat creation. The Norfolk Biodiversity Action Plan has individual plans and targets to conserve and enhance 61 species and 22 habitats within the county, all of which are considered to be of national importance.

Norfolk is home to numerous local, national, and international biodiversity designations (Figures 5-5 – 5-9) and is an area of high landscape quality. Table 9 summarises the number and area of the biodiversity and nature conservation designations in Norfolk.

Table 9: Biodiversity and Geodiversity Designations

Status	Designation	Number of Sites
International	Special Protection Areas	7
	Special Areas of Conservation	12
	Ramsar Sites	8
National	Sites of Special Scientific Interest	162
	National Nature Reserves	22
Local	Local Nature Reserves	27
	County Wildlife Sites	1,326 (July 2015)
	County Geodiversity Sites (previously called Regionally Important Geological/ Geomorphological Sites (RIGS))	5 (2015)

In terms of condition, some 96% of Norfolk's Sites of Special Scientific Interest are in favourable or recovering condition, this is the same as the national levels. Unfavourable condition is due mostly to eutrophication, excessive nutrients, poor drainage conditions caused by water abstraction, agricultural runoff and water pollution from discharges, all of which are secondary impacts from water pollution.

Figure 5-5: Special Protection Areas (SPAs) in Norfolk

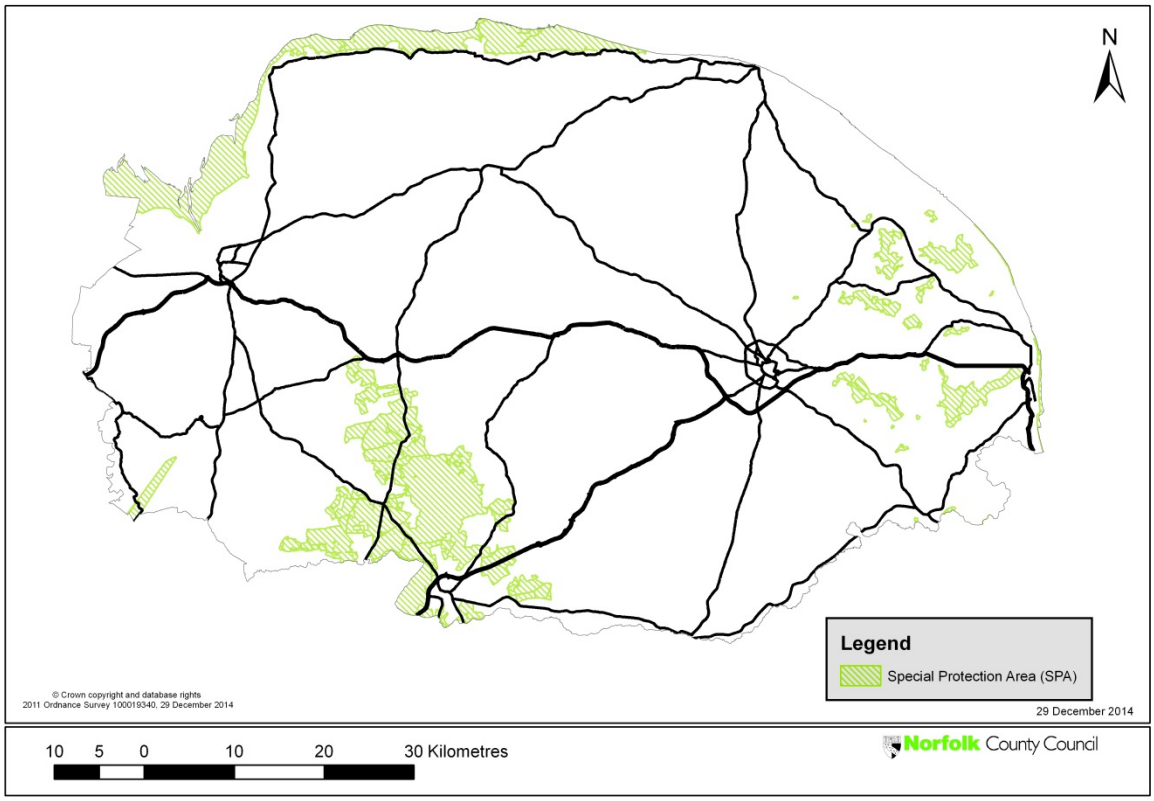


Figure 5-6: Special Areas of Conservation (SACs) in Norfolk

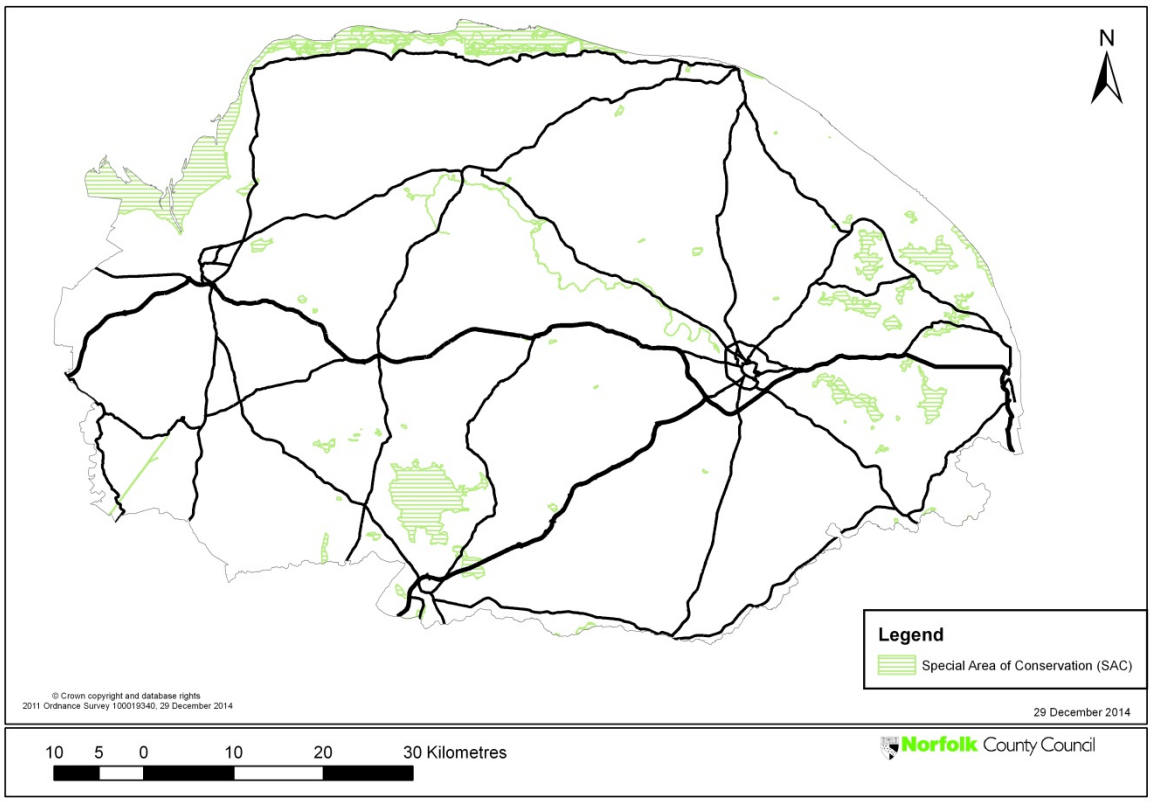


Figure 5-7: Ramsar Sites in Norfolk

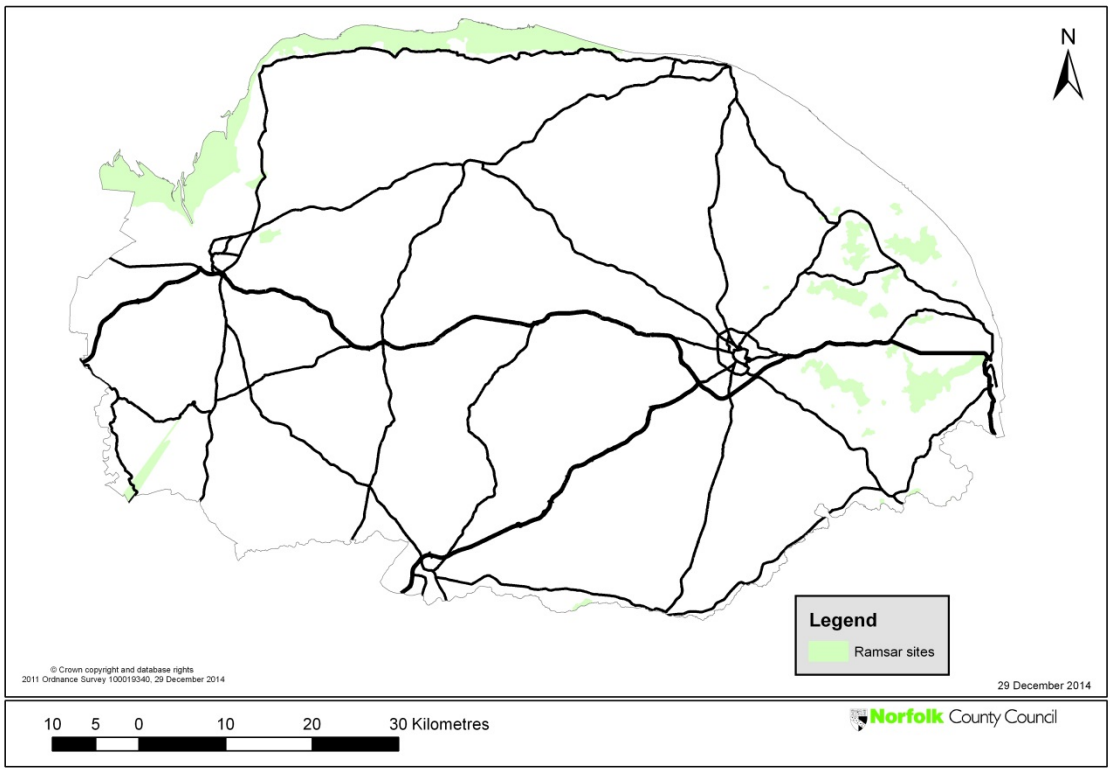


Figure 5-8: National Sites of Nature Conservation Value in Norfolk

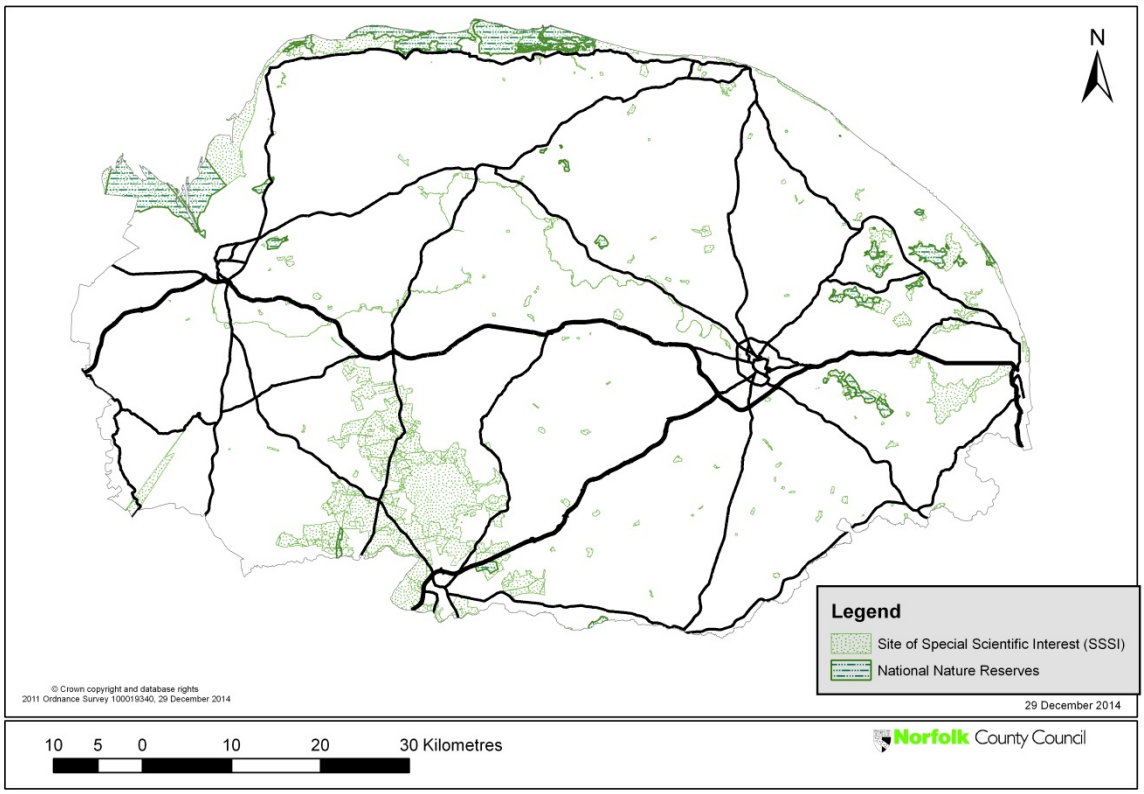
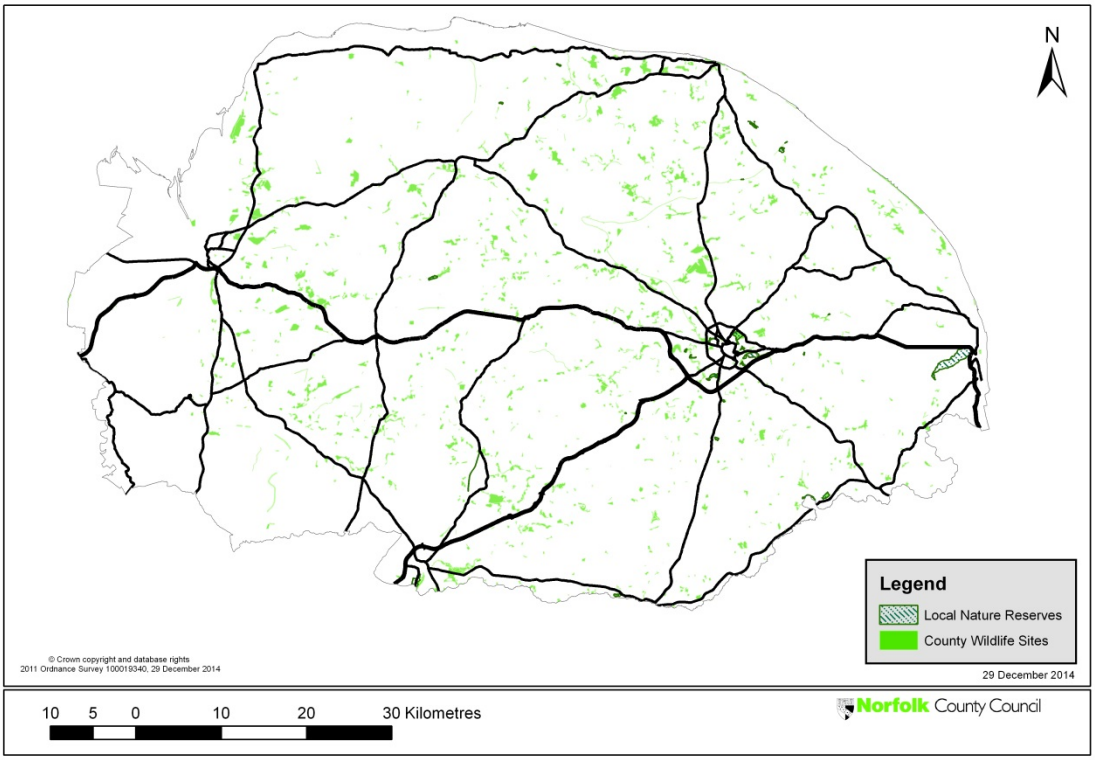


Figure 5-9: Local Sites of Nature Conservation Value in Norfolk



Norfolk is nationally important for its geodiversity, particularly sites and features relating to the story of environmental change (including fauna, flora, climate and early human occupation) over the last two million years. This period, known as the Ice Age, is important for an understanding of the background to climate change. Norfolk has important sites and features dating from the Cretaceous period, including the youngest chalk strata in Britain. It also has spectacular geomorphology, including the 40km stretch of coastal landforms on the north coast. Many of these sites and features have been designated under the Geological Conservation Review as geological or geomorphological SSSIs, and Norfolk has the highest percentage of such sites in the East of England (33%).

A Geodiversity Action Plan (Norfolk's Earth Heritage- valuing our geodiversity, 2010) has been completed to co-ordinate the non-statutory conservation of the county's geodiversity, and over 225 sites have been identified for possible RIGS designation.

Table 10: Geodiversity Designations

Status	Designation	Number of Sites	Area (ha)
National	SSSI	37	8910
Local	County Geodiversity Sites (RIGS)	5	12.1

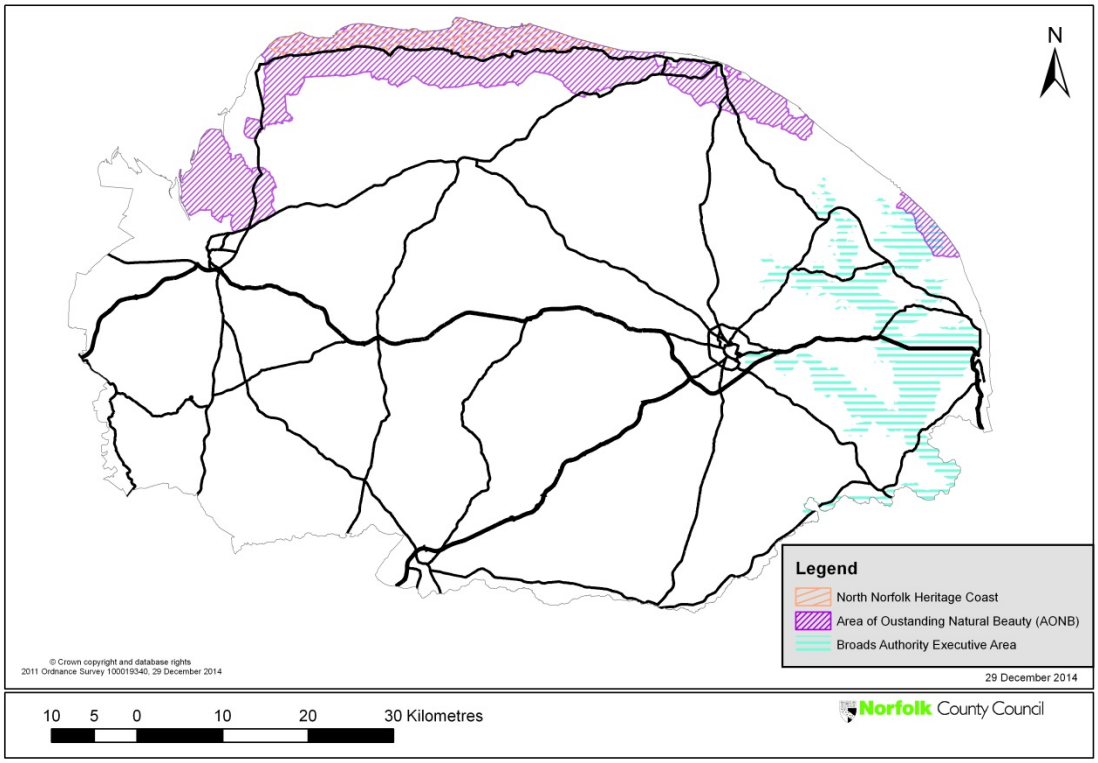
There are a range of threats to Norfolk's geodiversity, particularly to the integrity of finite landforms such as river terraces and floodplains and to finite geological resources, including interglacial deposits that are often spatially restricted.

5.2.6 Landscape and Soil

Norfolk is predominantly rural in its nature and the integrity of the landscape and countryside is an important aspect of quality of life for Norfolk residents. Minerals and waste development can threaten the character and integrity of Norfolk's landscape if it is not appropriately designed to respect landscape character. Many types of waste management facility are considered appropriate to locate on industrial and employment land.

Within the county, the Broads Authority Executive Area, the Norfolk Coast Area of Outstanding Natural Beauty and the Heritage Coast are protected by national designations and are some of the most prized landscapes in England (Figure 5-10).

Figure 5-10: Landscape Designations in Norfolk



The wider countryside supports a considerable number of sites of local landscape importance. Norfolk's countryside is predominately agricultural in character, containing diverse landscapes that reflect the local variation in physical factors. The area to the east and north of Norwich contains generally excellent to very good soils. The area known as the Brecks surrounding Thetford contains generally poor or very poor soils. The Fens to the west of King's Lynn contain virtually entirely excellent or very good soils. The majority of the remaining soils in Norfolk are moderate to good quality. 78.6% of the area is classified as good or better agricultural land grade 3 or above (Figure

5-11).The Agricultural land classification divides land quality into 5 grades : 1 – Excellent, 2 – Very Good, 3 – Good to Moderate, 4 – Poor, 5 – Very Poor.

Norfolk's varying landscapes are underlain by an intricate mosaic of different soils which has been mapped by the Soil Survey. Soil variability is principally as a result of the variable nature of the underlying geology, in particular the superficial geology. The majority of Norfolk's superficial geology has been shaped by glacio-fluvial actions. Soil quality to a great extent depends on the energy of the deposition event which laid down the superficial geology at a given site, the larger the material size the greater the energy required to transport it.

High energy environments such as glacial outwash deposits, or storm terraces, will generally contain greater proportions of stone, often in the form of gravel or cobble close to the site of the event; this diminishes over distance. These types of deposit often contain sand as the next most significant proportion, followed by silts and clay at variable proportions. Low energy deposition environments, such as river and estuarine locations, contain low levels of stone and sand in relation to silts and clays. High energy events are generally short-lived compared with low energy events.

The superficial geology is directly linked to soil quality in a number of ways; stoniness and droughtiness are principal indicators of soil quality. Therefore soils derived from an underlying geology deposited in high energy environments are more likely to score adversely for these indicators, as a result of the high proportions of sand and gravel. Due to the nature of the events these areas are also more likely to contain a more varied topography, and slope is another indicator used in determining agricultural land quality.

Mineral extraction may impact on soils through loss of farmland, and increasing run-off and siltation in rivers. Norfolk's soils support varied wildlife habitats and play a vital role in agriculture; peat soils play a significant role in sequestrating atmospheric carbon. Soil conservation is an important issue in Norfolk and is partly addressed through the grading of agricultural land. The county's soils are threatened by erosion; contamination; destruction of soil profiles and structure; drying out and shrinkage of peat; acidification and ochre accumulation. Such issues are addressed by Natural England, the Environment Agency and FWAG, and by the Norfolk Geodiversity Action Plan.

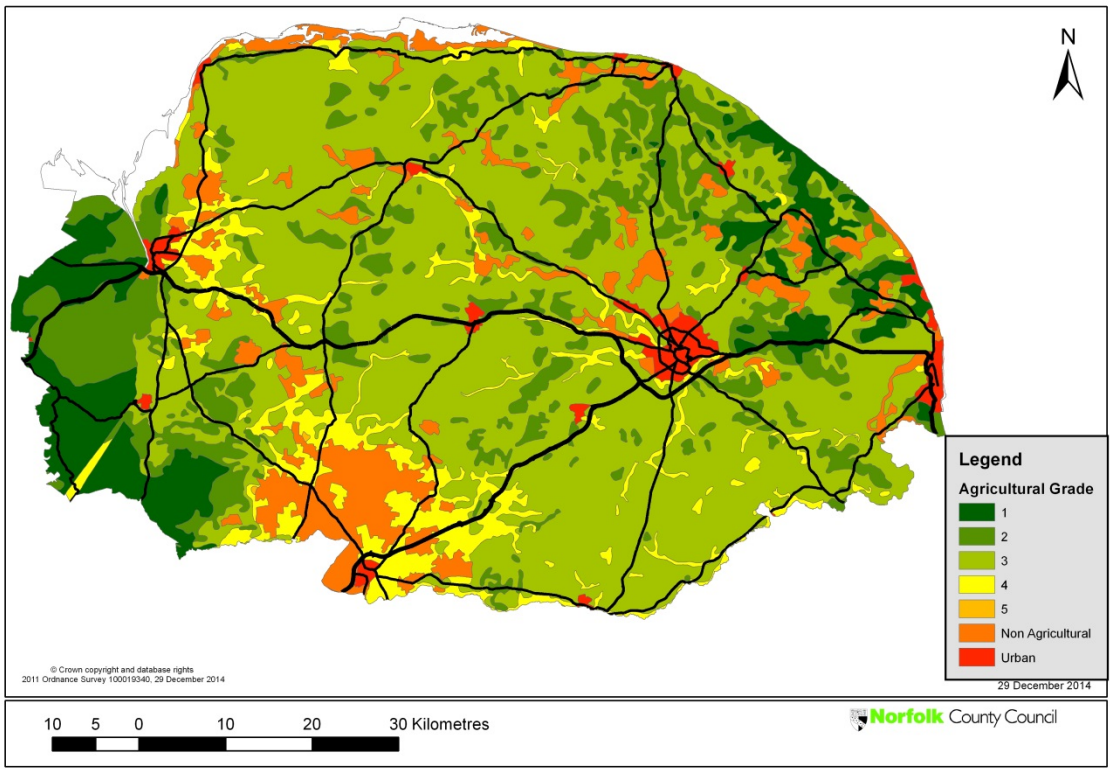
River valleys have been a traditional source of sand and gravel in Norfolk and many have experienced incremental growth in a number of water areas over a number of years which has changed their character. The intention is to direct new exploration and mineral development away from these areas, as detailed in adopted Minerals and Waste Core Strategy policy DM2 - Core River Valleys.

Development in these areas not only has adverse effects on landscape, but also has the potential to adversely affect flood risk, soil and water quality.

In recent years, concern has grown about the gradual degradation of both the countryside and urban environment through changing farming practices, drainage of wetlands, increased pressure from transport and the need for new housing and other development. There has been loss of biodiversity and landscape as a result of growth, development and road construction. Rural

tranquillity is rapidly being eroded due to growth and transport pressures which also lead to loss and fragmentation of habitats.

Figure 5-11: Agricultural Landscape Classifications in Norfolk



5.2.7 Human Health

The National Planning Policy Framework addresses human health as part of sustainable development, building on the UK Sustainable Development Strategy, with guiding principles including “ensuring a strong, healthy and just society”. In the NPPF three dimensions are described for sustainable development: economic, social and environmental. The social role includes a requirement for the planning system to support strong, vibrant and healthy communities. The planning system should meet this requirement “by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community’s needs and support its health, social and cultural well-being”.

Minerals and waste facilities can, if not correctly managed, adversely affect human health in a number of ways, from contaminating local soil and water, to dust and air emissions from operations and transportation of minerals and waste. The UK has a significantly more robust regulatory framework for managing emissions from minerals and waste facilities than many other countries, and the climate and scale of operations is often significantly different. Therefore, it is often inappropriate to compare mineral and waste operations from other countries with UK operations.

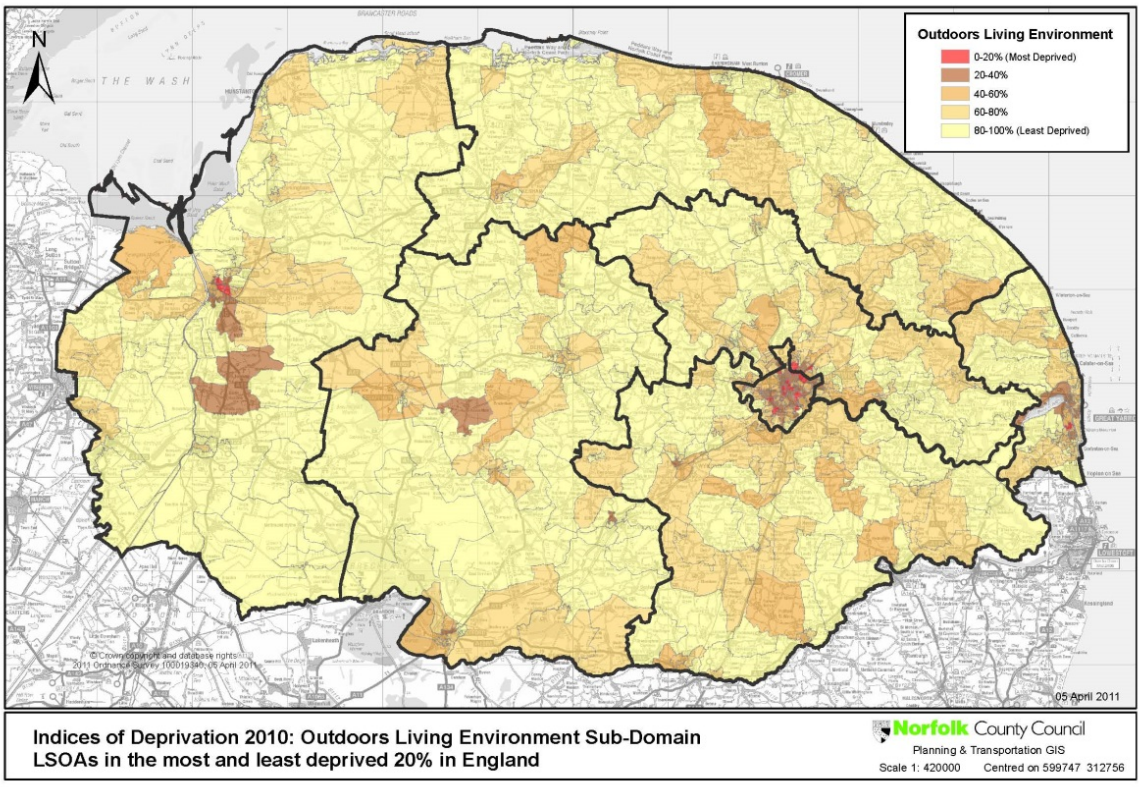
Human health components look at a wide range of conditions to measure and establish the baseline, including health and outdoors living environment deprivation.

Air quality also plays a significant role in human health, and regulations are based on concentrations considered safe for human health. There is growing evidence regarding the effects of pollutants from road transport and industry on human health. Air pollution is a potential hazard to the population as a whole, but in particular to vulnerable groups including pregnant women, the elderly, those suffering from respiratory and coronary illnesses, children and workers with high occupational pollution exposure levels. Reductions in air quality from increased air pollution concentrations may cause respiratory problems for local residents. The English indices of deprivation 2010, contains a sub-domain for 'outdoors' living environment which uses as indicators:

- Nitrogen dioxide indicator (component of air quality index)
- Particulates indicator (component of air quality index)
- Sulphur dioxide indicator (component of air quality index)
- Benzene indicator (component of air quality index)
- Air quality indicator
- Road traffic accidents indicator.

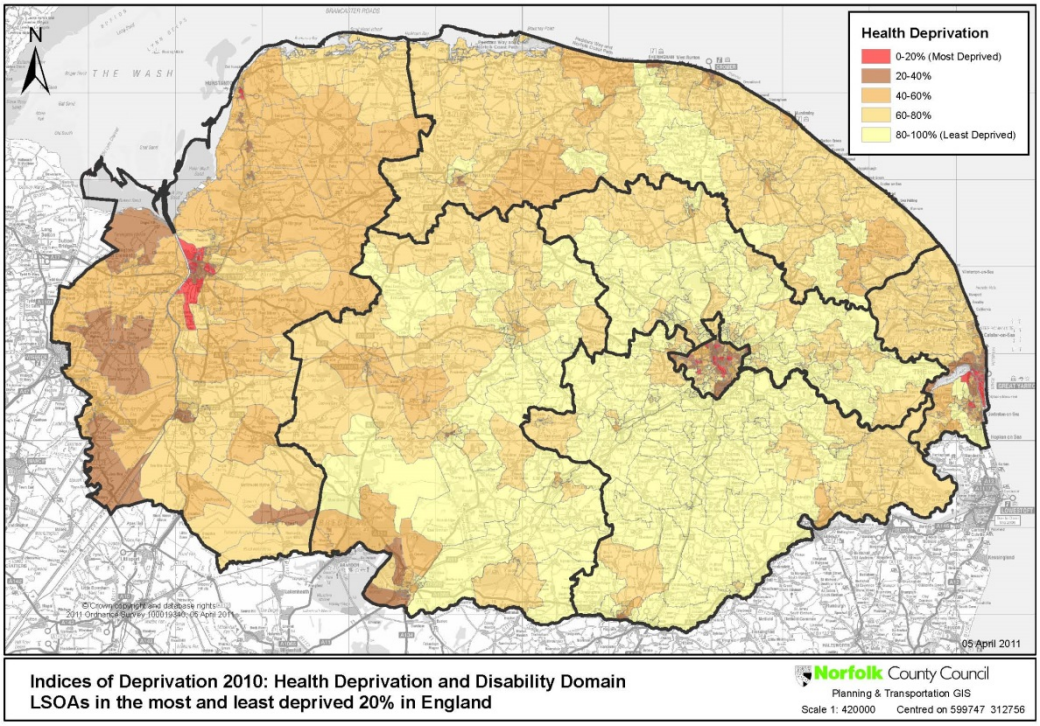
Air quality is discussed in more detail in Section 5.2.2; however it can be seen from Figure 5-12 that areas of greater deprivation based on this sub-domain are in urban areas, reflecting the impact of road traffic on air quality.

Figure 5-12: Outdoors Living Environment Deprivation in Norfolk



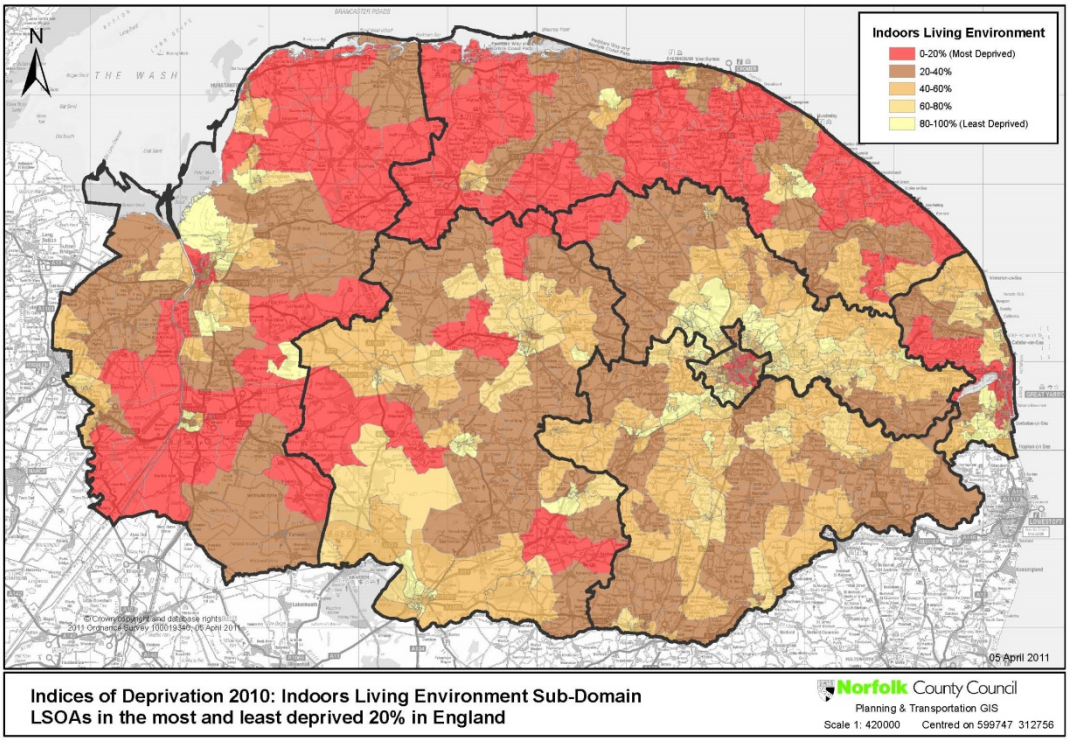
In 2007, there were 10 (or 1.8%) of lower super output areas in Norfolk that ranked within the worst 10% nationally for health deprivation and these can be seen in Figure 5-13. Health deprivation has been identified as an issue in Norfolk in the urban areas of King's Lynn, Norwich, and Great Yarmouth. In 2010, 13 (or 2.45%) of LSOAs in Norfolk were within the worst 10% nationally for health deprivation.

Figure 5-13: Health Deprivation in Norfolk



Indices of deprivation include a sub-domain for 'indoors' living environments. This category refers to the quality of housing, using housing in poor condition and housing lacking central heating as indicators. The 'indoor' and 'outdoor' sub domains are combined to form a living environment domain. In 2007, 3.4% of lower super output areas in Norfolk ranked within the worst 10% nationally for living environment deprivation (Figure 5-14). In 2010, 3% (16) of LSOAs ranked within the worst 10% nationally for living environment deprivation.

Figure 5-14: Indoor Living Environment Deprivation in Norfolk



5.2.8 Water Quality and Flood Risk

Historically, there was concern that minerals and waste development could have significant negative effects on water resources, from high levels of usage and abstraction, to ground and surface water contamination from diffuse and point sources, to altering patterns of drainage and increasing flood risk. However, UK legislation and policy now provides a robust regulatory framework to ensure protection of water quality and to ensure that flood risk is not negatively affected by development either at the site or downstream.

Patterns of mineral extraction in Norfolk have changed significantly over the last thirty years, with extraction in river valleys now being discouraged and greater utilisation of mineral resources from glacial formations. This has led to a reduction in the formation of water bodies in valleys as a result of mineral extraction which could change flow rates downstream. It should be noted that in some instances with a well-designed restoration scheme there is the opportunity for mineral extraction to increase flood storage areas which positively improve flood risk downstream.

On some mineral extraction sites high groundwater levels mean that some parts of a working need to be 'dewatered'. Dewatering is where water is pumped out of a working to artificially lower the groundwater so that working can take place. The Environment Agency and the Mineral Planning Authority require a 'hydrogeological risk assessment' to support planning applications for mineral extraction which involves dewatering to ensure that the working will not adversely affect groundwater levels or quality. The washing of mineral requires significant amounts of water; however modern plants use a series of lagoons to remove suspended material from the water so that it can be re-used in the washing plant many times. The use of lagoons reduces the likelihood and quantity of water that may need to be abstracted; all

abstractions over a daily volume threshold require an abstraction license issued by the Environment Agency following assessment.

Waste development is also far more strictly regulated now than in the past. UK legislation requires waste operations not to discharge pollutants to surface or groundwater. As an example, historically landfill sites were unlined and leachate (liquid emitting from the waste) was allowed to disperse into the groundwater to dilute it to levels below those thought to cause harm. Current legislation, which has been in force for a number of years, requires landfills to be engineered so that they are sealed to groundwater, to prevent leachate entering the groundwater. The Environment Agency would also need to assess the extent to which any impermeable barrier would block groundwater flows. Capping with impermeable material on finished landfill sites reduces the amount of rainwater entering the waste. Excess leachate is required to be collected and sent to an appropriate treatment facility as part of the ongoing management of closed landfills.

Water Quality

There has been a long-running problem with silt and soil entering rivers including within Norfolk, which builds up and increases the risk of local flooding. Silt infiltration is compounded by low summer river flow rates

Rivers provide a habitat for aquatic biodiversity, some of which require low levels of silt to survive. Silt and mud causes lasting damage if it enters rivers by:

- Smothering important fish and insect habitats;
- Destroying fish spawning sites;
- Affecting aquatic plant growth, which then limits the oxygen supply in the water;
- Building up in the river to increase the risk of flooding.

Agricultural practices have played a significant role in silt infiltration into rivers. Livestock accessing water have caused bank degradation and ‘puddling’ of mud on the low lying bankside. Ploughing and other machine use close to the bankside have similarly caused problems with silt and soil. These practices have been improved through such measures as leaving an uncultivated strip close to the riverbank which reduces windblown soil and bank damage.

Historically, mineral extraction also contributed to silt infiltration, however changes to the location of mineral extraction from river valleys and the discharge from workings as the result of ‘dewatering’ to lagoons for settlement prior to discharge to a watercourse has significantly reduced the issue.

Under the Water Framework Directive, the Environment Agency has classified Norfolk’s surface water bodies in terms of their ecological and chemical status. In total, only 18% of watercourses meet ‘good’ status or better; the main reasons for not meeting ‘good’ status are because of the ‘phosphate’, ‘fish’ and ‘invertebrate’ elements of the classification. In essence, fertiliser runoff enriching water bodies, over-abstraction and morphological alteration to water bodies have all contributed to the low level of ‘good’ status water bodies.

Figure 5-15: Surface water bodies ecological status in Anglian river basin (2009)

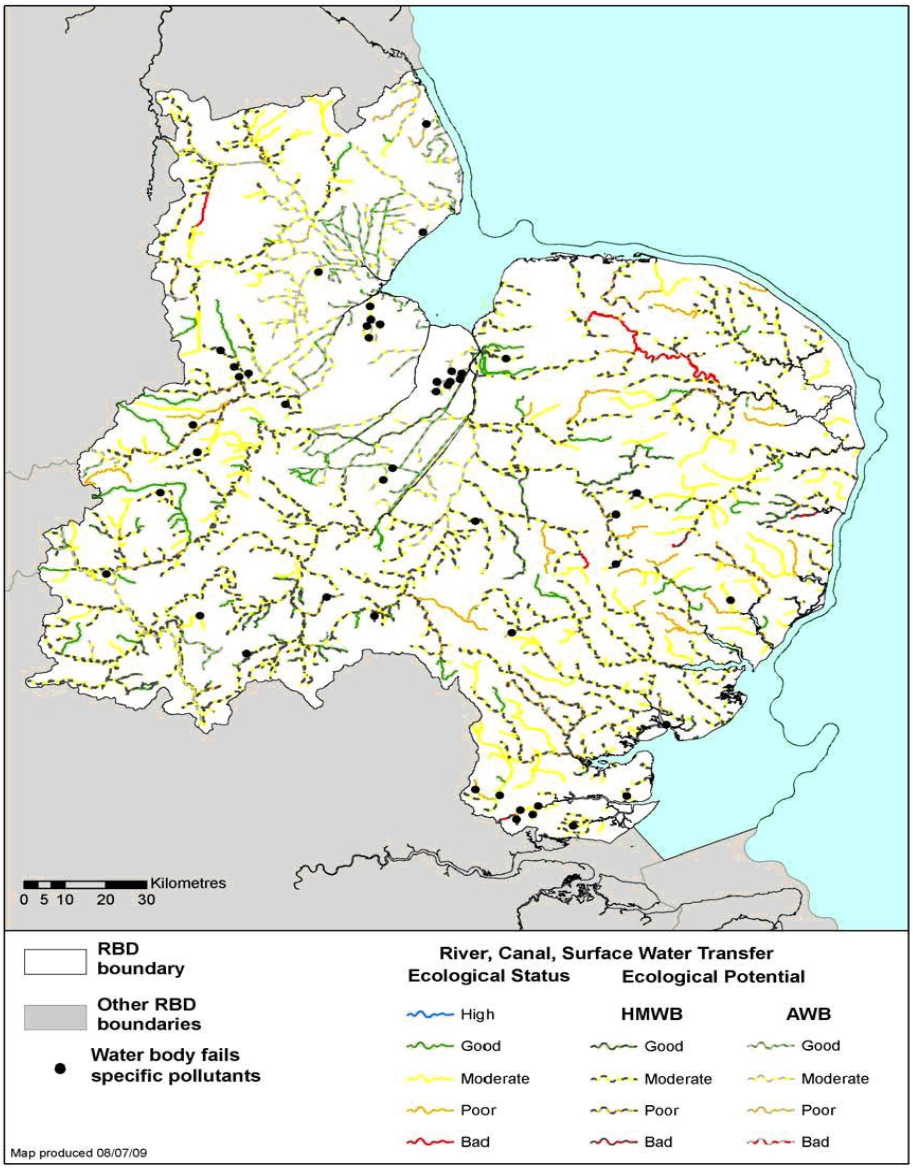
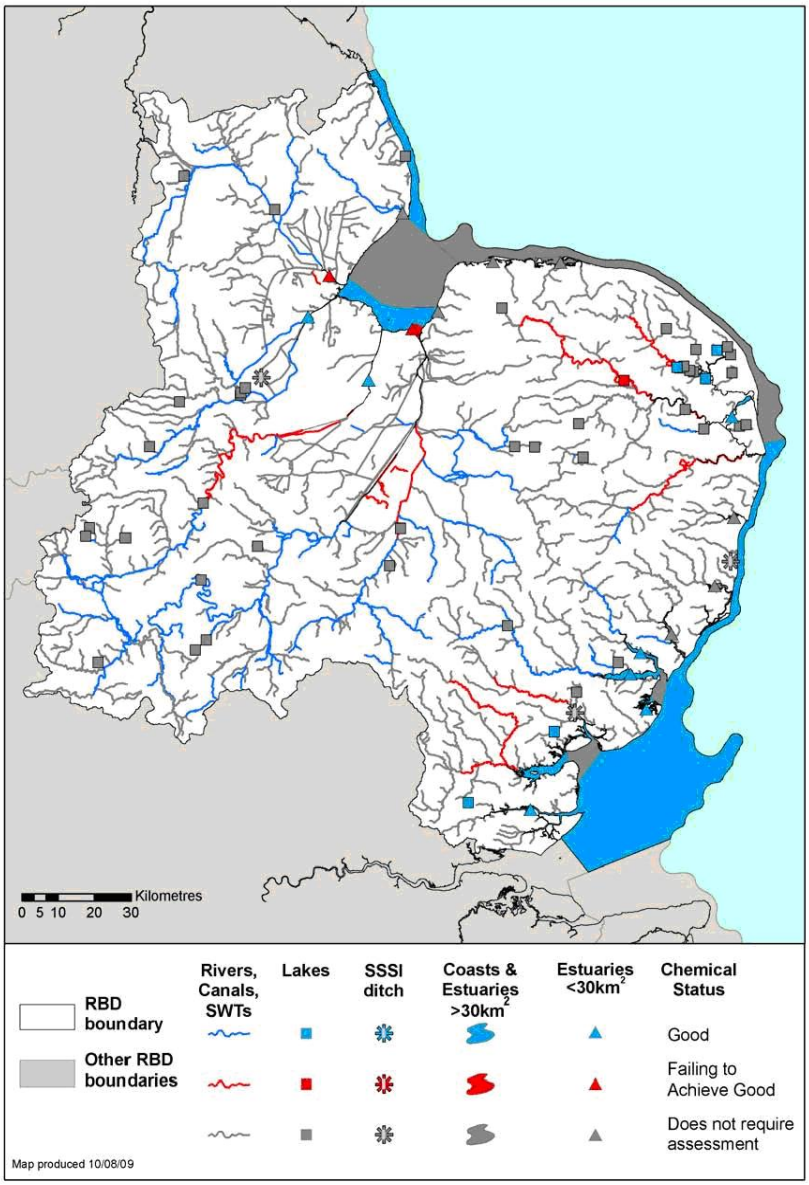


Figure 5-16: Surface water bodies chemical status in Anglian river basin (2009)

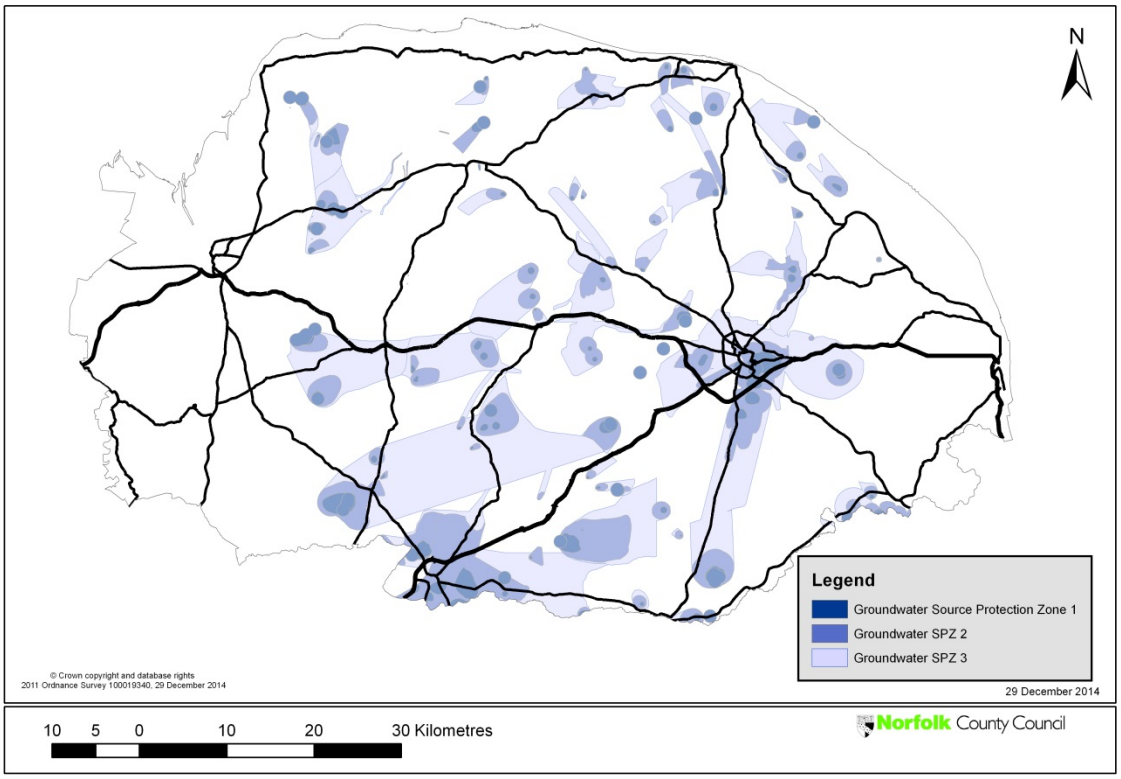


Groundwater

A significant proportion of the county is covered by Groundwater Protection Zones - areas surrounding groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area (Figure 5-17). Groundwater Source Protection Zones are defined by the Environment Agency and are based on the number of days taken by any pollutant to follow to the borehole. Source Protection Zone 1 is defined as a zone within which any contamination would reach the borehole within 50 days. This applies to groundwater at and below the water table. This zone also has a minimum 50 metre protection radius around the borehole.

Adopted Minerals and Waste Core Strategy Policy DM3 – Groundwater and Surface Water requires assessment of development proposals for minerals extraction and waste management facilities in accordance with the Environment Agency's 'Groundwater Protection: Policy and Practice (GP3)' document.

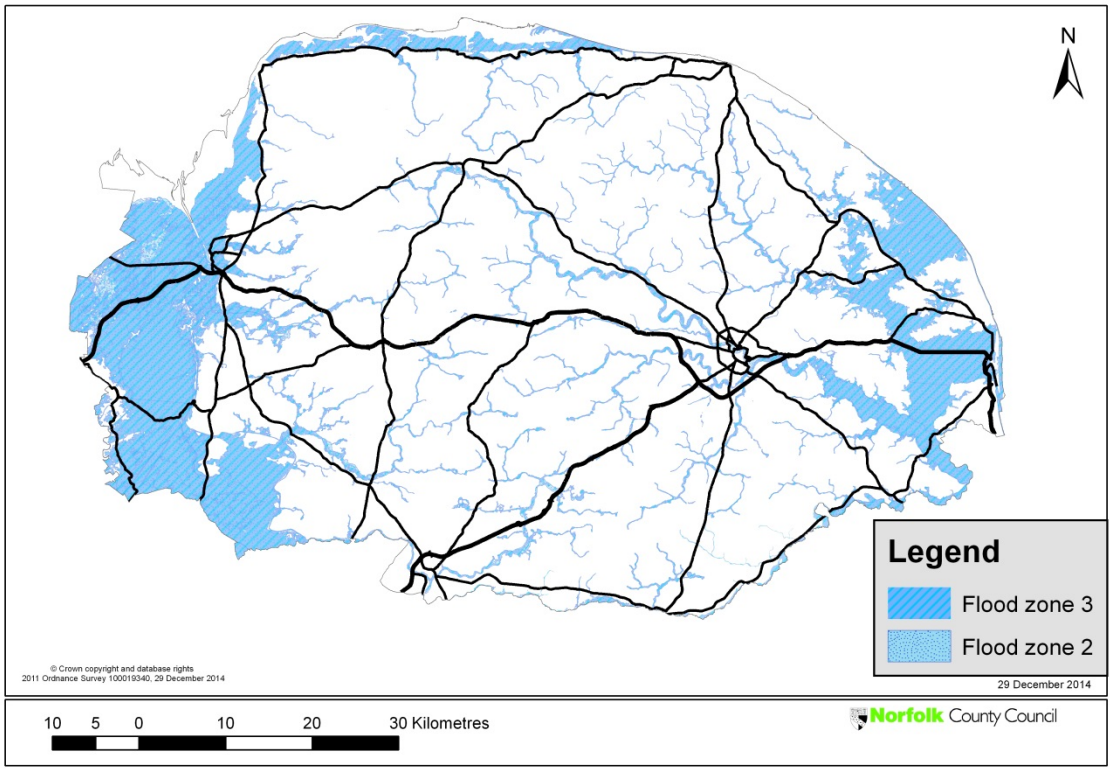
Figure 5-17: Groundwater Protection Zones in Norfolk



Flood Risk

As Norfolk is low-lying, coastal, and home to a series of inland water and lakes; flood risk is of particular concern throughout the county. The effects of climate change are likely to increase these risks. Areas at risk of flooding from rivers and the sea can be viewed in Figure 5-18.

Figure 5-18: Flood Risk in Norfolk



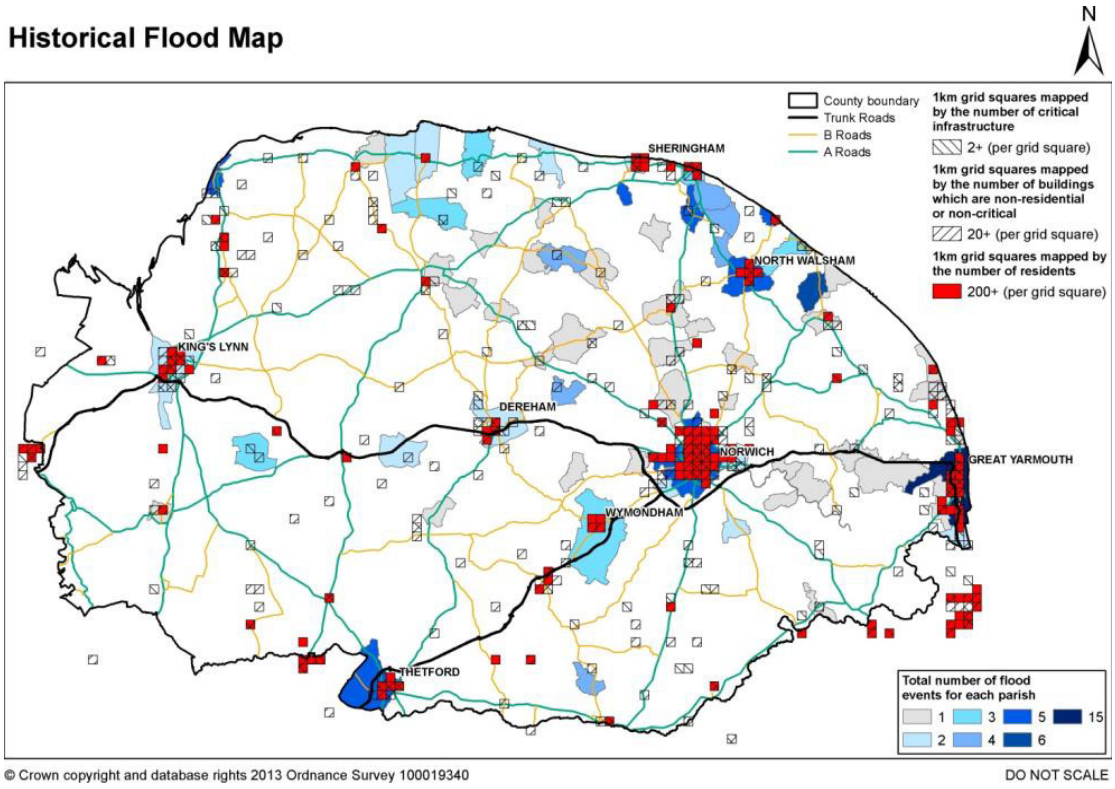
Norfolk's Local Planning Authorities have produced Strategic Flood Risk Assessments for their areas, to assess the risk of flooding from all sources, now and in the future, taking account of the impacts of climate change and to assess the impact that land use changes and development in the area will have on flood risk. The Environment Agency is responsible for managing flood risk from rivers and the sea, whilst Norfolk County Council, as the Lead Local Flood Authority, is responsible for co-ordinating the management of local flood risk from groundwater, surface run-off and ordinary watercourses (for example small streams and drainage ditches).

Surface water flooding happens when the ground, rivers and drains cannot absorb heavy rainfall. Typically, this type of flooding is localised and happens very quickly after the rain has fallen. Surface Water Management Plans (SWMPs) have been produced for Great Yarmouth and the Norwich Urban Area. A SWMP for King's Lynn and West Norfolk Settlements is planned to be published in 2015 and work is underway for a SWMP for South Norfolk District.

Norfolk County Council is also in the process of preparing a Local Flood Risk Management Strategy to identify the extent of local flood risk in Norfolk, how it will be managed in partnership with others and to outline Norfolk County Council's approach to local flood risk management.

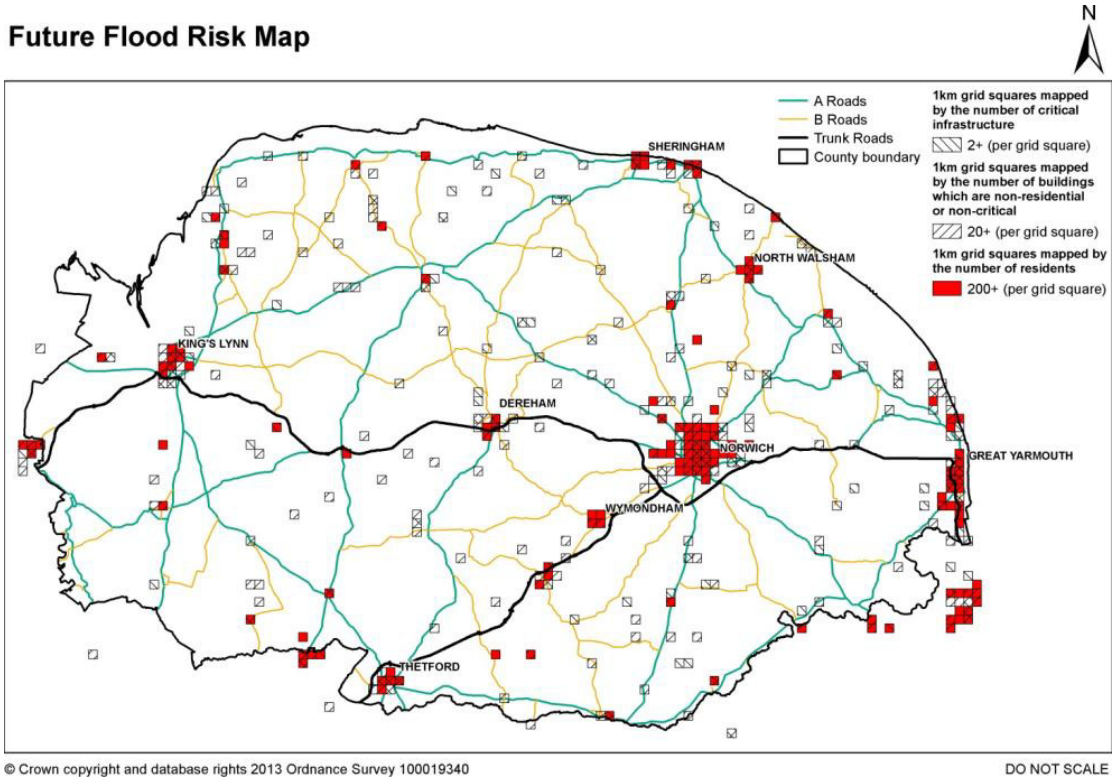
In July 2011 Norfolk County Council published a Preliminary Flood Risk Assessment which identifies those areas in the county at risk of flooding with significant consequences (Flood Risk Areas). The PFRA collated and summarised local historical flood information from twelve years.

Figure 5-19



The PFRA also produced a locally agreed priority list of settlements to provide a consistent basis for prioritising local Future Flood Risk. The top thirty nine settlements are grouped into four priority bands, based primarily on the potential numbers of people at risk from flooding. See figure 5-20 below for the Future Flood Risk Map.

Future Flood Risk Map



 DO NOT SCALE

5.2.9 Material Assets

Minerals extraction and associated activities and waste management facilities provide a host of material assets for the county. There are currently over 40 minerals extraction sites and over 130 waste management sites active in Norfolk. Both minerals extraction and waste management facilities will be required to support growth, through the supply of building materials and handling of construction and demolition waste, through to the need to manage commercial, industrial and local authority collected waste, including household waste, more sustainably.

Minerals extraction and development within Norfolk includes sand and gravel, crushed rock (carstone) and silica sand as well as secondary and recycled aggregates. The production of aggregates is directly dependent on activity within construction, infrastructure and related industries and it is therefore important that there is a steady and adequate supply of aggregates.

Sand and gravel production in 2013 was 1,114,935 tonnes, representing a decrease of 2% on the 2012 figure (1,131,941). Production of sand and gravel continues to be well below the high levels of the late 1980s and early 1990s and below the average for the last twenty years of about 2.21 million tonnes (mt) per annum. **The average over the last 10 years was 1.71 million tonnes per annum.** The National Planning Practice Guidance (NPPG) states that the 10 year average should be used in the calculation of aggregate landbanks. **The rolling 3 year average is 1.18 millions tonnes per annum.** This highlights a continuing downward trend in recent years. The NPPG suggests the use of 3 year average figures to indicate recent trends in sales.

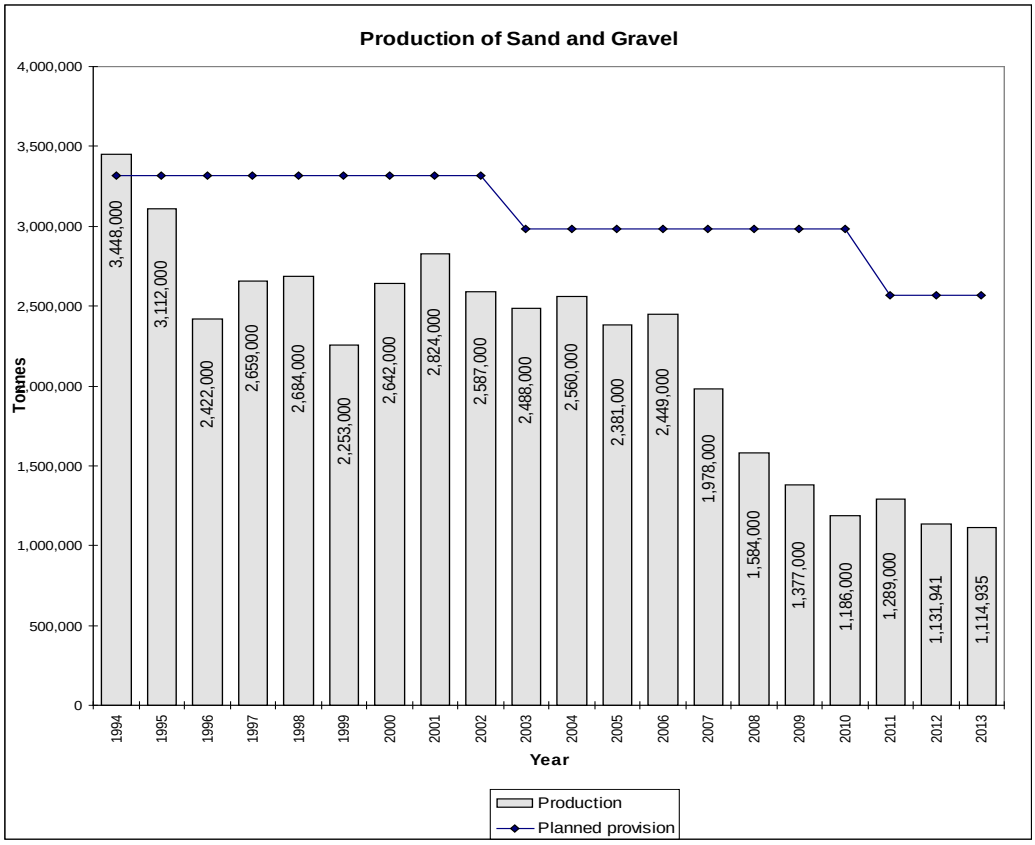
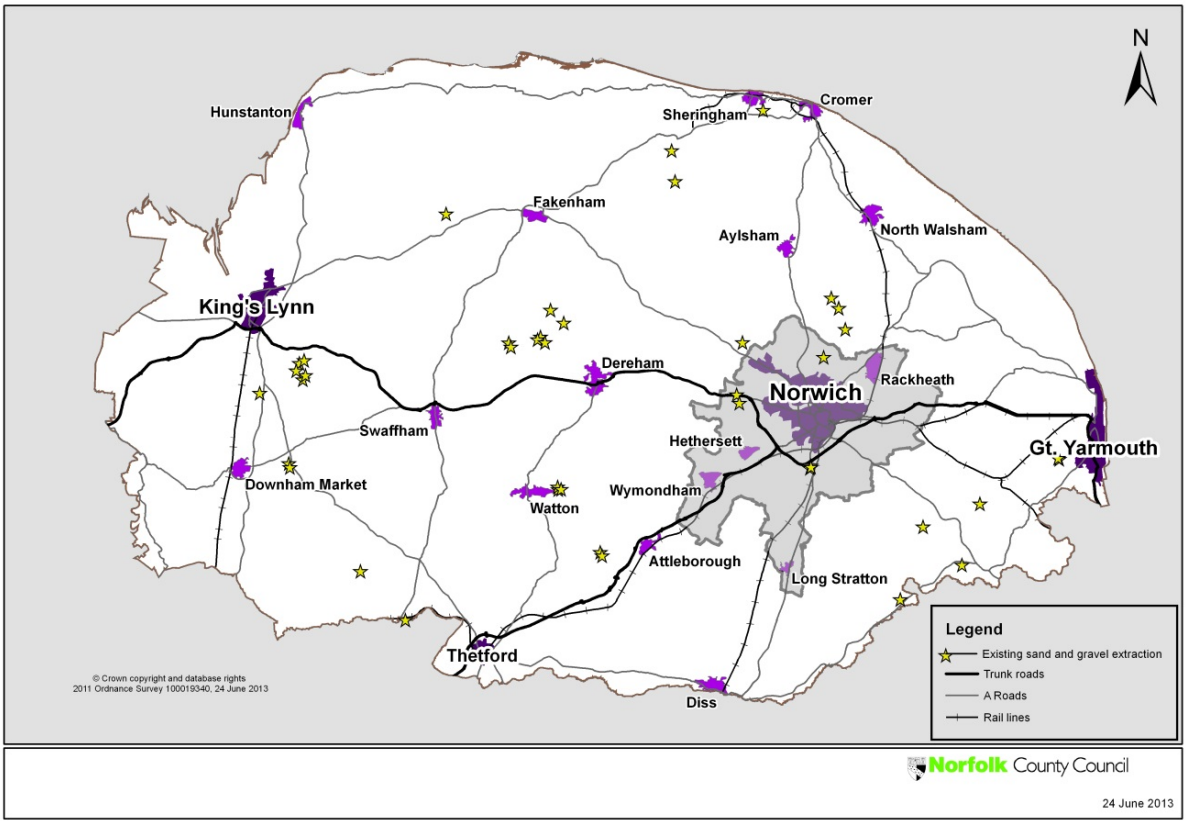


Figure 5-21 Sand and gravel extraction in Norfolk in 2013



Reserves of sand & gravel at 31 December 2013 were 13,335,398 tonnes, a decrease of 8% on the 2012 figure. The landbank of permitted reserves at 31/12/2013, based on the 10 year average in the NPPF, was 7.8 years, and therefore within the range for the landbank of between 7 and 10 years, indicated in Policy CS1. The landbank was therefore also above the "at least 7 years" landbank that the NPPF states should be maintained for sand & gravel. The Mineral Site Specific Allocations DPD allocated 26 sites for sand and gravel extraction. The estimated resource for the 26 sites was 27.51mt.

Carstone production in 2013 was 37,193 tonnes, representing a decrease of 69% over the 2012 figure (118,288 tonnes). This is substantially below the average for the last twenty years (206,000 tonnes) and the average for the last ten years **(123,000 tonnes)**. The NPPG states that the 10 year rolling average should be used in the calculation of aggregate landbanks. The rolling 3 year average is 72,600 tonnes per annum. This highlights a downward trend in recent years. The NPPG suggests the use of 3 year rolling average figures to indicate recent trends in sales. Reserves of Carstone at 31 December 2013 were 1,841,470 tonnes and the landbank of permitted reserves at 31/12/2013, calculated on the 10 year rolling average sales, as set out in the NPPF was 14.9 years. This is above the "at least 10 years" landbank that the NPPF states should be maintained for crushed rock. The carstone extraction sites are at Middleton and Snettisham.

The 10 year average **silica sand** production for the Leziate site in Norfolk, for 2005-2014 was 636,500 tonnes. This represents a landbank of 5.5 years' worth of permitted silica sand reserves based on the 10 year average figure, this is less than the "at least" 10 years for individual silica sand sites required in the NPPF. The three year average of silica sand extraction in Norfolk from 2012-2014 was 790,400 tonnes. This is an increase on the previous three year average (from 20011-2013) of 777,100 tonnes. This increase in production is as a result of an increased demand for Leziate sand as silica sand sites in other parts of the country reach the end of their working lives. The silica sand reserve at 31/12/2014 was estimated at 3.5 million tonnes. No planning applications have been submitted for silica sand extraction so far in 2015. The Minerals Site Specific Allocations Plan allocated a site (MIN 40) for silica sand extraction; this site contains an estimated resource of three million tonnes. This represents a shortfall based on the amount planned for in Core Strategy Policy CS1 which was based on a forecast production volume of 750,000 tonnes per annum.

Waste management facilities

There are a number of waste management facilities within Norfolk. They include:

- 20 Household Waste Recycling Centres, provided by Norfolk County Council, which accepted nearly 66,000 tonnes of waste in 2013/14.
- Norfolk has seven operational commercial composting facilities which received 210,000 tonnes of waste in 2013/14, as well as a few small community composting facilities;
- There are two large metal recycling facilities at Lenwade and Great Yarmouth, one metal recycling facility at King's Lynn docks and a large number of small sites accepting scrap metal or end-of life vehicles. (The majority of end-of life vehicle depollution sites have planning permission granted by the relevant district council instead of the County Council.) The metal recycling facilities received over 155,000 tonnes of waste in 2013/14;
- There are three non-hazardous landfill sites (Blackborough End, Feltwell and Aldeby) in Norfolk, but the site at Feltwell is currently inactive. These three sites have a permitted void capacity (remaining landfill space) estimated to be 5.62 million cubic metres at 31/3/2014. In 2013/14 the operational non-hazardous landfill sites in Norfolk (which were Blackborough End, Edgefield and Aldeby) received 359,000 tonnes of waste. Edgefield landfill site has since ceased operating and has been restored;
- In 2013/14 270,000 tonnes of inert waste was received at inert landfill sites (44,000 tonnes) and used in the restoration of mineral workings (226,000 tonnes).
- In 2013/14 there were 60 operational sites for the treatment and/or transfer of waste (including municipal, commercial & industrial, hazardous, clinical, construction & demolition and inert) and 25 sites for the treatment and transfer of inert waste (including construction and demolition waste) only.
- There is a renewable energy plant operated by EPR at Thetford which received over 430,000 tonnes of waste in 2013/14. The waste received at this facility is poultry litter which is burned to produce energy.

5.3 Evolution of the Sustainability Baseline

5.3.1 Sustainability Baseline Evolution

The sustainability baseline will be used to forecast to the end of the plan period in order to compare the environmental, social and economic effects of the Silica Sand Review and the Minerals and Waste Core Strategy Review against the evolution of the sustainability baseline without these reviews. The baseline scenario not only provides a basis for the prediction of environmental, social and economic effects, but will also assist in the long-term monitoring of the effects from the implementation of the Silica Sand Review and the Minerals and Waste Core Strategy Review.

Forecasting the evolution of the baseline in the absence of the reviews will also help to understand how the plan will contribute to changes in the future. This can be done by comparing the forecast evolution or the "without the plan" scenario against the predicted effects of the reviews. A section in the Sustainability Appraisal will therefore evaluate the likely changes to the sustainability baseline assuming that the plan reviews are not implemented.

Whilst the future scenario will forecast the evolution of the environment in the absence of the Silica Sand Review and Minerals and Waste Core Strategy Review, it will not, however, assume that previously adopted, draft and future plans and programmes will not continue to be implemented. SEA must assume that other adopted plans and programmes will be delivered as planned.

The most significant changes to the sustainability baseline will be borne from the planned growth allocated in Local Plans/LDFs and transport schemes identified in the Third (2011-2016) Local Transport Plan for Norfolk.

Central and local government policies require that the principle of Sustainable Development is applied to the location and design of new development. However, it is unlikely that the amount of growth allocated in Norfolk through the Local Plans/LDFs will not lead to increases in waste generated and minerals demand in the absence of the reviews. With regard to silica sand the demand for this mineral (in the form of glass sand) is indirect in relation to construction, as the demand for flat glass is driven by the building industry

5.3.2 Climate Change

"Warming of the climate system is unequivocal, and since the 1950's, many of the observed changes are unprecedented over decades to millennia". "It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century", IPCC 5th Assessment Report Summary, 2013.

Climate change has been identified as one of the most important challenges the global community faces, and it may also have potentially severe repercussions at the local level in Norfolk. Rising temperatures are already affecting the UK, with a 1^{o}C increase in the average temperature compared with a century ago, with half of that increase occurring since 1970. It is virtually certain that these increases will continue and that it will accelerate with increases of 2°C to 5°C likely by the end of the 21st Century.

”It is virtually certain that there will be more frequent hot and fewer cold temperature extremes”, IPCC 5th Assessment Report Summary, 2013. Winters are likely to be warmer; however, as a result of natural fluctuations within the climate, occasional winter extremes will continue to occur. The seasonal contrast in precipitation is likely to increase, winters are likely to be wetter, as average winter rainfalls will more likely than not increase 50% by the end of the century. Increased winter rainfall, combined with a likely increase in the quantity of rainfall from intense events in winter, will result in a greater risk of flooding.

Summers are virtually certain to be hotter, as summer average and average maximum temperature is likely to increase. Acute temperature events such as heat waves are very likely to increase. It is very likely that heat waves will be longer and occur more often, over the 21st century. Summers are also likely to be drier overall, although climate change will also lead to an increase in the number of heavy rainfall events. The warmer and drier summers will certainly have many implications including food production, health impacts, air quality and road infrastructural damage, and as a result of heavy rainfall events localised flash flooding, and increased crop damage.

Sea levels are already rising with a global average increase of 19 centimetres in just over a century, a rate that has not occurred during the previous two millennia. Mean sea levels are likely to rise by up to 0.82m in the 21st century, and are very likely to rise at rates faster than has been observed in the last 30 years (IPCC, 2013). Norfolk as a generally low lying area will be at increased danger of fluvial, tidal and surface water flooding in the future. Rising mean sea levels are likely to having a major impact on coastal erosion and coastal flooding.

Rising mean sea level is also the main cause of extreme sea level events (such as storm surge flooding) which are likely to have increased in global frequency since the 1970’s. Higher wave and storm surge elevations are very likely, and increased frequency of winter storms, resulting in increased wind speeds, will have major impacts.

The UK Government is using a variety of policy measures with regard to climate change. The Climate Change Act 2008 sets out legally binding targets to reduce Green House Gas (GHG) emissions by at least 80%, based on 1990 levels, by 2050, and improve carbon management. The Carbon Plan 2011 sets out proposals for achieving emissions reductions in the first four carbon budgets.

The reduction of GHG is through the setting of Carbon budgets, the EU Emissions Trading Scheme and analysis and research to inform other elements of energy and climate change policy, such as those to reduce the demand for energy, reduce GHG emissions from sources including waste, transport and agriculture, increasing the contribution made by low-carbon technologies, including carbon capture and storage. In 2009, emissions from waste management represented just over 3% of UK GHG emissions, with methane from landfill responsible for 90% of this total. Between 1990 and 2009 methane emissions from landfill reduced by 70% principally as a result of the effects of landfill tax which reduced the amount of biodegradable waste sent to landfill, and the increased capture of landfill gas for energy generation. The Government has committed to working towards a zero waste economy, including the use of fuels such as biomass and wastes especially to generate

heat and electricity rather than reliance on fossil fuels. Waste prevention is the first step in the plan to reduce GHG emissions from waste.

5.3.3 Air Quality

Air Quality has important impacts on human health and the wider environment. The principal driver to manage and improve low air quality is the EU Ambient Air Quality Directive 2008. This directive sets legal limits for the major pollutants in ambient (outdoor) air which affect human health. These pollutants include nitrogen dioxide, and fine particulate matter, which as well as direct impacts can combine in the atmosphere to form ozone which as well as being a potent GHG can also have significant health impacts at low level.

The EU Ambient Air Quality Directive is transposed into national policy through assessment carried out by Defra on an annual basis to measure compliance with the EU limit values. National assessment indentifies areas where the limit values are being exceeded or where air quality is low enough to give concern that an exceedance could occur.

District councils are required by the Local Air Quality Management regime to review and assess the air quality in their area to determine whether the national objectives are being met. If these objectives are not being met or there is a risk that they may not be met, then councils are required to define an Air Quality Management Area. In an AQMA the council is required to prepare a plan to improve the air quality - an Air Quality Action Plan.

Air quality, in particular high levels of nitrogen dioxide can have impacts on biodiversity and habitats through potential nutrient enrichment, therefore air quality is also an issue in relation to appropriate assessment through the Habitats Directive.

Transport is the largest source for most of the regulated pollutants; the Third Local Transport Plan for Norfolk will also tackle air pollution emissions from transport over the plan period. In addition, the statutory obligation to improve air quality in the three AQMAs designated in Norfolk will ensure that the number should decline through revocation. Implementation of the Act, however, will become increasingly difficult with increases in traffic growth and energy consumption, as the regulations are reactive and not preventative. The planned growth set out in district plans is projected to result in an increase in the number of miles driven in the county; new AQMAs cannot be ruled out.

5.3.4 Population

The Census is a ten yearly population survey and it was last undertaken in 2011. The key findings for Norfolk were that the increase in population across districts was uneven. The largest increase was in South Norfolk (13,300) followed by King's Lynn and West Norfolk (12,200) with very little growth in North Norfolk (3,100). This will result in dramatically different demands on services and housing across districts. Norfolk has a generally ageing population with a higher than average percentage of the population aged 45 or over, again there is an uneven distribution across the districts. North Norfolk has the third highest percentage of the population aged over 65 in the country (29%); this is mirrored by a small percentage of under 5s and under 19s. King's Lynn and West Norfolk also has a high percentage of the population in the 65-74 age group (12%). In Norwich the age structure is

radically different with a very high percentage in the 20-29 age group (29%), partly as a result of the student population at the University of East Anglia. This variation in age structure will result in differing requirements for services and the potential for different groups to be affected by the operation of minerals and waste facilities.

Accessibility is a high priority nationally as well as in district plans and a number of other plans including the Rural Development Strategy for Norfolk and the Third Local Transport Plan for Norfolk. Across Norfolk as a whole, between 2013 and 2026, the Local Planning Authorities plan to deliver 65,000 dwellings and around 60,000 jobs, which will go some way to tackling social exclusion. The Greater Norwich City Deal commits Broadland, Norwich and South Norfolk districts to deliver 13,000 more jobs than the Joint Core Strategy target and bring forward 3,000 more dwellings from the period after 2026. The scale of growth should reflect a location's ability to provide jobs, services and sustainable transport. Therefore growth in Norfolk, in terms of additional dwellings, is concentrated in and around urban areas, selected market towns and well-located villages with local services.

Additional transport infrastructure included in Norfolk's 3rd Local Transport Plan includes the Norwich Northern Distributor Road, Bus Rapid Transit for the Norwich area, Junction improvements at Postwick, Longwater and Thickthorn, Norwich city centre enhancements. A Third River Crossing is required at Great Yarmouth to enhance access to the port and remove freight traffic from the town centre. Improvements are also required to the A47.

The Norfolk Rural Development Strategy 2013-2020 contains priorities which work towards improving accessibility and social exclusion, including: increasing the quality and number of rural jobs, increasing the number of rural business start-ups, deliver superfast broadband, improve mobile phone coverage, increase attainment in rural schools, drive innovation, build on strengths in agri-tech, engineering and manufacturing sectors, and increase the rate at which new affordable housing is developed.

The New Anglia Local Economic Partnership Strategic Economic Plan commits the LEP to working with government and local partners to deliver 95,000 more jobs, 10,000 new businesses and 117,000 new homes by 2026 in the New Anglia area (Norfolk and Suffolk). This requires investment to improve the area's infrastructure and ensure that business has a supply of skilled workers.

Accessibility and social inclusion are expected to improve in the future from the implementation of these plans and strategies.

5.3.5 Historic Environment

The historic environment, particularly in Conservation Areas, is likely to continue to be preserved and restored through district council planning policies. Additionally, some heritage assets(such as Scheduled Monuments) are afforded additional statutory protection at the national level.

Norfolk also contains a large number of areas in which either undesignated heritage assets or archaeological assets occur. Archaeological assets may either be known or unknown where the potential of assets is high but no field studies have been carried out. The Historic Environment Record will be used when carrying out site assessments to ensure it is highlighted where undesignated heritage assets may occur. The NPPF, national guidance and the Minerals and Waste Core Strategy all indicate that prospective applicants will be expected to take designated and undesignated heritage assets into account through assessment and proposed mitigation.

Some planned housing and employment growth will most likely be sited on brownfield land, which will improve the townscape by regenerating derelict sites and may help to restore important historic buildings that are currently at risk. New green infrastructure proposals are likely to be largely beneficial for the historic environment. The overall effect on the historic environment and townscape over the plan period is likely to be neutral.

5.3.6 Biodiversity, flora, fauna and geodiversity

Loss of natural habitats due to the development of greenfield sites, water pollution and increased visitor pressure, all have the potential to adversely impact upon local biodiversity, particularly on vulnerable species. However, if existing agricultural sites are intensively farmed as a monoculture, their existing biodiversity value may already be low and the creation of green infrastructure as part of a new development may result in a biodiversity gain.

Norfolk's local plans contain policies specifically to protect and enhance biodiversity as part of the development of the county. For example, Policy 1 of the Greater Norwich Development Partnership's Joint Core Strategy states "development will minimise fragmentation of habitats and seek to conserve or enhance existing environmental assets…" Policy CP10 of the Breckland Core Strategy states that open spaces and areas of biodiversity interest will be protected from harm and the restoration, enhancement, expansion and linking of these areas to create ecological networks will be encouraged. Protection of species and habitats through the Norfolk Biodiversity Action Plan and the UK Biodiversity Action Plan will also help to mitigate potential negative effects of development.

The protection of internationally-designated sites through the Habitats Regulations will prevent or restrict development which could affect the most environmentally sensitive sites. For example, Policy 1 of the Greater Norwich Development Partnership's Joint Core Strategy states "All new development will ensure that there will be no adverse impacts on European and Ramsar designated sites and no adverse impacts on European protected species in the area and beyond including by storm water runoff, water abstraction, or sewage discharge. They will provide for sufficient and appropriate local green infrastructure to minimise visitor pressures." Policy SS1 of the Breckland Core Strategy states that "the Core Strategy will not allocate or promote any development within a 1,500 metre zone from the boundary of the areas of

Breckland SPA with Stone Curlew. Additionally, the Core Strategy will apply a 1,500m zone from that habitat which supports the Breckland SPA Stone Curlew population. In this second zone development will only be considered if the proposal is supported by a project level Habitats Regulation Assessment and suitable mitigation can be provided."

Intensified development is likely to impact negatively on Norfolk's geodiversity. The integrity of coastal and fluvial landforms and the natural processes that maintain them is likely to be threatened by engineering work to reduce the impacts of rising sea levels and flooding. Finite landforms such as eskers, river terraces and floodplains and their associated sedimentary, palaeo-environmental and Palaeolithic archaeological archives are likely to be threatened by the rising demand for construction aggregate. Built and infrastructural development is likely to lead to a diffuse and increasing damage to natural landform throughout the county, although recording and sampling of excavated sections as part of mitigation measures will lead to increased information about geological strata. The Norfolk Geodiversity Action Plan, backed by a National Geodiversity Action Plan, will provide a context for raising public awareness of the importance of the county's Earth heritage, particularly as the number of County Geodiversity Site designations grow.

5.3.7 Landscape and Soil

In recent years, concern has grown about the gradual degradation of both the countryside and urban environment through changing farming practices, drainage of wetlands, increased pressure from transport and the need for new housing and other development. There has been loss of biodiversity and landscape as a result of development. Rural tranquillity is rapidly being eroded from growth and transport pressures. These pressures also lead to loss and fragmentation of habitats, which in turn impact negatively on local biodiversity. Norfolk contains designated landscapes such as the Norfolk Coast AONB, and the Norfolk Broads. It is important to note that these landscapes will also have areas surrounding them which will form part of their setting. The distance of this setting would be dependent on factors such as topography and the nature of the proposed development and its visibility in relation to the designated landscape.

Development has the potential to significantly affect the landscape, particularly if a significant proportion of this growth is built on greenfield sites, and appropriate mitigation strategies are not put in place. However, Local Planning Authorities in Norfolk have sought to put in place strategic policies to steer development into sustainable locations, and landscape quality plays a part in sustainable development. Development which is well matched to its surroundings in terms of scale and existing adjacent development can have minimal adverse impacts on landscape. The Local Planning Authorities have also put forward Development Management policies to improve and enhance Green Infrastructure through developer contributions or as conditions on specific applications. Green Infrastructure creation and improvement has positive benefits on both biodiversity and landscape.

Opportunities exist for sites of low landscape value, such as derelict land, to be redeveloped and this can result in a positive effect on landscape in the long term, especially if such sites incorporate Green Infrastructure creation

which may replace features lost many years before in the landscape. The loss of greenfield sites to development is more challenging in landscape terms, but a high quality masterplan design which integrates features such as green infrastructure can reduce any adverse landscape impacts. Often sites on the urban edges which are most sustainable for development are not of the highest landscape value as they have already been degraded by urban uses nearby. While greenfield land is finite and therefore losses are permanent and irreversible, this must be balanced against the need for sustainable growth for economic and social reasons, and the potential for mitigation to minimise adverse impacts. There is also the potential for restoration schemes for mineral extraction sites to create new high-quality landscapes and include green infrastructure.

The Local Planning Authorities in Norfolk have put in place through their respective Local Plans, policies which elaborate on the national policy contained in the NPPF that valued soils should be protected.

Where minerals or waste development is proposed on agricultural land, the Minerals and Waste Core Strategy states a clear preference for it to be located on land of lower agricultural grades 3b, 4 and 5. Mineral extraction is often proposed on lower grade land because it is the stone and sand content of the soils which make it valuable for mineral extraction that also decreases its agricultural quality.

Large scale development on agricultural land in the BMV grades over 20ha must be subject to consultation with Natural England. The Minerals and Waste Core Strategy also requires the operation and restoration of any mineral workings on the best and most versatile agricultural land to be carried out with high standards of soil management to enable restoration to a condition at least as good as its previous agricultural quality. DEFRA guidance is available on the correct handling of soils to ensure that they can be re-instated on restoration. A soil handling strategy is normally required as a condition of such permissions to minimise adverse impacts to high quality soils.

5.3.8 Human Health

Sustainable development underpins the National Planning Policy Framework, and includes making positive improvements in people's quality of life by 'replacing poor design with better design', 'improving the conditions in which people live, work, travel and take leisure', and 'widening the choice of high quality homes'. Minerals extraction and associated activities and waste management operations can play an important part in achieving these objectives. Silica sand is a nationally important mineral for the production of glass used in windows, and in the production of glass fibre, both of which can play a significant part in improving the thermal efficiency of housing. Norfolk contains a number of areas which are within the 20% most deprived in the country for indoor living environment (Figure 5-14) which is a measure of housing condition. Double glazing and improved internal and external insulation can improve housing condition indicators.

Chapter 8 of the National Planning Policy Framework sets out a number of ways in which the planning system can promote healthy communities, much of this is related to the planning of residential developments and associated facilities. However, there are a number of areas where minerals operations could have a positive impact, especially on restoration. In Paragraph 73 access to high quality open spaces and opportunities for sport and recreation are highlighted as making an important contribution to the health and well-being of communities. There have been examples in Norfolk of mineral operations facilitating open spaces and recreation areas, such as Whitlingham Country Park. Paragraph 75 of the NPPF states that 'Planning policies should protect and enhance public rights of way and access. Local authorities should seek opportunities to provide better facilities for users, for example by adding links to existing rights of way'. A number of mineral operations have provided such links on restoration.

Local Plans in Norfolk contain within them objectives and policies to encourage the development of healthy and active lifestyles, e.g. Greater Norwich Development Partnership Joint Core Strategy objective 11 and Policy 7. In terms of human health, obesity and other lifestyle-related health problems (such as diabetes and heart disease) are on the rise and may be further exacerbated by increases in sedentary lifestyles.

Traffic growth may lead to increases in congestion and have the ancillary effect of increasing the number of road traffic accidents and injuries, particularly affecting the most vulnerable in society. The Third Local Transport Plan for Norfolk contains targets to increase active modes of transport, reduce road traffic accidents and improve air quality, all of which will work to improve human health.

Article 13 of the EU Waste Framework Directive (2008/98/EC) requires the protection of human health, which is implemented in Part 6 of the Waste (England and Wales) Regulations 2011. National Planning Policy for Waste (2014) sets out in paragraphs 4, 5 and 7 and Appendix B how waste management authorities should identify suitable sites and areas for new or enhanced waste management facilities and the locational criteria to be considered. Testing the suitability of proposed sites in this way will ensure that waste is handled in a manner which protects human health. In addition, environmental permits which are required for many waste management facilities and regulated by the Environment Agency, ensure that ambient air and water quality meet standards that guard against impacts to the environment and human health.

The NPPF states that "when determining planning applications, local planning authorities should: ensure, in granting planning permission for mineral development, that there are no unacceptable adverse impacts on human health, and take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality". Therefore, in addition to local policies, there are also national policies and legislation in place to ensure that human health is not adversely affected by minerals extraction and waste management facilities.

5.3.9 Water and Flood Risk

The Water Framework Directive aims to deliver long-term protection of the water environment by improving the quality of all waters and requires all coastal and inland waters to reach “good” status by 2015. Negative impacts to the water system under this directive must be identified and a programme of measures established to address all types of impacts. The Environment Agency is subject to meeting targets for river catchment quality through the Water Framework Directive and associated targets should prevent further decline of water quality over the plan period.

Water Cycle Studies have informed the policies in the District Councils’ local plans, including identifying when additional waste water treatment capacity will be required for new housing developments. Linking the scale of growth with the provision of associated sewerage infrastructure will ensure that water quality is not detrimentally affected by new development.

All local plans are subject to a Strategic Flood Risk Assessment, development should be steered to areas with the lowest probability of flooding, and relevant planning applications also require a site specific Flood Risk Assessment, in accordance with the NPPF policies and NPPG. These measures are to ensure that new development can take place without unacceptable flood risk to the site itself and without increasing flood risk elsewhere.

However, the threat of flood risk is likely to significantly increase over the plan period, due to the effects of climate change.

It is possible for the restoration of mineral workings located in flood risk areas to be designed to increase flood water storage which could have a positive improvement on flood risk.

5.3.10 Material Assets

Both the existing population and planned growth have significant implications for minerals development. Additional minerals extraction will be required to support growth, through the supply of building materials for homes and associated infrastructure.

Planning for minerals extraction helps to ensure the provision of a steady and adequate supply of aggregates that reflect growth patterns. Without allocation of minerals sites, it is unlikely that the demand for minerals throughout the county would be met locally. An inadequate supply of minerals may lead to an increase in the price of aggregates, and/or industrial minerals and lead to imports of material from adjoining counties, with consequent increases in CO_2 emissions and additional HGV impacts. The adopted Minerals Site Specific Allocations Plan allocates sufficient mineral extraction sites over the plan period (to 2026) to meet the forecast need.

For silica sand the operations in Norfolk provide a significant proportion of the national demand for glass sand which ultimately meets a significant demand for window glass. The adopted Minerals SSA Plan includes one site for silica sand extraction with an estimated resource of 3 million tonnes of silica sand. There is currently a shortfall of 2.45 million tonnes of allocated silica sand resources in the Minerals SSA Plan and therefore the Silica Sand Review process will find additional specific sites, preferred areas and/or areas of search for silica sand extraction to meet this shortfall.

The existing population and planned growth will require suitable waste management facilities, to deal with both the waste generated by construction and demolition operations, and also waste produced by residents, businesses (including agriculture) and associated infrastructure such as schools and health care facilities. The adopted Minerals and Waste Core Strategy contains policies against which planning applications are currently determined and the Waste Site Specific Allocations Plan allocates sites for a range of waste management facilities.

Whilst the production of waste will continue to take place, where and how it is managed will be affected by the Minerals and Waste Core Strategy Review. The EU Waste Framework Directive requires that the management of waste should be moved up the waste hierarchy. Helping to achieve this objective is the responsibility of all waste producers, operators of waste management facilities and local planning authorities as well as waste planning authorities and waste disposal authorities.

5.3.11 Conclusion

The Norfolk Core Strategy and Minerals and Waste Development Management Policies DPD (the Core Strategy) was adopted in November 2011. The Core Strategy contains policies guiding future minerals extraction and associated development and waste management facilities in Norfolk up to the end of 2026.

In particular, the adopted Development Management policies in the Core Strategy cover the sustainability issues detailed in this scoping report, including:

DM1 – nature conservation
DM2 – core river valleys
DM3 – groundwater and surface water
DM4 – flood risk
DM8 – design, local landscape and townscape character
DM9 – archaeological sites
DM10 – transport
DM11 – sustainable construction and operations
DM12 –amenity
DM13 – air quality
DM14 – progressive working, restoration and afteruse
DM15 – cumulative impacts
DM16 - soils

A review of the Core Strategy five years after adoption is included in the requirements for the Plan. The Core Strategy Review will assess the adopted policies following a review and update of the evidence base and determine whether changes to policies are required to ensure they remain up-to-date.

Following the Core Strategy Review, a review of the adopted Minerals Site Specific Allocations and Waste Site Specific Allocations Plans are planned to take place by 2018 (five years after adoption of these plans) to ensure they are consistent with any updated policies. The sites included in the adopted Site Specific Allocations Plans have been guided by their appropriateness against Core Strategy policies and other relevant planning policies.

The Silica Sand Review is intended to find suitable specific sites allocations, preferred areas and/or areas of search to address the identified shortfall in silica sand extraction sites to meet the demands of the silica sand processing plant in Norfolk only. It is intended that the selection of sites and areas for silica sand extraction will be based on the adopted Core Strategy policies, with criteria requiring additional location specific evidence to be provided to better inform the process of assessing proposed sites and areas.

6. Task A3: Sustainability Problems, Issues and Recommendations

6.1 Identification of Sustainability Problems

In the course of collecting sustainability baseline information, a number of problems and issues emerged which will clearly affect Norfolk and its sustainable development in the future. These are set out in the table below and include recommendations through which the Silica Sand Review and the Minerals and Waste Core Strategy Review can mitigate or reduce these sustainability problems and issues.

Table 11 – Sustainability problems, issues and recommendations

SA/SEA Topic	Problems	Issues	Recommendation
Climate	▪ Norfolk is predicted to have warmer, drier summers and wetter, warmer winters. Sea level is predicted to rise as a result of climate change.	▪ Ensuring that minerals and waste facilities minimise greenhouse gas emissions as much as possible and contribute towards the mitigation of climate change ▪ Reduce landfilling biodegradable waste ▪ Reduce road transportation of minerals and waste where practicable ▪ Virtually all silica sand is transported out of Norfolk by rail. ▪ Encourage energy efficient buildings ▪ Encourage low carbon or renewable energy sources	Proposed sites and areas for silica sand extraction which are most likely to minimise greenhouse gas emissions and mitigate climate change should be favoured in the Silica Sand Review. The impact of Minerals and Waste Core Strategy policies on greenhouse gas emissions and climate change mitigation and adaption must be considered in the Core Strategy Review process.

SA/SEA Topic	Problems	Issues	Recommendation
Air	▪ Air Quality Management Areas designated in King's Lynn and Norwich due to traffic congestion.	▪ Minimising air pollution emissions from minerals and waste operations and transportation ▪ Ensuring that no new Air Quality Management Areas are declared as a result of development ▪ The majority of silica sand is transported out of Norfolk by rail.	Proposed sites and areas for silica sand extraction which are most likely to minimise air pollution emissions, avoid the risk of breaching air quality thresholds, and avoid AQMAs should be favoured in the Silica Sand Review. The impact of Minerals and Waste Core Strategy policies on transport, the highway network and air quality must be considered in the Core Strategy Review process, including any potential for waterborne transportation.
Population	▪ Deprivation is higher in the urban areas of Norwich, Great Yarmouth, King's Lynn and Thetford. ▪ The potential for minerals and waste development to impact on local amenity, including cumulative impacts ▪ Increasing population requiring additional housing and associated facilities	▪ Ensuring that minerals and waste developments do not adversely affect the amenity of local communities, through their location and operations, including air quality, noise, vibration, odour and transport impacts ▪ Take account of cumulative impacts	The amenity impacts of proposed minerals sites and areas must be considered in the Silica Sand Review process. The amenity impacts of minerals and waste policy implementation must be considered in the Core Strategy Review process.

SA/SEA Topic	Problems	Issues	Recommendation
Historic Environment	▪ The potential for minerals and waste development to affect heritage assets and their settings	▪ Protecting and enhancing both designated and undesignated heritage assets through appropriate location and design of minerals and waste developments ▪ Recognise that areas may contain unknown archaeological assets which may be adversely affected without investigation and appropriate mitigation. ▪ Provide enhancement of the setting of heritage assets through restoration schemes ▪ Opportunities arising through development to understand heritage assets and archaeology	The impact of extraction on the historic environment must be considered in determining the acceptability of proposed sites and areas in the Silica Sand Review. This includes assessment and investigation in areas with a potential to contain unknown archaeological assets. However, extraction can enable the investigation of heritage assets and archaeological finds. The investigation of heritage and archaeological assets may provide an important resource for scientific study and education. The impact of Minerals and Waste Core Strategy policies on the historic environment must be considered in the Core Strategy Review process.
Biodiversity, flora and fauna	▪ Land take for development ▪ Water pollution affecting nature conservation designations ▪ Loss of finite geodiversity resources	▪ The protection of habitats, species and geodiversity features as part of minerals and waste development planning ▪ Providing enhancement of biodiversity, habitats and geodiversity features as part of minerals and waste development, including through the enabling of scientific study and a part of restoration schemes	The impact of extraction on designated sites and BAP habitats and species must be considered in determining the acceptability of proposed sites and areas in the Silica Sand Review. Opportunities for enhancement of biodiversity, habitats, species and geodiversity through restoration schemes. The impact of Minerals and Waste Core Strategy policies on designated sites and BAP habitats and species must be considered in the Core Strategy Review process.

SA/SEA Topic	Problems	Issues	Recommendation
Landscape	▪ Gradual loss of countryside, landscape and tranquillity to development ▪ The potential for minerals and waste development to impact on the Broads Authority Executive Area, the AONB and Heritage Coast as well as landscape character	▪ Protecting and enhancing landscape through appropriate location and design of minerals and waste developments, including landscaping schemes ▪ Provide enhancement through restoration schemes	The impact of proposed sites and areas for silica sand extraction on the landscape must be considered in determining the acceptability of the proposed sites and areas (taking into account opportunities for improvement on restoration). The impact of Minerals and Waste Core Strategy policies on the landscape must be considered in the Core Strategy Review process.
Human Health	▪ High levels of health deprivation in the urban areas of Norwich, King's Lynn and Great Yarmouth. ▪ Poor housing quality in parts of Norwich, North Norfolk, King's Lynn and West Norfolk and Breckland.	▪ Ensuring that minerals and waste facilities do not exacerbate health deprivation ▪ Take into account cumulative impacts ▪ Provide enhancement to public open space, public rights of way and recreation through restoration ▪ Assessing any potential risks to human health from gas emissions from mineral extraction and waste management facilities, including from previous land uses.	The impact of silica sand extraction proposals on human health and well-being must be considered in determining the acceptability of proposed sites and areas in the Silica Sand Review. The impact of Minerals and Waste Core Strategy policies on human health and well-being must be considered in the Core Strategy Review process. Ensuring appropriate mitigation through the use of protective measures to protect human health from any potential gas emissions.

SA/SEA Topic	Problems	Issues	Recommendation
Water, Soil	• Only a small percentage of the rivers in Norfolk have been classified as good status or better status by the Environment Agency • Significant proportion of the county is covered by Groundwater Protection Zones • Need to preserve Norfolk's best and most versatile (grades 1, 2, or 3a) agricultural land	• Ensuring that minerals and waste development do not negatively affect surface water quantity or quality • Ensuring that minerals and waste development do not negatively affect groundwater quantity or quality • Ensuring that development does not permanently reduce the proportion of high quality agricultural land	The impact of silica sand extraction on groundwater, surface water and soil quality must be considered in determining the acceptability of proposed sites and areas in the Silica Sand Review. The impact of Minerals and Waste Core Strategy policies on groundwater, surface water and soil quality must be considered in the Core Strategy Review process.
Material Assets	• Declining production of aggregate minerals	▪ Safeguarding mineral resources, extraction sites and infrastructure from being sterilised or prejudiced by non-mineral development ▪ Safeguarding existing significant waste management facilities from being prejudiced by non-waste development ▪ Variable production of recycled and secondary aggregates • Declining production of sand and gravel since 2007 • Increasing production of silica sand • Crushed rock for road building is mainly imported to Norfolk through one railhead in Norwich	Assess the effectiveness of the adopted policy on minerals safeguarding as part of the Minerals and Waste Core Strategy Review The purpose of the Silica Sand Review is to ensure that a steady and adequate supply of silica sand is planned for. The impact of the Minerals and Waste Core Strategy policies on planning for a steady and adequate supply of aggregate minerals should be assessed as part of the Core Strategy Review process.

SA/SEA Topic	Problems	Issues	Recommendation
Material Assets	• Need to continue to drive waste management up the waste hierarchy and especially reduce the quantity of waste disposed of to landfill. • Need to enable waste to be disposed of or, in the case of mixed municipal waste from households, recovered, in line with the proximity principle	• Need sufficient facilities to enable waste to be managed as high up the waste hierarchy as practicable and in accordance with the proximity principle	The impact of the Minerals and Waste Core Strategy policies on driving waste management up the waste hierarchy and meeting the principles of self-sufficiency and proximity must be assessed as part of the Core Strategy Review process.

7 Task A4: Development of SA/SEA Framework

7.1 Developing Sustainability Objectives

The SEA Directive does not specifically require the use of objectives or indicators, but they are a recognised way in which environmental, social and economic effects can be described, analysed and compared. The sustainability objectives describe a statement of intention and the desired direction of change, whilst indicators will be used to measure the performance of the minerals and waste policies against the objectives and also to predict their effects on sustainability.

To fulfil the requirements of the SEA Directive, objectives should cover biodiversity, population, human health, fauna, flora, soil, water, air climatic factors, material assets, cultural heritage, landscape and interrelationships between them. A set of sustainability objectives and indicators were used in the Sustainability Appraisals of the adopted Minerals and Waste Core Strategy, Minerals Site Specific Allocations and Waste Site Specific Allocations Development Plan Documents. The objectives were developed taking into account the Norfolk Minerals and Waste Development Framework objectives (detailed in Table 12), objectives from other relevant plans, policies and programmes, and local environmental, social and economic issues identified as part of the baseline analysis. These objectives are also the starting point for the Silica Sand Review and the Minerals and Waste Core Strategy Review. Following the review of relevant plans, policies and programmes and the baseline conditions analysis, it is considered that the existing SA Objectives continue to be suitable for use in the Silica Sand Review and the Minerals and Waste Core Strategy Review.

SEA Topic	Sustainability Appraisal Objective
Climate	SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change
Air	SA2: To improve air quality in line with the National Air Quality Standards
Population	SA3: To minimise noise, vibration and visual intrusion
Population	SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion
Cultural Heritage	SA5: To maintain and enhance the character of the townscape and historic environment
Biodiversity, flora and fauna	SA6: To protect and enhance Norfolk's biodiversity and geodiversity
Biodiversity, landscape, soil, population	SA7: To promote innovative solutions for the restoration and afteruse of minerals and waste sites
Landscape	SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape
Human Health	SA9: To contribute to improved health and amenity of local communities in Norfolk
Water, soil	SA10: To protect and enhance water and soil quality in Norfolk
Material Assets	SA11: To promote sustainable use of minerals and waste resources
Climate, Population, Human Health	SA12: To reduce the risk of current and future flooding at new and existing development
Population	SA13: To encourage employment opportunities and promote economic growth

Table 12: Sustainability Appraisal Objectives

7.2 Scoring of SA objectives

A range of factors are included in the scoring of the SA objectives, and the general considerations are listed in the following tables. There are two tables of SA Objectives, one for the assessment of specific sites and areas of search in the Silica Sand Review and one for both the assessment of strategic alternatives in the Silica Sand Review and for the assessment of the Minerals and Waste Core Strategy Review.

Table 13 shown below, details the factors that will be taken into account in assessing proposed specific site allocations, preferred areas and areas of search for mineral extraction. This table will be used to assess the Silica Sand Review and was also used in the assessment of sites in the Minerals Site Specific Allocations DPD. (This is not an exhaustive list – individual sites may have individual elements to be taken into account).

By definition, minerals development is only a temporary use of land; all minerals planning permissions are time-limited. The Sustainability Appraisal assessments will therefore be divided into two: the operational stage (the development and operation of the site, which broadly covers the 'short' and 'medium' terms); and the restoration/post-restoration stage (which broadly covers the 'long' term).

Table 13: SA scoring factors for the assessment of minerals sites and areas

SA Objective	Factors taken into account in scoring
SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change	▪ Distance from the existing silica sand processing plant at Leziate as a general proxy for CO_2 emissions: <5km ++; 5-10km +; 10-15km 0; 15-20km -; >20km -- ▪ Would restoration include any areas of woodland which could act as a carbon sink?
SA2: To improve air quality in line with the National Air Quality Standards	▪ Would working the site worsen air quality generally? Would it impact on any already-designated AQMA or potentially lead to the designation of a new AQMA?
SA3: To minimise noise, vibration and visual intrusion	▪ Would the site be close enough to dwellings to impact adversely on the amenity of residents?
SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion	▪ Would working the site have any impact on (social) accessibility and social exclusion?

SA Objective	Factors taken into account in scoring
SA5: To maintain and enhance the character of the townscape and historic environment	▪ Would working the site impact on local townscapes? ▪ Would working the site impact adversely on any Conservation Areas/listed buildings/Historic Parks & Gardens? ▪ Would working the site impact on non-designated heritage assets? ▪ Would working the site impact adversely on any designated archaeological sites? ▪ Would working the site potentially impact on unknown archaeological sites? ▪ Would working the site potentially enable the discovery of new archaeological finds?
SA6: To protect and enhance Norfolk's biodiversity and geodiversity	▪ Would working the site impact adversely on designated ecological or geological/geomorphological sites (through damage), or on species or habitats? ▪ Would working the site allow access to useful geological/geomorphological assets? ▪ Would appropriate restoration offer opportunities for ecological gains?
SA7: To promote innovative solutions for the restoration and after use of minerals sites	▪ Would restoration deliver any landscape/ ecological/ geological/ recreation / green infrastructure benefits instead of just restoration back to agricultural land?
SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape	• Would working the site affect adversely the countryside and landscape, particularly designated landscape? • Would restoration offer opportunities to improve the quality of countryside and landscape?
SA9: To contribute to improved health and amenity of local communities in Norfolk	• Would health and amenity (including impact on the amenity when walking on footpaths) of residents/ visitors be affected? • Would restoration offer any opportunities for 'gains' (e.g. new footpaths)?
SA10: To protect and enhance water and soil quality in Norfolk	▪ Would surface water and/or groundwater quality be affected during the operational stage? ▪ Would previous land uses pose a risk to the water environment as a result of development on the site. ▪ Would soils of 'best and most versatile' soil quality (grades 1, 2 and 3a) be affected or lost?
SA11: To promote sustainable use of minerals resources	▪ Distance from the processing plant at Leziate a proxy for efficient use of silica sand: <5km ++; 5-10km +; 10-15km 0; 15-20km -; >20km --

SA Objective	Factors taken into account in scoring
SA12: To reduce the risk of current and future flooding at new and existing development	▪ Would the site be affected by flooding itself (noting that the NPPG classifies sand and gravel extraction as 'water compatible' development) or result in increased flood flows elsewhere? ▪ Would restoration involving the creation of water bodies provide additional flood storage capacity?
SA13: To encourage employment opportunities and promote economic growth	▪ Would working the site provide new employment opportunities? ▪ Would working the site help contribute to economic growth generally in Norfolk (e.g. by facilitating the development of new roads, houses etc)?

Table 14 details the factors that will be taken into account in assessing policies in the Minerals and Waste Core Strategy Review and assessing strategic alternatives in the Silica Sand Review against each SA Objective.

Table 14: SA scoring factors for the assessment of Core Strategy and Development Management policies and the assessment of strategic alternatives in the Silica Sand Review

SA Objective	Factors taken into account in scoring
SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change	▪ Would implementation of the policy affect emissions to air from transport? ▪ Would implementation of the policy encourage energy efficient buildings and the provision of energy from renewable or low carbon sources?
SA2: To improve air quality in line with the National Air Quality Standards	▪ Would implementation of the policy affect air quality generally? ▪ Would implementation of the policy affect any already-designated AQMA or potentially lead to the designation of a new AQMA?
SA3: To minimise noise, vibration and visual intrusion	▪ Would implementation of the policy affect the amenity of residents?
SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion	▪ Would implementation of the policy affect (social) accessibility and social exclusion?
SA5: To maintain and enhance the character of the townscape and historic environment	▪ Would implementation of the policy affect local townscapes? ▪ Would implementation of the policy affect any Conservation Areas/listed buildings/Historic Parks & Gardens? ▪ Would implementation of the policy affect any designated archaeological sites? ▪ Would implementation of the policy potentially enable the discovery of new archaeological finds?
SA6: To protect and enhance Norfolk's biodiversity and geodiversity	▪ Would implementation of the policy affect designated ecological sites, or on species or habitats? ▪ Would implementation of the policy enhance biodiversity (e.g. creation of new target habitat on site restoration)? ▪ Would implementation of the policy affect geological/ geomorphological sites?
SA7: To promote innovative solutions for the restoration and after use of minerals sites [and waste management sites where applicable]	▪ Would implementation of the policy deliver any landscape/ ecological/ geological/ recreation/ green infrastructure benefits on restoration instead of just restoration back to agricultural land?

SA Objective	Factors taken into account in scoring
SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape	• Would implementation of the policy affect the countryside and landscape, particularly designated landscape? • Would implementation of the policy improve the quality of countryside and landscape?
SA9: To contribute to improved health and amenity of local communities in Norfolk	• Would health and amenity (including impact on the amenity when walking on footpaths) of residents/ visitors be affected by implementation of the policy? • Would implementation of the policy lead to opportunities for 'gains' (e.g. new footpaths or public open space on site restoration)?
SA10: To protect and enhance water and soil quality in Norfolk	▪ Would implementation of the policy affect surface water and/or groundwater quality? ▪ Would implementation of the policy affect soils of 'best and most versatile' agricultural land (grades 1, 2 and 3a)?
SA11: To promote sustainable use of minerals and waste resources	▪ Would implementation of the policy ensure that waste is managed as high up the waste hierarchy as practicable? ▪ Would implementation of the policy be in accordance with the proximity principle for waste? ▪ Would implementation of the policy affect the safeguarding of known mineral resources, mineral extraction sites and associated infrastructure? ▪ Would implementation of the policy affect the use of secondary and recycled aggregates? ▪ Would implementation of the policy provide a steady and adequate supply of aggregates and silica sand? ▪ Would implementation of the policy affect the highway network and road users?
SA12: To reduce the risk of current and future flooding at new and existing development	▪ Would implementation of the policy affect flood risk at minerals or waste management sites, or affect flood risk elsewhere? ▪ Would implementation of the policy lead to the creation of additional flood storage capacity?
SA13: To encourage employment opportunities and promote economic growth	▪ Would implementation of the policy provide new employment opportunities? ▪ Would implementation of the policy contribute to economic growth generally in Norfolk (e.g. by facilitating the development of new roads, houses etc)?

In the Silica Sand Review each proposed specific site, preferred area and area of search will be assessed against each SA/SEA Objective to determine

where they are likely to have a positive, neutral or negative effect. Proposed policies in the Minerals and Waste Core Strategy Review will also be assessed against each SA/SEA Objective to determine where they are likely to have a positive, neutral or negative effect. The proposed sites, areas and policies will be assessed according to short term, medium term and long term effects on the SA/SEA Objectives and will be scored against each SA Objective as follows:

++	Significant positive effect
+	Positive effect
-	Negative effect
--	Significant negative effect
0	No effect
+/-	Positive and negative effects
?	Uncertain effect

As well as primary sustainability effects, the assessment will also take into account secondary, tertiary, cumulative and synergistic effects in other areas.

8. Glossary

Air Quality Management Areas: Areas designated by local authorities because they are not likely to achieve national air quality objectives by the relevant deadlines.

Ancient woodland: An area of woodland which has had a continuous history of tree cover since at least 1600.

Area of Outstanding Natural Beauty (AONB): designated under the National Parks and Access to the Countryside Act 1949 for the purposes of preserving and enhancing their natural beauty.

Area of Search: areas where knowledge of mineral resources may be less certain but within which planning permission may be granted, particularly if there is a potential shortfall in supply. If it is not possible to designate Specific Sites, or Preferred Areas, the alternative way to plan for the steady and adequate supply of minerals is to designate Areas of Search.

Biodiversity: The variety of all life on earth (mammals, birds, fish, invertebrates, plants etc)

Conservation Area: An area designated by the Local Planning Authority under the Planning (Listed Buildings and Conservation Areas) Act 1990 as possessing special architectural or historical interest.

Core Strategy (for Minerals and Waste): This planning policy document contains the vision, objectives and strategic planning policies for minerals and waste development in Norfolk until 2026. The Minerals and Waste Core Strategy also includes Development Management policies which are used in the determination of planning applications to ensure that minerals extraction and associated development and waste management facilities can happen in a sustainable way.

Conservation Area: An area designated by the Local Planning Authority under the Planning (Listed Buildings and Conservation Areas) Act 1990 as possessing special architectural or historical interest.

County Wildlife Site: A site of local importance for wildlife. Outside SSSIs, County Wildlife Sites are the best sites for wildlife in Norfolk. Sites are designated using stringent criteria, by a committee composed of the Norfolk Wildlife Trust, Norfolk County Council, Natural England, the Norfolk Biological Records Centre, and the Norfolk Biodiversity partnership.

Cumulative Impact: The combined impacts of a number of developments on the environment, amenity, health, traffic etc.

Development Management: The process through which the Council determines whether a proposal for development should be granted planning permission, taking into account the development plan and any other material considerations.

Development Plan: This includes adopted Local Plans and neighbourhood plans and is defined in section 38 of the Planning and Compulsory Purchase Act 2004 (as amended) that set out the planning policies and proposals for the development and use of land. Decisions on planning applications must conform to the Development Plan, unless material considerations indicate otherwise.

Examination: The Local Plan will be subject to an independent examination by an independent planning inspector. The recommendations in the Inspectors report will inform the final adopted version, but are no longer legally-binding.

Geodiversity: The variety of rocks, minerals, fossils, soils and landforms, together with the natural processes which shape the landscape.

Groundwater: Water within soil, sediments or rocks below the ground surface. Water contained within underground strata is referred to as an aquifer.

Groundwater Source Protection Zone: The Environment Agency divides groundwater source catchments into four zones. These are based on the number of days taken by any pollutant to flow to the potable water abstraction borehole. Source protection Zone 1 is defined as a zone within which any contamination would reach the borehole within 50 days. This applies to groundwater at and below the watertable. This zone has a minimum 50 metre protection radius around the borehole. These zones are designed to provide control over activities taking place near boreholes which could result in contamination reaching the public water supply.

Habitats Regulations Assessment (Appropriate Assessment): *Directive 92/43/EEC (the Habitats Directive) on the Conservation of Natural Habitats and of Wild Fauna and Flora* requires an Appropriate Assessment to be undertaken to assess the impacts of a land-use plan against the conservation objectives of a European Site and to ascertain whether it would adversely affect the integrity of that site.

Heritage asset: A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.

Landbank: A stock of mineral reserves with planning permission for their extraction.

Listed building: A building or other structure officially designated as being of special architectural, historical or cultural significance using provisions under the Planning (Listed Buildings and Conservation Areas) Act 1990.. A listed building may not be demolished, extended or altered without special permission being granted by the Local Planning Authority. The Local Planning Authority must also consider if development nearby could cause adverse impacts to the listed building, and whether mitigation could address these impacts.

Local Development Scheme: Describes the Local Plan documents which the authority intends to prepare and the timetable for their preparation.

Local Planning Authority: An organisation with statutory planning powers, ie the relevant County, District, Borough or Unitary Council.

Local Plan: The plan for the future development of the local area, drawn up by the local planning authority in consultation with the community. In law this is described as the development plan documents adopted under the Planning and Compulsory Purchase Act 2004 (as amended). Current core strategies or other planning policies, which under the regulations would be considered to be development plan documents, form part of the Local Plan. The term includes old policies which have been saved under the 2004 Act.

Mineral Consultation Area: An area identified in order to ensure consultation between the relevant LPA and the Mineral Planning Authority

before certain non-mineral planning applications made within the area are determined

Mineral Safeguarding Area: An area designated by Minerals Planning Authorities which covers known deposits of minerals which are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development.

Mineral Planning Authority: An organisation with statutory planning powers relating to minerals development, in most areas the County or Unitary Council.

Mitigation: Measures to reduce, avoid or remedy any adverse impacts caused by development.

National Planning Policy Framework: This document sets out the Government's planning policies for England and was published on 27 March 2012. The NPPF must be taken into account in the preparation of Local and neighbourhood Plans, and is a material consideration in planning decisions. It states that in order to be considered sound a Local Plan should be consistent with national planning policy.

National Planning Practice Guidance: A web-based resource published by the Department for Communities and Local Government (DCLG) on 6 March 2014 and updated as needed. It is available at: http://planningguidance.planningportal.gov.uk/blog/guidance/

Permitted reserves: Saleable minerals in the ground with planning permission for extraction. Usually expressed in million tonnes.

Planning conditions: Conditions attached to a planning permission for the purpose of regulating and controlling the development.

Preferred Areas: If it is not possible to designate Specific Sites, the next way to plan for a steady and adequate supply of minerals is to designate preferred areas, which are areas of known resources where planning permission might reasonably be anticipated. Such areas may also include essential operations associated with mineral extraction.

Principal Aquifers: These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Proximity principle: The EU Waste Framework Directive (2008/98/EC) requires Member States to "establish an integrated and adequate network of waste disposal installations and of installations for the recovery of mixed municipal waste collected from private households. The network shall enable waste to be disposed of or recovered in one of the nearest appropriate installations, by means of the most appropriate methods and technologies…". The requirement for waste to be disposed of or recovered in one of the nearest appropriate installations is called the proximity principle.

Ramsar sites: Wetlands of international importance, designated under the 1971 Ramsar Convention

Restoration: Operations designed to return an area to an acceptable environmental state, whether for the resumption of the former land use or for

a new use following mineral working. Involves the reinstatement of land by contouring, the spreading of soils or soil making materials etc.

Scheduled Monuments: Nationally important monuments and archaeological areas protected under the Ancient Monuments and Archaeological Areas Act

Secondary Aquifers: These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:

Secondary A - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers;

Secondary B - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

Secondary Undifferentiated - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Setting of a heritage asset: The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.

Site Specific Allocations: Also known as Specific Sites - where viable resources are known to exist, landowners are supportive of minerals development and the proposal is likely to be acceptable in planning terms. Such sites may also include essential operations associated with mineral extraction. This is the preferred way to plan for the steady and adequate supply of minerals as it provides the necessary certainty on when and where development may take place.

Site of Specific Scientific Interest (SSSI): Sites designated by Natural England under the Wildlife and Countryside Act 1981

Special Areas of Conservation (SAC): SSSIs given special protection under the European Union's Habitats Directive, which is transposed into UK law by the Habitats and Conservation of Species Regulations 2010.

Special Protection Areas (SPA): SSSIs which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds fond in European Union countries. They are European designated sites, classified under the EC Directive on the Conservation of Wild Birds.

Statement of Community Involvement: A document that sets out a local planning authority's intended consultation strategy for different elements of the planning process. This is a requirement of the Planning and Compulsory Purchase Act 2004.

Strategic Environmental Assessment: A procedure (set out in the Environmental Assessment of Plans and Programmes Regulations 2004) which requires the formal environmental assessment of certain plans and programmes which are likely to have significant effects on the environment.

Submission: A stage of the Local Plan preparation process where the plan is 'submitted' to the Secretary of State for independent examination by a planning inspector.

Sustainability Appraisal: An evaluation process for assessing the environmental, social, economic and other sustainability effects of plans and programmes. This is a statutory requirement.

Sustainable development: Development which meets the needs of the present without compromising the ability of future generations to meet their own needs.