Norfolk County Council

# Norfolk Minerals and Waste Local Plan

# Draft Sustainability Appraisal Report –Part B

March 2022




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**Abbreviations**

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

| | |
|---|---|
| AONB | Area of Outstanding Natural Beauty |
| AQMA | Air Quality Management Area |
| ASNW | Ancient Semi-Natural Woodland |
| BGS | British Geological Survey |
| BMV | Best and Most Versatile (Agricultural Land Classification) |
| CD&E | Construction, demolition and excavation |
| C&I | Commercial and industrial |
| $CO_2$ | Carbon dioxide |
| CWS | County Wildlife Site |
| DPD | Development Plan Document |
| EEFM | East of England Forecasting Model |
| ELV | End-of-Life Vehicle |
| HGV | Heavy Goods Vehicle |
| HRA | Habitats Regulations Assessment |
| IDB | Internal Drainage Board |
| IRZ | Impact Risk Zone |
| LAA | Local Aggregate Assessment |
| LACW | Local Authority Collected Waste |
| LNR | Local Nature Reserve |
| LPA | Local Planning Authority |
| MPA | Minerals Planning Authority |
| MRF | Materials Recycling Facility |
| NCC | Norfolk County Council |
| NM&WLP | Norfolk Minerals and Waste Local Plan |
| NNR | National Nature Reserve |
| NPPF | National Planning Policy Framework |
| NPPG | National Planning Practice Guidance |
| ONS | Office of National Statistics |
| PAWS | Plantation on Ancient Woodland |
| PRoW | Public Right of Way |
| RDF | Refuse Derived Fuel |
| SA | Sustainability Appraisal |
| SAC | Special Area of Conservation |
| SEA | Strategic Environmental Assessment |
| SPA | Special Protection Area |
| SSA | Site Specific Allocations |
| SSSI | Site of Special Scientific Interest |
| WEEE | Waste electrical and electronic equipment |
| WFD | Water Framework Directive |
| WPA | Waste Planning Authority |

## Non –Technical Summary

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 (NPPF), National Planning Policy for Waste (NPPW) and the National Planning Practice Guidance (NPPG).

The adopted Norfolk Minerals and Waste Development Framework consists of three Development Plan Documents (DPDs): the 'Core Strategy and Minerals and Waste Development Management Policies DPD', the Minerals Site Specific Allocations DPD and the Waste Site Specific Allocations DPD. Together these documents contain the policies for the development and use of land for minerals s extraction and associated development and waste management facilities in Norfolk. These documents form the Local Plan for minerals and waste planning in Norfolk up to the end of 2026.

As more than five years have passed since the adoption of the documents within the existing Norfolk Minerals and Waste Development Framework, a new Norfolk Minerals and Waste Local Plan (NM&WLP) is being produced to bring the three DPDs into one Local Plan, to extend the Plan period to 2038 and to ensure the planning policies remain up to date. This process is the Minerals and Waste Local Plan review.

The NM&WLP includes a forecast of the quantities of waste that need to be planned for over the Plan period to 2038 and criteria-based policies to determine planning applications for waste management facilities. The draft Publication version of the NM&WLP does not allocate specific sites for waste management facilities because there is sufficient capacity in existing waste management facilities in Norfolk to accommodate the forecast waste arisings during the Plan period. However, a 'call for waste management sites' was carried out in 2019 and the six sites submitted were assessed in the Sustainability Appraisal (Appendix D) and were consulted on in 2019, although they are not considered appropriate to allocate in the NM&WLP.

The NM&WLP includes the forecast quantities of sand and gravel, carstone and silica sand that need to be planned for during the period to 2038, in order to provide a steady and adequate supply of minerals, and the policies to be used to determine planning applications for mineral extraction and associated development.

The Initial Consultation (2018) and the Preferred Options (2019) stages also included all the sites that were proposed for mineral extraction in response to a 'call for mineral extraction sites' carried out for the purpose of the NM&WLP, as well as four areas of search for future silica sand extraction. The draft Publication version of the NM&WLP only includes the sites that will be allocated for future mineral extraction (one Carstone site, two silica sand sites and 16 sand and gravel sites) and does not include any areas of search for silica sand.

Under the Environmental Assessment of Plans and Programmes Regulations 2004, a SEA is required to ensure that the environmental effects of the NM&WLP 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.

In accordance with the Act, SEA Regulations, and Government guidance a combined SA/SEA is being undertaken on the Minerals and Waste Local Plan. A Scoping Report published in March 2015 was the first stage (Stage A) in this process (the NM&WLP was referred to as the Core Strategy Review in the Scoping Report), but due to the time that has elapsed the Scoping Report has been reviewed to provide an up-to-date assessment for the Norfolk Minerals and Waste Local Plan, based on information available in 2021.

The SA/SEA process follows the requirements of the SEA Regulations and the National Planning Practice Guidance. The SEA/SA Scoping Report built 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 NM&WLP.

The Sustainability Appraisal Report has been published in two parts. Part A is the Scoping Report and Part B assesses the effects of alternative options for the Norfolk Minerals and Waste Local Plan.

The Scoping Report (Part A) provides an outline of the baseline information, key issues, relevant plans and programmes and SA/SEA framework and includes the following information:
• Statutory context;
• Influences of other plans and programmes;
• Sustainability baseline information;
• Issues for sustainable development; and
• Sustainability Appraisal Framework

**Policy, Plans and Programmes Review**

A review of relevant international, national and local planning policy has been undertaken as part of the SA/SEA process. The review highlights how the Norfolk Minerals and Waste Local Plan can contribute to delivering wider national and local objectives, whilst ensuring that key environmental protection objectives (such as the Wild Birds Directive and Habitats Directive) are respected.

**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 Norfolk Minerals and Waste Local Plan. 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 NM&WLP.

**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 of relevance to the NM&WLP included:

**Climate change**

• Norfolk is predicted to have warmer, drier, summers and wetter warmer winters. Sea level is predicted to rise. More extreme weather events are likely.
• Carbon dioxide and methane emissions should be reduced from minerals extraction and associated development, and waste management facilities by reducing the quality 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, Norwich and Swaffham due to traffic congestion.
• Minimise air pollution emissions from minerals extraction and associated development, from 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 planning for minerals extraction and associated development and waste management facilities, including through restoration schemes.

**Landscape**

• Gradual loss of countryside, landscape and tranquillity to development.
• The potential for minerals extraction and associated development and waste management facilities 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 development, 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 extraction and associated development and waste management 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 extraction and waste management development does 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 minimise 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
• Variable production of sand and gravel since 2008
• Gradually increasing production of silica sand
• Crushed rock for road building is mainly imported to Norfolk via rail
• 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 Environmental Assessment Regulations do 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 local planning and sustainability objectives, and review of the baseline and key issues for Norfolk.

The 13 sustainability objectives to be used in the assessment of the NM&WLP are:
1. To adapt to and mitigate the effects of climate change by reducing contributions to climate change
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 to jobs, services and facilities and reduce social exclusion
5. To maintain and enhance the character of the townscape and historic environment
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

Factors to be used in scoring each proposed site, area and policy against each SA Objective have been proposed for use in the Norfolk Minerals and Waste Local Plan.

**Alternatives**

Development of the NM&WLP has been through a number of stages, including Initial Consultation, Preferred Options and Pre-Submission (detailed in the consultation section below).

Following a 'call for mineral extraction sites' in July 2017, the sites submitted were subject to Sustainability Appraisal and all the submitted sites were contained in the Initial Consultation (2018) and in the Preferred Options document (2019) as alternative options for mineral extraction during the Plan period.

At the Initial Consultation stage in 2018 the initial assessments of the proposed sites and areas of search for future mineral extraction were published for consultation. The initial assessments included an initial conclusion regarding the suitability of the proposed Specific Sites and Areas of Search for inclusion in the NM&WLP for future mineral extraction.

The comments received in response to the Initial Consultation (2018) were been taken into account in drafting the Preferred Options (2019). The Preferred Options document also contained all of the proposed sites and areas of search for future mineral extraction, along with an assessment and conclusion regarding the suitability of these sites and areas for inclusion in the NM&WLP for future mineral extraction and a draft policy where relevant. The Preferred Options contained an assessment and conclusion regarding the suitability of six proposed waste management sites for inclusion in the NM&WLP, although none of the sites are considered appropriate to allocate. The waste management sites have also been subject to Sustainability Appraisal (Appendix D to the SA Report).

Planning policies were also contained in the Initial Consultation (2018) and in the Preferred Options document (2019). The planning policies have been subject to Sustainability Appraisal. Where there are alternative policy options, these alternatives have also been subject to Sustainability Appraisal.

The draft Publication version of the NM&WLP only includes those sites considered suitable to allocate for future mineral extraction. It also includes criteria-based policies to be used in the determination of planning applications for minerals extraction and associated development and for

waste management facilities. Where there have been any changes to the policy wording since the Preferred Options stage, the Sustainability Appraisal of the policy has been reviewed.

### Consultation

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 (which is now called the Minerals and Waste Local Plan) with statutory environmental bodies and other key stakeholders for a six week period in March and April 2015. Consultation comments have been addressed as much as possible in the subsequent stages of the SA/SEA and the development of the Norfolk Minerals and Waste Local Plan. The consultation comments received were published, along with Norfolk County Council's planning officer responses, in the Initial Consultation Feedback Report in June 2015. Due to the time that has elapsed since the original Scoping Report was produced in 2015, the Scoping Report has been updated using data available in 2021, to inform the Sustainability Appraisal.

#### Initial Consultation

The Initial Sustainability Appraisal Report Parts A and B accompanied the Initial Consultation version of the 'Norfolk Minerals and Waste Local Plan' for a six-week period of consultation. The documents were sent out to the three statutory consultees, Historic England, Environment Agency, and Natural England, and to other stakeholders and the public. Only one response was received regarding the Initial Sustainability Appraisal Report, which was from Natural England and is detailed in Section 1.6 of this SA Report. The SA and NM&WLP have been revised where necessary following this consultation response.

#### Preferred Options Consultation

The Preferred Options version of the Minerals and Waste Local Plan was subject to a six-week consultation period and was accompanied by a draft Sustainability Appraisal Report. The documents were sent to the three statutory consultees, Historic England, Environment Agency, and Natural England, and other stakeholders and the public were informed of the consultation and where the documents could be viewed. Seven response were received regarding the draft Sustainability Appraisal Report, which are detailed in section 1.6 of this SA Report. The SA and NM&WLP have been received where necessary following these consultation responses.

The responses received to the Preferred Options consultation informed the Pre-Submission version of the Norfolk Minerals and Waste Local Plan, which will be published for representations on soundness and legal compliance in 2022, prior to its submission to the Secretary of State, for examination by an independent Planning Inspector.

The Pre-Submission version of the NM&WLP will be published for a six-week representations period and be accompanied by this Sustainability Appraisal Report. The three statutory consultees, Historic England, Natural England and the Environment Agency, as well as other stakeholders and the public, will be informed of the representations period and where the documents can be viewed. Representations received at the Pre-Submission stage will be documented and provided to the Planning Inspectorate when the NM&WLP is submitted for examination.

## Norfolk Minerals and Waste Local Plan Appraisal

### Developing Strategic Alternatives

Development of the Minerals and Waste Local Plan will go through a number of stages, including Initial Consultation, Preferred Options and Pre-Submission.

Following a 'call for mineral extraction sites' in July 2017, the sites submitted have been subject to Sustainability Appraisal and all the submitted sites were contained in the Initial Consultation (2018)

and in the Preferred Options document (2019) as alternative options for mineral extraction during the Plan period.

At the Initial Consultation stage (2018) the initial assessments of the proposed sites and areas of search for future mineral extraction were published for consultation. The assessments included a conclusion regarding the suitability of the proposed specific sites and areas of search for inclusion in the NM&WLP for future mineral extraction. The Sustainability Appraisal has helped to determine the conclusion for each proposed site. At the Preferred Options stage (2019) the assessments and conclusions for the sites and areas were updated where necessary, taking into account the comments received at the Initial Consultation stage and was published for consultation.

Following a 'call for waste management sites' in January 2019, the sites submitted were subject to Sustainability Appraisal (Appendix D to this report). All the submitted sites were contained in the Sustainability Appraisal accompanying the Preferred Options document (2019) as alternative options for waste management during the Plan period.

Planning policies were also contained in the Initial Consultation (2018) and the Preferred Options document (2019). The planning policies have been subject to Sustainability Appraisal. At the Preferred Options stage (2019) the assessments and conclusions for the policies was updated where necessary, taking into account the comments received at the Initial Consultation stage and was published for consultation.

At the Pre-Submission Publication stage, the assessments and conclusions for the proposed policies, sites and areas were updated where necessary, taking into account the comments received at the Preferred Options stage. The assessments of policies are in Appendix A to this report, the assessment of proposed minerals sites and areas are in Appendix B to this report and the assessment of proposed waste management sites are in Appendix D to this report.

Where there are alternative policy options, these alternatives have also been subject to Sustainability Appraisal. The policies where alternative options have been considered are:

WP1: Waste management capacity to be provided

WP2: Spatial strategy for waste management facilities

MP1: Provision for minerals extraction

MP2: Spatial Strategy for minerals extraction

These policies contain the quantity of minerals (MP1) and waste (WP1) to plan for and contain the spatial strategy for the location of mineral extraction sites (MP2) and waste management facilities (WP2). These strategic alternative options were consulted on through the Initial Consultation stage (2018) and the Preferred Options (2019) and have also been subject to sustainability appraisal. The comments received in response to the Initial Consultation and the Preferred Options Consultation and the assessment in the sustainability appraisal has helped to determine the proposed policy wording.

**Likely significant environmental effects**

The proposed specific sites and defined areas of search have been assessed against the 13 SA/SEA objectives to determine whether they would have positive, neutral or negative effects during the extraction phase and also post extraction. The effects are summarised in Table 6.1 of this report and vary by site, depending on the location of the proposed site in relation to planning constrains (including designated landscapes, designated ecological sites, heritage assets and sensitive receptors to amenity impacts).

The proposed planning policies have also been assessed against the 13 SA/SEA objectives to determine whether they would have positive, neutral or negative effects in the short, medium and long term. The effects are summarised in Table 6.2 of this report.

### Mitigation measures

In accordance with SA guidance, measures to prevent, reduce or offset significant adverse effects of implementing the Minerals and Waste Local Plan have been considered based on the findings of the policy appraisals and proposed site appraisals. Typical mitigation measures recommended include requiring specific HGV routing, restoration to specified biodiversity habitats and the need for advanced screen-planting of trees. Appropriate location of mineral extraction sites and waste management facilities is the most significant way that potential impacts can be mitigated.

### Monitoring of significant effects

A draft monitoring regime has been established in order to monitor the effects implementation of the plan has on sustainability. To monitor effects on the 13 SA objectives, a total of 38 indicators will be monitored with the results published in the Monitoring Report.

# 1. Introduction

## 1.1 Terms of Reference

Under the Environmental Assessment of Plans and Programmes Regulations 2004, a SEA is required to ensure that the environmental effects of the Norfolk Minerals and Waste Local Plan 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. The Scoping Report is Stage A in the SEA/SA process, and the Sustainability Appraisal Report (Part B) is stage B in the SEA/SA process. Information on the legislative requirements and approach are contained within Section 2 of the 'Initial Sustainability Appraisal (Part A) Scoping' document.

## 1.2 Purpose of the Draft Sustainability Appraisal Report (Part B)

The 'Sustainability Appraisal (Part A) Scoping' meets the requirements of Stage A of an SEA as required by the Regulations. Part A presents information on:
• the review of relevant policies, plans and programmes,
• baseline environmental, social and economic information and key issues for Norfolk,
• sets the context and objectives for the SEA/SA Framework

The 'Draft Sustainability Appraisal Report (Part B)' meets the requirements of Stage B of an SEA "developing and refining alternatives and assessing effects" as required by the Regulations. Part B presents information on:
• the Norfolk Minerals and Waste Local Plan strategic options;
• the results of the appraisal to predict the effects of the alternatives for the Minerals and Waste Local Plan;
• the evaluation of the effects and alternatives for the Minerals and Waste Local Plan;
• recommendations to mitigate adverse effects and maximise benefits;
• the proposed monitoring framework.

Together, Parts A and B form a Sustainability Appraisal Report to fulfil the requirements of the Environmental Report as required by the Environmental Assessment Regulations. The SA Report on the Minerals and Waste Local Plan is a key output of the appraisal process, presenting information on the effects of the Minerals and Waste Local Plan.

## 1.3 Links with wider studies - Habitats Regulations Assessment

Under the Conservation of Habitats and Species Regulations 2017 as amended (known as the Habitats Regulations), a Habitats Regulations Assessment (HRA) is required where a plan may give rise to significant effects on the national sites network.

Special Protection Areas (SPAs), Special Areas of Conservation (SACs) in the UK no longer form part of the EU's Natura 2000 ecological network. The 2019 Regulations have created a national site network on land and at sea including both the inshore and offshore marine areas in the UK. The national site network includes existing SACs and SPAs and new SACs and SPAs designated under these Regulations. Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.

Within Norfolk there are a number of SPAs and SACs and therefore a HRA is required. A HRA Task 1 'Test of Likely Significance' has been undertaken for the Minerals and Waste Local Plan 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 Minerals and Waste Local Plan review processes and will feed into each other.

### 1.4 Limitations of the Sustainability Appraisal Report (Part B)

Norfolk County Council relied on published data and information provided by others (as well as data obtained by NCC) in the production of this SA Report (Part B). 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 the Scoping Report (Part A) was the most up-to-date information available when it was produced; however, it is possible that conditions described in the Scoping Report may change over time. The baseline has been updated during the SEA/SA process and it is likely to be updated for post-adoption monitoring requirements as new information becomes available or other information presents itself.

### 1.5 Structure of the SA Report (Part B)

The SA Report (Part B) contains stage B of the SA/SEA process "developing and refining alternatives and assessing effects" and 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 presents the SA/SEA objectives to be used to assess the Minerals and Waste Local Plan and alternatives (SA/SEA Task A4);

• Section 3 presents the findings from the compatibility test between the Minerals and Waste Local Plan Review strategic objectives and the SA/SEA objectives (SA/SEA Task B1);

• Section 4 presents the details of the Minerals and Waste Local Plan strategic options considered (SA/SEA Task B2);

• Section 5 presents the results of the appraisal to predict the effects of the Minerals and Waste Local Plan (SA/SEA Task B3);

• Section 6 presents the evaluation of the effects of the Minerals and Waste Local Plan (SA/SEA Task B4);

• Section 7 presents the recommendations to mitigation adverse effects and maximise benefits of the Norfolk Minerals and Waste Local Plan (SA/SEA Task B5);

• Section 8 provides details of the proposed monitoring framework linked to specific indicators (SA/SEA Task B6).

Stage A of the SA/SEA Process "setting the context and objectives, establishing the baseline and deciding on the scope" is contained within the 'Sustainability Appraisal Report - Part A Scoping' document, which has been updated with information available in 2021 and is being published along with this document 'Sustainability Appraisal - Part B', which contains stage B of the SA/SEA process.

## 1.6 Previous Consultation Stages

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 (which is now called the Minerals and Waste Local Plan) with statutory environmental bodies and other key stakeholders for a six week period in March and April 2015. Consultation comments have been addressed as much as possible in the subsequent stages of the SA/SEA and the development of the Norfolk Minerals and Waste Local Plan. The consultation comments received were published, along with Norfolk County Council's planning officer responses, in the Initial Consultation Feedback Report in June 2015. Due to the time that has elapsed since the original Scoping Report was produced in 2015, the Scoping Report has been updated using data available in 2021, to inform the Sustainability Appraisal.

### Initial Consultation

The Initial Sustainability Appraisal Report Parts A and B accompanied the Initial Consultation version of the 'Norfolk Minerals and Waste Local Plan' for a six-week period of consultation. The documents were sent out to the three statutory consultees, Historic England, Environment Agency, and Natural England, and to other stakeholders and the public. Only one response was received regarding the Initial Sustainability Appraisal Report, which was from Natural England as follows:

**(Comment)** Representation ID: 93217 Respondent: **Natural England (Ms L Oliver) [1874]**

"Natural England is satisfied that the SA objectives, assessment methodology and framework generally accord with the requirements of the Planning and Compulsory Purchase Act 2004 and the Strategic Environmental Assessment Regulations. The future conclusions and recommendations of the revised HRA will need to be incorporated into later revisions of the SA report, and be reflected in the allocations and policies of the Local Plan.

The Government expects an 'environmental net gain' principle to be embedded into development including minerals and waste. A good measure of the effectiveness of the M&WPR in delivering this would be to monitor annually the type and area of new habitats created or enhanced post restoration. It may be helpful to include the following definition of GI:

Green Infrastructure is the strategic network of multi-functional, linked green and blue spaces, both new and existing, urban and rural, which delivers a range of benefits for people and wildlife. The network is formed by individual green infrastructure components at different scales, from street trees, green roofs, and sustainable drainage, to allotments, nature conservation sites and country parks. These assets may be physically and visually connected to one another by linear features such as hedgerows, public rights of way, cycle routes, rivers and watercourses to form a green infrastructure network.

Individual elements of the green infrastructure network can serve a useful purpose at a range of scales without being connected. However, when green infrastructure components are linked together to form green networks, further combined benefits can be achieved at a strategic level. These direct and indirect benefits of green infrastructure have been termed 'ecosystem services' and are derived from physical natural assets known as 'natural capital'. Development can impact on the extent and ability of natural capital to provide ecosystem services. To ensure that these benefits are delivered, green infrastructure must be protected, well planned and managed."

The SA and NM&WLP have been revised where necessary following this consultation response.

### Preferred Options Consultation

The Preferred Options version of the Minerals and Waste Local Plan was subject to a six-week consultation period and was accompanied by a draft Sustainability Appraisal Report. The documents were sent to the three statutory consultees, Historic England, Environment Agency, and Natural England, and other stakeholders and the public were informed of the consultation and

where the documents could be viewed. Seven consultation responses were received regarding the draft Sustainability Appraisal Report:

**(Comment)** Representation ID: **98976** Respondent: **Broads Authority [16282]**

"SA Part A Scoping
Page 31 needs a very big update. Core Strategy, DM and Sites not in place any more.
Local Plan adopted May 2019, Flood Risk SPD - most recent is 2017, Broads Plan is 2017.
Seems relevant to refer to our dark skies data and policy
Please note: The Broads Authority has adopted a new Local Plan. The policies in the Core Strategy, Development Management and Site Specific documents are all superceded and not in place any more.**"**

**NCC Planning Officer response to representation 98976:** Noted. The Scoping Report has been updated using data available in 2021, including the most recent Local Plans and SPDs.

**(Comment)** Representation ID: **98975** Respondent: **Broads Authority [16282]**

"SA - Part B 4.5 - did you consider a zone from the Broads?"

**NCC Planning Officer response to representation 98975:** No, a zone from the Broads was not considered because the silica sand resource is only found in very limited areas of West Norfolk. Therefore, there was no need to exclude the Broads from the areas of search for silica sand because there are no deposits of silica sand near the Broads.

**(Support)** Representation ID: **98886** Respondent: **Natural England [1874]**

"Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

We are satisfied, and agree, with the findings of both of the above Sustainability Appraisal (SA) and Habitats Regulations Assessment documents, both are thorough and robust. My only comment in regard to the SA is that it would be good under Table 8.1 under SA6: To protect and enhance Norfolk's biodiversity and geodiversity, to include an indicator which demonstrates how the Local Plan is contributing to biodiversity net gain by recording the area of new habitats created following the restoration of allocated sites.

Otherwise, I'd just like to reiterate the remarks I made in response to the Initial Options stage, that you and your team are to be congratulated on the quality of the consultation documents that have been produced. Natural England considers that the M&WLPR undertaken to date has been detailed, comprehensive and written in accordance with current legislation and policy."

**NCC Planning Officer response to representation 98886:** Noted. An additional monitoring indicator has been added as suggested.

**(Object)** Representation ID: **98823** Respondent: **Historic England [17619]**

"We do not have the capacity to review the Sustainability Appraisal report in any detail but did note on quickly skimming the report some surprising conclusions in the report. For example in relation to site MIN 40 - land east of Grandcourt Farm, East Winch where it was concluded that there would be 'No effects expected during the extraction phase' despite a grade II* listed church being located just 50m from the site boundary.

We consider that with such proximity there is likely to be some effects on the setting of this asset. On this brief observation we must question the some of the assessment in the SA."

**NCC Planning Officer response to representation 98823:** For site MIN 40 the score for Sustainability Appraisal objective SA5 (to maintain and enhance the character and townscape and historic environment) was - - (significant negative effect). The statement 'no effects expected during the extraction phase' was made in relation to Scheduled Monuments, Conservation Areas and

Historic Parks and Gardens and does not apply to the effect on the nearest listed building. For the assessment of the effect on listed buildings during the extraction phase, the SA says "A Heritage Statement would be required to support any future planning application. The heritage statement should identify potential impacts to heritage assets and suggest appropriate mitigation, which may include identification of areas where mineral extraction would be inappropriate."

**(Comment)** Representation ID: **98916** Respondent: **Campaigners Against Two Silica Sites [19437]**

"* Comment on Sustainability Appraisal Report (SAR) Part A - Scoping (2015). Specifically included here section 2.2 Approach to the SA/SEA Process
o 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.
Nothing in the NCC Silica Sand Review addresses the aims stated in section 2.2 with respect to 'alternative options for delivering sustainable minerals development in Norfolk, or 'further enhance .... economic effects'. Only an up to date, efficient glass recycling programme for Norfolk will address the aims stated in the SAR section 2.2. At this moment the M&WLP fails this section."

**NCC Planning Officer response to representation 94916:** The Silica Sand Review referred to in the 2015 Scoping Report has been completed and was examined and adopted in 2017. Norfolk County Council as the Waste Disposal Authority is responsible for the provision of Household Waste Recycling Centres in Norfolk and for the management of the Local Authority Collected Waste that is not recycled. Glass is collected and recycled at the HWRCs and from the kerbside of properties in Norfolk, as well as through 'bring banks'. The glass collected through these methods in Norfolk is sent to existing glass recycling facilities located elsewhere in the UK. The NM&WLP contains criteria-based policies which would be used to determine planning applications for waste management facilities including glass recycling. In terms of silica sand, National Planning Practice Guidance states that the required stock of permitted reserves for each silica sand site is based on the average of the previous 10 year sales; it does not take into account any other supply options (such as recycled materials).

**(Object)** Representation ID: **94928** Respondent: individual **[17796]**

"Without a sound glass recycling policy/plan the NCC M&WLP fails their own sustainability objectives SA1, SA3, SA4, SA5. SA6, SA8, SA9, SA11 and SA13 on pg 9 of the Sustainability Appraisal Report - Part A- Scoping (Oct 2015) and pgs 15-16 of Part B (Jun 2019)."

**NCC Planning Officer response to representation 94928:** Objection noted. See response to representation 94916 above.

**(Object)** Representation ID: **94691** Respondent: individual **[17797]**

"The plan is not sound. Without a sound glass recycling policy/plan Including flat glass recycling NCC fails their own sustainability objectives SA1, SA3, SA4, SA5. SA6, SA8, SA9, SA11 and SA13 on pg 9 of the Sustainability Appraisal Report - Part A- Scoping (Oct 2015) and pgs 15-16 of Part B (Jun 2019)."

**NCC Planning Officer response to representation 94691**: Objection noted. See response to representation 94916 above.

### 1.7 Pre-Submission Representations stage

The responses received to the Preferred Options consultation informed the Pre-Submission version of the Norfolk Minerals and Waste Local Plan, which will be published for representations on soundness and legal compliance in 2022, prior to its submission to the Secretary of State, for examination by an independent Planning Inspector. The Pre-Submission version of the NM&WLP will be published for a six-week representations period and be accompanied by this Sustainability Appraisal Report. The three statutory consultees, Historic England, Natural England and the Environment Agency, as well as other stakeholders and the public, will be informed of the representations period and where the documents can be viewed. Representations received at the Pre-Submission stage will be documented and provided to the Planning Inspectorate when the NM&WLP is submitted for examination.

All information on the Pre-Submission Publication stage will be available on the County Council's website at www.norfolk.gov.uk/nmwdf (on the Minerals and Waste Local Plan Review page) and respondents will be able to make direct online responses.

The consultation documents will be available for public inspection, free of charge, within normal opening hours, at:

- Norfolk County Council, County Hall, Martineau Lane, Norwich, NR1 2DH
- Breckland District Council, Elizabeth House, Walpole Loke, East Dereham, NR19 1EE
- Broadland District Council, Thorpe Lodge, Yarmouth Road, Norwich, NR7 0DU
- Great Yarmouth Borough Council, Town Hall, Great Yarmouth, NR30 2QF
- Borough Council of King's Lynn and West Norfolk, King's Court, Chapel Street, King's Lynn, PE30 1EX
- North Norfolk District Council, Holt Road, Cromer, NR27 9EN
- Norwich City Council, City Hall, Bethel Street, Norwich, NR2 1NH
- South Norfolk Council, South Norfolk House, Swan Lane, Long Stratton, NR15 2XE
- The Broads Authority, Yare House, 62-64 Thorpe Road, Norwich, Norfolk, NR1 1RY

The preferred method of submitting representations is by using the County Council's online consultation system to make the comments directly at https://norfolk.oc2.uk

However, emails and letters and also acceptable and the relevant contact details are as follows:

Post to: Planning Services, CES Department, Norfolk County Council, County Hall, Martineau Lane, Norwich, NR1 2DH

Email: LDF@norfolk.gov.uk

Please note that representations cannot be treated as confidential and will be published on the consultation website and provided to the Planning Inspectorate when the NM&WLP is submitted for examination.

## 2. Task A4: Scoring of SA Objectives

The following tables are also included in the 'Initial Sustainability Appraisal – Part A Scoping' as part of Task A4.

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 three tables of SA Objectives, one for the assessment of specific sites and areas of search for mineral extraction, one for the assessment of specific sites for waste management facilities and one for the assessment of planning policies in the Minerals and Waste Local Plan.

Table 1 details the factors that will be taken into account in assessing the proposed planning policies in the Minerals and Waste Local Plan. The planning policies cover: general issues relevant to both minerals and waste management developments, minerals specific policies and waste management specific policies. The Sustainability Appraisal assessments for the policies will be divided into three: short term, medium term and long term.

Table 2 details the factors that will be taken into account in assessing proposed specific site allocations and areas of search for mineral extraction in the Norfolk Minerals and Waste Local Plan. (This is not an exhaustive list – individual sites or areas of search 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 3 details the factors that will be taken into account in assessing proposed specific site allocations for waste management facilities in the NM&WLP (this is not an exhaustive list – individual sites may have individual elements to be taken into account). All of the waste sites are proposed as permanent facilities. Therefore, the Sustainability Appraisal assessments only contain one score because it is considered that the short, medium and long term effects will be similar for a permanent development.

**Table 1: SA scoring factors for the assessment of policies**

| 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?<br>▪ 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?<br>▪ 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? |

| SA Objective | Factors taken into account in scoring |
|---|---|
| SA5: To maintain and enhance the character of the townscape and historic environment | ▪ Would implementation of the policy affect local townscapes?<br>▪ Would implementation of the policy affect any Conservation Areas/listed buildings/Historic Parks & Gardens?<br>▪ Would implementation of the policy affect non-designated heritage assets?<br>▪ Would implementation of the policy affect any designated archaeological sites or any unknown archaeological sites?<br>▪ 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?<br>• Would implementation of the policy enhance biodiversity (e.g. creation of new target habitat on site restoration)?<br>• Would implementation of the policy affect geological/ geomorphological assets? |
| 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? |
| 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?<br>• 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?<br>• Would implementation of the policy lead to any opportunities for 'gains' (e.g. new footpaths or public open space on restoration)? |
| SA10: To protect and enhance water and soil quality in Norfolk | ▪ Would implementation of the policy affect surface water and/or groundwater?<br>▪ 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?<br>▪ Would implementation of the policy be in accordance with the proximity principle for waste?<br>▪ Would implementation of the policy affect the safeguarding of known mineral resources, mineral extraction sites and associated infrastructure?<br>▪ Would implementation of the policy affect the use of secondary and recycled aggregates?<br>▪ Would implementation of the policy provide a steady and adequate supply of aggregates and silica sand?<br>▪ Would implementation of the policy affect the highway network and road users? |

| SA Objective | Factors taken into account in scoring |
|---|---|
| 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 increase flood risk elsewhere?<br>▪ 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?<br>▪ Would implementation of the policy contribute to economic growth generally in Norfolk (e.g. by facilitating the development of new roads, houses etc)? |

**Table 2: 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 urban areas and main towns or (existing processing plant for silica sand) as a general proxy for $CO_2$ emissions: <5km ++; 5- 10km +; 10-15km 0; 15-20km -; >20km --<br>▪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?<br>Sensitive receptors: over 250m 0, between 100 to 250m -, within 100m - - |
| 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? |
| SA5: To maintain and enhance the character of the townscape and historic environment | ▪ Would working the site impact on local townscapes?<br>▪ Would working the site impact adversely on any Conservation Areas/listed buildings/Historic Parks & Gardens?<br>▪ Would working the site impact on non-designated heritage assets?<br>▪ Would working the site impact adversely on any designated archaeological sites?<br>▪ Would working the site potentially impact on unknown archaeological sites?<br>▪ Would working the site potentially enable the discovery of new archaeological finds?<br>▪ Heritage assets: 0ver 500m 0, between 250m to 500m -, under 250m -- |
| 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?<br>• Would working the site allow access to useful geological/ geomorphological assets?<br>• Would appropriate restoration offer opportunities for ecological gains? |

| SA Objective | Factors taken into account in scoring |
|---|---|
| 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?<br>• 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?<br>• 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?<br>▪ Would previous land uses pose a risk to the water environment as a result of development on the site?<br>▪ 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 urban areas and main towns (or existing processing plant for silica sand) as a proxy for efficient use of mineral: <5km ++; 5- 10km +; 10-15km 0; 15-20km -; >20km -- |
| 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?<br>▪ 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?<br>▪ Would working the site help contribute to economic growth generally in Norfolk (e.g. by facilitating the development of new roads, houses etc)? |

**Table 3: SA scoring factors for the assessment of sites for waste management facilities**

| 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 urban areas and main towns as a general proxy for $CO_2$ emissions: <5km ++; 5- 10km +; 10-15km 0; 15-20km -; >20km -- |
| SA2: To improve air quality in line with the National Air Quality Standards | ▪ Would the proposed waste management 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 proposed waste management site be close enough to dwellings to impact adversely on the amenity of residents?<br>Sensitive receptors: over 250m 0, between 100 to 250m -, within 100m - - |

| SA Objective | Factors taken into account in scoring |
|---|---|
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | ▪ Would development of the proposed waste management site have any impact on (social) accessibility and social exclusion? |
| SA5: To maintain and enhance the character of the townscape and historic environment | ▪ Would development of the site impact on local townscapes?<br>▪ Would development of the site impact adversely affect any Conservation Areas/listed buildings/Historic Parks & Gardens?<br>▪ Would development of the site impact on non-designated heritage assets?<br>▪ Would development of the site impact adversely on any designated archaeological sites?<br>▪ Would the site potentially impact on unknown archaeological sites?<br>▪ Heritage assets: 0ver 500m 0, between 250m to 500m -, under 250m -- |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | • Would development of the site impact adversely on designated ecological or geological/geomorphological sites (through damage), or on species or habitats? |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites [and waste management sites where applicable] | • Would development of the site deliver any landscape/ ecological/ geological/ recreation / green infrastructure benefits on restoration instead of just restoration back to agricultural land? |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | • Would development of the site adversely affect the countryside and landscape, particularly designated landscape?<br>• Would development of the site 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? |
| SA10: To protect and enhance water and soil quality in Norfolk | • Would surface water and/or groundwater quality be affected by development of the site?<br>• Would previous land uses pose a risk to the water environment as a result of development on the site?<br>• 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 and waste resources | • Would development of the site ensure that waste is managed as high up the waste hierarchy as practicable?<br>• Would development of the site be in accordance with the proximity principle for waste?<br>• Distance from urban areas and main towns as a proxy for efficient use of waste: <5km ++; 5- 10km +; 10-15km 0; 15-20km -; >20km -- |
| SA12: To reduce the risk of current and future flooding at new and existing development | • Would the site be affected by flooding itself or result in increased flood flows elsewhere |

| SA Objective | Factors taken into account in scoring |
|---|---|
| SA13: To encourage employment opportunities and promote economic growth | ▪ Would development of the site provide new employment opportunities?<br>▪ Would development of the site contribute to economic growth generally in Norfolk? |

In the SA of the Minerals and Waste Local Plan each proposed policy, specific site 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. The strategic alternatives in the Minerals and Waste Local Plan 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 strategic alternatives, specific sites and areas of search have been 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.

## 3. Task B1: testing the Norfolk Minerals and Waste Local Plan Objectives against the SA/SEA Objectives

The draft Strategic Objectives for minerals and waste were consulted on in the Initial Consultation (2018) and the Preferred Options Consultation (2019) of the Minerals and Waste Local Plan review process and the Strategic Objectives to be contained in the draft Publication version of the NM&WLP are detailed below. The compatibility of these strategic objectives with the SA/SEA Objectives (which are detailed in Tables 1 and 2 of the previous section) have been assessed using a compatibility matrix as shown in Table 4.

### Draft Waste Strategic Objectives

**WSO1:** Support the prevention and minimisation of waste generation in line with the Waste Hierarchy, and where waste cannot be avoided, maximise the recovery value from waste.

**WSO2:** To support an increase in the proportion and the quantity of waste that is re-used, recycled and recovered within Norfolk.

**WSO3:** To safeguard and encourage opportunities to enhance existing waste infrastructure which provide an important contribution to waste management at sites that serve Norfolk. The 'agent of change' principle will be applied to any new proposed development impacting on safeguarded sites.

**WSO4:** To achieve net self-sufficiency in waste management throughout the Plan period, where practicable.

**WSO5:** To make provision to meet the need for new waste management facilities through the inclusion of 'criteria-based' locational policies.

**WSO6:** To reduce greenhouse gas emissions, primarily by moving waste up the hierarchy to minimise the need for landfill and by minimising waste transport and distance by locating new waste facilities as close as practicable to the origin of the waste.

**WSO7:** To ensure waste facilities and their proposed locations are sustainably designed, constructed and operated to reduce potential adverse effects on human health, amenity and the natural, built and historic environment and to contribute to achieving net zero carbon emissions. All developments will provide biodiversity net gains.

**WSO8:** Recognise the importance of the waste sector in the local economy as a generator of employment and its provision of infrastructure which supports businesses and communities.

### Draft Minerals Strategic Objectives

**MSO1:** To provide a steady and adequate supply of aggregate minerals by identifying adequate mineral extraction sites within Norfolk sufficient to meet the forecast need, based on the Local Aggregate Assessment, and safeguarding existing infrastructure.

**MSO2:** To provide a steady and adequate supply of industrial minerals by identifying adequate mineral extraction sites within Norfolk and through the inclusion of criteria-based 'locational' policies, sufficient to meet the forecast need and safeguarding existing infrastructure.

**MSO3:** To encourage the sustainable use of minerals by utilising secondary and recycled aggregates which will reduce the reliance on primary won aggregates and safeguarding existing infrastructure.

**MSO4:** To safeguard silica sand, carstone, and sand and gravel resources for future use. Avoiding unnecessary sterilisation by encouraging the extraction of minerals prior to other development taking place where practicable and using minerals in construction on the land from which they are extracted. The 'agent of change' principal will be applied to any new proposed development impacting on safeguarded areas or sites.

**MSO5:** To promote the sustainable transport of minerals by rail, road and water, including the safeguarding of railheads and wharfs for the import of minerals to and export of minerals to and export of minerals from Norfolk to minimise carbon emissions. The 'agent of change' principle will be applied to any new proposed development impacting on safeguarded sites.

**MSO6:** To ensure the sustainable and expedient delivery of mineral extraction while protecting people from harm, positively contributing to the natural, built and historic environments and mitigating against unacceptable adverse cumulative impacts.

**MSO7:** To ensure potential impacts on the amenity of those people living in proximity to minerals development are effectively controlled, minimised and mitigated to acceptable levels.

**MSO8:** To ensure that mineral development addresses and minimises the impacts it will have on climate change by: minimising greenhouse gas emissions during the winning, working and handling of minerals, providing for sustainable patterns of minerals transportation where practicable, and integrating features consistent with climate change mitigation and adaption into the design of restoration and aftercare proposals.

**MSO9:** To positively contribute to the natural, built and historic environments with high quality, progressive and expedient restoration to achieve a beneficial after use. The restoration scheme and aftercare will protect and enhance the environment, including landscape improvements and the provision of biodiversity net gains.

**MSO10:** To increase public access to the countryside and enhance biodiversity through enhancing the amenity value of land when restoring extraction sites

**Table 4: Compatibility between SA/SEA Objectives and M&W LPR Objectives**

| Objectives | SA1 | SA2 | SA3 | SA4 | SA5 | SA6 | SA7 | SA8 | SA9 | SA10 | SA11 | SA12 | SA13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WSO1 | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | + | + | 0 | + |
| WSO2 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | + |
| WSO3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | +/- | + | 0 | + |
| WSO4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | + |
| WSO5 | 0 | 0 | + | 0 | + | + | 0 | + | + | + | 0 | + | + |
| WSO6 | + | + | + | 0 | 0 | + | 0 | 0 | + | 0 | + | 0 | + |
| WSO7 | + | + | + | 0 | + | + | + | + | + | + | 0 | + | 0 |
| WSO8 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | + |
| MSO1 | 0 | 0 | 0 | 0 | + | +/- | 0 | 0 | +/- | 0 | + | 0 | + |
| MSO2 | 0 | 0 | 0 | 0 | + | +/- | 0 | 0 | +/- | 0 | + | 0 | + |
| MSO3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | + |
| MSO4 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | + |
| MSO5 | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 |
| MSO6 | + | + | + | 0 | + | + | + | + | + | + | + | + | 0 |
| MSO7 | + | + | + | 0 | 0 | 0 | 0 | 0 | + | 0 | + | 0 | 0 |
| MSO8 | + | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | + | 0 |
| MSO9 | 0 | 0 | + | + | + | + | + | + | + | 0 | 0 | + | + |
| MSO10 | 0 | 0 | + | + | + | + | + | + | + | + | 0 | 0 | + |

**Key**

++ = Significant positive effect

\+ = Positive effect

\- = Negative effect

-- = Significant negative effect

0 = No effect

+/- = Positive and negative effects

? = Uncertain effect

In general, there is a high level of compatibility between the Minerals and Waste Local Plan objectives and the SA objectives; in that, if the objectives are met, they will have either a neutral or positive effect on meeting the Sustainability Appraisal objectives.

Objective MSO1 has tensions with a couple of the SA objectives, because although aggregate minerals extraction may have impacts on the ecology of a site, it does provide positive opportunities for geological and archaeological investigations. Similar tensions exist for MSO2 because this objective relates to the extraction of industrial minerals.

# 4. Task B2: Developing Strategic Options

## 4.1 Options development

The first stage in the Minerals and Waste Local Plan review process was a 'call for mineral extraction sites' in July 2017. A 'call for waste management sites' took place in January 2019.

The first public consultation stage was the 'Initial Consultation' in June/August 2018. The current stage of the NM&WLP is the Preferred Options public consultation. The next public consultation stage was the 'Preferred Options Consultation' in September/October 2018.

The next stage in the NM&WLP will be a formal representations period on the Pre-Submission version of the NM&WLP, prior to submission to the Secretary of State for Examination in Public.

The comments received in response to the Initial Consultation and the Preferred Options consultation have informed the Pre-Submission version of the NM&WLP.

Following a 'call for mineral extraction sites' in July 2017, the sites submitted have been subject to Sustainability Appraisal and all the submitted sites from the Initial consultation (which had not been withdrawn or granted planning permission) were contained in the Preferred Option document, together with MIN213 (Stratton Strawless) which was submitted for future sand and gravel extraction, in response to the Initial Consultation. All these sites are considered as alternative options for mineral extraction during the Plan period. The site assessment tables are contained in Appendix B to this report.

Following a 'call for waste management sites' in January 2019, the sites submitted were subject to Sustainability Appraisal (Appendix D). All the submitted sites are contained in the Sustainability Appraisal (this document) accompanying the Publication document (2022) as alternative options for waste management during the Plan period.

The Initial Consultation (2018) contained an assessment of each of the proposed sites and areas of search for future mineral extraction. The Preferred Options (2019) contained an assessment of the proposed sites and areas of search for mineral extraction, and the proposed sites for waste management facilities. These assessments included a conclusion regarding the suitability of the proposed specific sites and areas of search for inclusion in the NM&WLP for future mineral extraction, and the proposed sites for waste management facilities. Additional information for some sites was received as part of the Initial consultation process which was considered in the assessments at the Preferred Options stage. Where additional information was received as part of the Preferred Options stage, this has been taken into account in the draft Publication document. The draft Publication document only includes the sites that are to be allocated for future mineral extraction during the Plan period. No waste sites are allocated in the draft Publication document.

Planning policies were contained in the Initial Consultation document and the Preferred Options Consultation document. Some of these policies have been amended in the draft Publication document following consultation responses received at these earlier stages. The planning policies have been subject to Sustainability Appraisal and the policy assessment tables are contained in Appendix A to this report. Where there are alternative policy options, these alternatives have also been subject to Sustainability Appraisal, as detailed below and were consulted on through the Initial Consultation stage. The draft Publication document contains the final policy wording. The policies where alternative options have been considered are:

WP1: Waste management capacity to be provided

WP2: Spatial strategy for waste management facilities

MP1: Provision for minerals extraction

MP2: Spatial Strategy for minerals extraction

These policies contain the quantity of minerals (MP1) and waste (WP1) to plan for and contain the spatial strategy for the location of mineral extraction sites (MP2) and waste management facilities (WP2).

### 4.2 Strategic Alternatives to Policy WP1: Waste management capacity to be provided

**Local Authority Collected Waste:**

Policy WP1 has forecast the growth of Local Authority Collected waste during the Plan period on a growth scenario where the current arisings of waste per household (approximately 1 tonne per year) are multiplied by the number of new homes planned for in the Local Authorities' Local Plans. Over the Plan period to 2038 this is an average growth rate of 1.28% per annum. The alternative options for forecasting arising of Local Authority Collected Waste are as follows:

Based on past household growth which results in a growth rate of over 1.5% per annum.

OR

Based on the ONS prediction of household and population growth of 0.88% per annum.

OR

Based on the growth rate of 0.97% per annum (based on the Norfolk Strategic Housing Market Assessments).

**Commercial and Industrial Waste:**

An alternative option is to forecast C&I waste growth over the Plan period at 1.5% per annum instead of the 1.35% per annum used in Policy WP1, which is based on the growth forecast for certain business sectors within the East of England Economic Forecasting Model.

Due to any potential effects on SA objectives depending upon the location and type of facilities required, the alternative options for forecasting waste growth will not affect the results of the SA for Policy WP1, which is detailed on the following page.

**Policy WP1: Waste management capacity to be provided**

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | 0 | 0 | No direct effects from this policy which contains the quantum of waste that is forecast to need to be managed over the plan period. Effects will depend upon the location and type of new facilities. Applications for new facilities will be determined in accordance with the relevant policy for the facility type. Each policy has been assessed separately in the SA. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0 | 0 | As above |

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0 | 0 | As above |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0 | 0 | As above |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0 | 0 | As above |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0 | 0 | As above |
| SA7: To promote innovative solutions for the restoration and after use of minerals or waste sites | 0 | 0 | 0 | No effect |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0 | 0 | No direct effects from this policy which contains the quantum of waste that is forecast to need to be managed over the plan period. Effects will depend upon the location and type of new facilities. Applications for new facilities will be determined in accordance with the relevant policy for the facility type. Each policy has been assessed separately in the SA. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0 | 0 | As above |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0 | 0 | As above |
| SA11: To promote sustainable use of | + | + | + | The policy states that provision will be made to manage the forecast quantities of waste. New facilities or changes to existing facilities which help |

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| minerals and waste resources | | | | to achieve the targets for recycling, composting, reuse and recovery set out in the Waste Management Plan for England will be encouraged. Therefore, this policy will promote sustainable use of waste resources. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0 | 0 | No direct effects from this policy which contains the quantum of waste that is forecast to need to be managed over the plan period. Effects will depend upon the location of new facilities. Applications for new facilities will be determined in accordance with the relevant policy for the facility type. Each policy has been assessed separately in the SA. |
| SA13: To encourage employment opportunities and promote economic growth | + | + | + | This policy to provide sufficient waste management capacity to meet the expected arisings will encourage employment opportunities and promote economic growth, through the provision of infrastructure to support businesses and the community. |

**Conclusion**

This policy is not expected to have any direct effects on the majority of the SA objectives because effects will depend upon the location and type of new waste management facilities, which will be determined in accordance with the relevant policy for the facility type. This policy scores positively for sustainable use of waste resources and promoting economic growth through the provision of waste management facilities to manage the forecast waste arisings. No changes or mitigation measures are recommended to this policy.

### 4.3 Strategic Alternatives to Policy WP2: Spatial strategy for waste management facilities

The following table assesses the policy wording contained in the draft Publication version of the NM&WLP:

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | + | + | + | The policy states that most types of waste management facilities should be located within five miles of one of Norfolk's urban areas or three miles of one of the main towns. Some facility types will be acceptable in other locations that are close to the source of waste or the destination of the recovered waste material. These requirements are expected to limit the distance that waste will be transported to |

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| | | | | and from facilities and the associated emissions to air from road transport, which should reduce contributions to climate change. |
| SA2: To improve air quality in line with the National Air Quality Standards | + | + | + | The policy states that most types of waste management facilities should be located within five miles of one of Norfolk's urban areas or three miles of one of the main towns. Some facility types will be acceptable in other locations that are close to the source of waste or the destination of the recovered waste material. These requirements are expected to limit the distance that waste will be transported to and from facilities and the associated emissions to air from road transport. Local effects will depend upon the location of new facilities. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0 | 0 | The purpose of the policy is to locate waste management facilities close to the source of waste or the destination of the recovered waste material. This policy is expected to have a neutral effect on noise, vibration and visual intrusion because local effects will depend upon the specific location of new facilities in relation to sensitive receptors to amenity impacts. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | + | + | + | The policy states that most waste management facilities should be located within five miles of one of Norfolk's urban areas or three miles of one of the main towns. This spatial strategy should improve accessibility to waste management services. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0 | 0 | There are heritage assets located within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also heritage assets located at greater distances from Norfolk's urban areas and main towns. The spatial strategy in this policy is therefore expected to have a neutral effect on the character of the townscape and historic environment. Local effects will depend upon the specific location of new facilities. The policy states that development should not be located with a designated heritage asset or its setting if the proposed development would cause substantial harm to or the loss of the heritage asset. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0 | 0 | There are designated sites for biodiversity and also locations of geodiversity priority features within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also designated sites for biodiversity and locations of geodiversity priority features at greater distances from Norfolk's urban areas and main towns. The spatial strategy in |

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| | | | | this policy is therefore expected to have a neutral effect on biodiversity and geodiversity. Local effects will depend upon the specific location of new facilities. The policy states that development should not be located within an SSSI or habitats site. |
| SA7: To promote innovative solutions for the restoration and after use of minerals or waste sites | 0 | 0 | 0 | No effect |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0 | 0 | There are areas of protected landscapes (such as AONB, the Broads and Conservation Areas) and areas of countryside within five miles of some of Norfolk's urban areas and three miles of some of Norfolk's main towns. There are also areas of protected landscapes and areas of countryside at greater distances of Norfolk's urban areas and main towns. The spatial strategy in this policy is therefore expected to have a neutral effect on the quality and distinctiveness of the countryside and landscape. Local effects will depend upon the specific location of new facilities. The policy states that development should not be located within the Broads Authority Area or the AONB other than in exceptional circumstances. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0 | 0 | The purpose of the policy is to locate waste management facilities close to the source of waste or the destination of the recovered waste material. This policy is expected to have a neutral effect on the health and amenity of local communities because local effects will depend upon the specific location of new facilities in relation to sensitive receptors to health and amenity impacts. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0 | 0 | The majority of agricultural land in Norfolk is grades 2 and 3. Grade 3 agricultural land could be BMV agricultural land if it is grade 3a. There are areas of Grade 2 and 3 agricultural land within five miles of Norfolk's urban areas and 3 miles of Norfolk's main towns. There are also areas of Grade 2 and 3 agricultural land at greater distances from Norfolk's urban areas and main towns. The spatial strategy in this policy is therefore expected to have a neutral effect on soil quality. The spatial strategy in this policy is also expected to have a neutral effect on water quality. Local effects will depend upon the specific location of new facilities. |

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| SA11: To promote sustainable use of minerals and waste resources | + | + | + | This policy states that most types of waste management facilities should be located within five miles of one of Norfolk's urban areas or three miles of one of the main towns. Some facility types will be acceptable in other locations that are close to the source of waste or the destination of the recovered waste material. These requirements are expected to ensure that waste management facilities are developed in sustainable locations in transport terms. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0 | 0 | There are areas at high risk and areas at low risk of flooding within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also areas at high risk of flooding at greater distances of Norfolk's urban areas and main towns. The spatial strategy in this policy is therefore expected to have a neutral effect on flood risk. Local effects will depend upon the specific location of new facilities. |
| SA13: To encourage employment opportunities and promote economic growth | + | + | + | The spatial strategy to locate waste management facilities close to the source of the waste or the destination of the recovered waste material should provide this infrastructure in suitable locations to support economic growth in other sectors. New waste management facilities may also increase employment levels slightly. |

**Conclusion**

The policy is assessed as having a positive effect for five of the SA objectives due to the policy aim to locate waste management facilities close to the source of the waste or the destination of the recovered waste material. The policy scores neutrally for all other SA objectives because it is not considered that locating facilities within 5 miles of one of Norfolk's urban areas or within three miles of Norfolk's main towns would have a particular effect on these objectives, compared to locating facilities nearer or further from Norfolk's urban areas or main towns.

No changes or mitigation measures are recommended to this policy.

**Alternative options to Policy WP2:**

Policy WP2 (as assessed in the previous table) states that most types of waste management facilities should be located within 5 miles of one of Norfolk's urban areas or three miles of one of the main towns. This is because these centres of population and employment are expected to be the main source of waste arisings in Norfolk and/or the destination of the recovered waste material. Some facility types will be acceptable in other locations that are close to the source of the waste or the destination of the recovered waste material.

The settlement hierarchy is defined by the Local Planning Authorities in Norfolk. The urban areas and main towns are as follows:

Urban Areas: Norwich, King's Lynn (including West Lynn), Thetford, Attleborough, Great Yarmouth and Gorleston-on-Sea.

The Norwich urban area includes the built-up parts of the urban fringe parishes of Colney, Costessey, Cringleford, Trowse, Thorpe St Andrew, Sprowston, Old Catton, Hellesdon, Drayton and Taverham.

Main Towns: Aylsham, Cromer, Dereham, Diss, Downham Market, Fakenham, Harleston, Holt, Hunstanton, North Walsham, Swaffham, Watton, Wymondham.

Alternative options to Policy WP2 are as follows:

1. Include settlements at a lower tier of the settlement hierarchy - Key Service Centres (KSC)
2. Increase the distance at which waste management facilities could be located from urban areas or main towns, from 5 miles to 10 miles
3. Different locational criteria depending on the throughput of a site – sites over 75,000 tonnes per annum (tpa) within 10 miles of an urban area, smaller facilities within 10 miles of an urban area or main town.

The table below assesses Policy WP2 (5 miles from an urban area or three miles from a main town) against each of the Sustainability Appraisal objectives and compares its effects to the effects of the three alternative options.

| SA Objective | Assessment of Policy WP2 approach | Assessment of 5 miles from a KSC | Assessment of 10 miles from an urban area or main | Assessment of distance varies by site size in tpa | Comments |
|---|---|---|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | + | - | - | - | Locating waste management facilities within 5 miles of an urban area or 3 miles of a main town should limit the distance that waste will be transported to and from facilities and the associated emissions to air from road transport, which should reduce contributions to climate change. Locating facilities within 10 miles of an urban area or main town would have less effect on reducing transport and associated emissions because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of such facilities. Locating large facilities 10 miles from an urban area and all other facilities within 10 miles of an urban area or main town would |

| SA Objective | Assessment of Policy WP2 approach | Assessment of 5 miles from a KSC | Assessment of 10 miles from an urban area or main | Assessment of distance varies by site size in tpa | Comments |
|---|---|---|---|---|---|
| | | | | | also have less effect on reducing transport and associated emissions because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities. Locating facilities within 5 miles of an urban area, main town or KSC may mean that facilities are located near settlements with a smaller population, instead of larger centres of population, and therefore have less effect on reducing transport and associated emissions. Virtually the entirety of Norfolk is within 5 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities. |
| SA2: To improve air quality in line with the National Air Quality Standards | + | - | - | - | As above. Local effects will depend upon the specific location of new facilities. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0 | 0 | 0 | Each policy option is expected to have a neutral effect on noise, vibration and visual intrusion because local effects will depend upon the specific location of new facilities in relation to sensitive receptors to amenity impacts. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | + | - | - | - | Accessibility to waste management services may be improved if facilities should be within 5 miles of an urban area or 3 miles of a main town. Locating facilities within 10 miles of an urban area or main town would be less accessible because it may lead to facilities not being located close to centres of population. Virtually the entirety |

| SA Objective | Assessment of Policy WP2 approach | Assessment of 5 miles from a KSC | Assessment of 10 miles from an urban area or main | Assessment of distance varies by site size in tpa | Comments |
|---|---|---|---|---|---|
| | | | | | of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities.<br>Locating large facilities 10 miles from an urban area and all other facilities within 10 miles of an urban area of main town would also be less accessible than 5 miles because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities.<br>Locating facilities within 5 miles of an urban area, 3 miles of a main town or 5 miles of a KSC may mean that facilities are located near to settlements with a smaller population, instead of larger centres of population, making them not as accessible to the majority of people. Virtually the entirety of Norfolk is within 5 miles of these locations. Therefore, it provides no spatial preference for the location of waste management facilities. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0 | 0 | 0 | There are heritage assets located within five miles of Norfolk's urban areas, 3 miles of main towns and 5 miles of KSCs. There are also heritage assets located at greater distances from Norfolk's urban areas and main towns. The spatial strategies in these policy options are therefore expected to have a neutral effect on the character of the townscape and historic environment. Local effects will depend upon the specific location of new facilities. |
| SA6: To protect and enhance Norfolk's | 0 | 0 | 0 | 0 | There are designated sites for biodiversity and also locations of geodiversity priority features |

| SA Objective | Assessment of Policy WP2 approach | Assessment of 5 miles from a KSC | Assessment of 10 miles from an urban area or main | Assessment of distance varies by site size in tpa | Comments |
|---|---|---|---|---|---|
| biodiversity and geodiversity | | | | | within five miles of Norfolk's urban areas, 3 miles of main towns and 5 miles of KSCs. There are also designated sites for biodiversity and locations of geodiversity priority features at greater distances from Norfolk's urban areas and main towns. The spatial strategies in these policy options are therefore expected to have a neutral effect on biodiversity and geodiversity. Local effects will depend upon the specific location of new facilities. |
| SA7: To promote innovative solutions for the restoration and after use of minerals or waste sites | 0 | 0 | 0 | 0 | No effect |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0 | 0 | 0 | There are areas of protected landscapes (such as AONB, the Broads and Conservation Areas) and areas of countryside within five miles of some of Norfolk's urban areas, main towns and KSCs. There are also areas of protected landscapes and areas of countryside at greater distances of Norfolk's urban areas and main towns. The spatial strategies in these policy options are therefore expected to have a neutral effect on the quality and distinctiveness of the countryside and landscape. Local effects will depend upon the specific location of new facilities. |
| SA9: To contribute to improved health and amenity of local | 0 | 0 | 0 | 0 | Each policy option is expected to have a neutral effect on the health and amenity of local communities because local effects will depend upon the specific location of new facilities in relation to sensitive |

| SA Objective | Assessment of Policy WP2 approach | Assessment of 5 miles from a KSC | Assessment of 10 miles from an urban area or main | Assessment of distance varies by site size in tpa | Comments |
|---|---|---|---|---|---|
| communities in Norfolk | | | | | receptors to health and amenity impacts. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0 | 0 | 0 | The majority of agricultural land in Norfolk is grades 2 and 3. Grade 3 agricultural land could be BMV agricultural land if it is grade 3a. There are areas of Grade 2 and 3 agricultural land within five miles of Norfolk's urban areas, three miles of Norfolk's main towns and five miles of KSCs. There are also areas of Grade 2 and 3 agricultural land at greater distances from Norfolk's urban areas and main towns. The spatial strategies in these policy options are therefore expected to have a neutral effect on soil quality. The spatial strategy in this policy is also expected to have a neutral effect on water quality. Local effects will depend upon the specific location of new facilities. |
| SA11: To promote sustainable use of minerals and waste resources | + | - | - | - | Locating waste management facilities in a sustainable location in transport terms means locating facilities close to the source of the waste or the destination of the recovered waste material.<br>Locating facilities within 5 miles of an urban area or 3 miles of a main town should ensure that facilities are developed in sustainable locations in transport terms.<br>Locating facilities within 10 miles of an urban area or main town may enable facilities to be developed in less sustainable locations in transport terms because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities. |

| SA Objective | Assessment of Policy WP2 approach | Assessment of 5 miles from a KSC | Assessment of 10 miles from an urban area or main | Assessment of distance varies by site size in tpa | Comments |
|---|---|---|---|---|---|
| | | | | | Locating large facilities 10 miles from an urban area and all other facilities within 10 miles of an urban area or main town may enable facilities to be developed in less sustainable locations in transport terms because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities. Locating facilities within 5 miles of an urban area, main town or KSC may mean that facilities are located near settlements with a smaller population, instead of larger centres of population, which would be less sustainable in transport terms. Virtually the entirety of Norfolk is within 5 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0 | 0 | 0 | There are areas at high risk and areas at low risk of flooding within five miles of Norfolk's urban areas, three miles of main towns and five miles of KSCs. There are also areas at high risk of flooding at greater distances of Norfolk's urban areas and main towns. The spatial strategies in these policy options are therefore expected to have a neutral effect on flood risk. Local effects will depend upon the specific location of new facilities. |
| SA13: To encourage employment opportunities and promote economic growth | + | - | - | - | To support economic growth in other sectors waste management facilities should be located close to the source of the waste or the destination of the recovered material. New waste facilities may also increase employment levels slightly. Locating facilities |

| SA Objective | Assessment of Policy WP2 approach | Assessment of 5 miles from a KSC | Assessment of 10 miles from an urban area or main | Assessment of distance varies by site size in tpa | Comments |
|---|---|---|---|---|---|
| | | | | | within 5 miles of an urban area or 3 miles of a main town should ensure that facilities are developed in suitable locations to support economic growth.<br>Locating facilities within 10 miles of an urban area or main town may mean that they are located in less suitable locations to support economic growth because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities.<br>Locating large facilities 10 miles from an urban area and all other facilities within 10 miles of an urban area or main town may also mean they are located in less suitable locations to support economic growth because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities.<br>Locating facilities within 5 miles of an urban area, main town or KSC may mean that facilities are located near settlements with a smaller population, instead of larger centres of population, and therefore are located in less suitable locations to support economic growth. Virtually the entirety of Norfolk is within 5 miles of these locations. Therefore, it provides no spatial preference for the location of these facilities. |

**Conclusion**

The policy option to locate facilities within five miles of one of Norfolk's urban areas or three miles of a main town is assessed as having a positive effect for five of the SA objectives due to the policy aim to locate waste management facilities close to the source of the waste or

the destination of the recovered waste material. The alternative policy options score negatively for the same five SA objectives. This is due to two of the alternative policy options enabling facilities to be located further away from the urban areas and main towns (10 miles instead of five miles) leading to increased transport of waste and associated impacts; whilst the third alternative policy option enables facilities to be located near Key Service Centres with a smaller population, instead of focussing development near to larger centres of population. Therefore, the option to include KSCs is also expected to lead to increased transport of waste and associated impacts. All the alternative options would cover virtually the entirety of Norfolk and would therefore provide no spatial preference for the policy.

All the policy options score neutrally for all other SA objectives because it is not considered that options for locating facilities at different distances from one of Norfolk's urban areas, main towns or Key Service Centres would have a particular effect on these objectives.

Therefore, it is concluded that the original policy option of locating the majority of waste management facility types within five miles of an urban area or three miles of a main town is the most sustainable option.

### 4.4 Strategic Alternatives to Policy MP1: Provision for minerals Extraction

Policy MP1 uses the average production figures for the last 10 years plus 10% to forecast the quantities of sand and gravel (1.506 million tonnes per annum) and carstone (0.083Mtpa) to be planned for. This results in a need to allocate specific sites to deliver at least 12.597 million tonnes of sand and gravel, but there is no shortfall in permitted reserves for carstone over the Plan period.

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | 0 | 0 | No direct effects from this policy which contains the quantum of minerals that are forecast to be needed over the plan period. Effects will depend upon the location of new mineral extraction sites. Applications for new sites will be determined in accordance with the relevant policy for the allocated site. Each proposed extraction site has been assessed separately in the SA. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0 | 0 | As above |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0 | 0 | As above |
| SA4: To improve accessibility to jobs, services and | 0 | 0 | 0 | As above |

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| facilities and reduce social exclusion | | | | |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0 | 0 | As above |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0 | 0 | As above |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | 0 | 0 | No effect |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0 | 0 | No direct effects from this policy which contains the quantum of minerals that are forecast to be needed over the plan period. Effects will depend upon the location of new mineral extraction sites. Applications for new sites will be determined in accordance with the relevant policy for the allocated site. Each proposed extraction site has been assessed separately in the SA. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0 | 0 | As above |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0 | 0 | As above |
| SA11: To promote sustainable use of minerals and waste resources | + | + | + | This policy states that sufficient sites will be allocated to meet the forecast need for sand and gravel. The policy states that a sites for Carstone will be allocated. It is considered that allocating sites to meet the quantities of aggregates forecast to be needed over the plan period will enable a steady and adequate supply of aggregates to be provided. |
| SA12: To reduce the risk of current and future flooding | 0 | 0 | 0 | No direct effects from this policy which contains the quantum of minerals that are forecast to be needed over the plan period. Effects will depend upon the |

| SA Objective | Short-term effects | Medium-term effects | Long-term effects | Comments |
|---|---|---|---|---|
| at new and existing development | | | | location of new mineral extraction sites. Applications for new sites will be determined in accordance with the relevant policy for the allocated site. Each proposed extraction site has been assessed separately in the SA. |
| SA13: To encourage employment opportunities and promote economic growth | + | + | + | This policy is to provide a steady and adequate supply of minerals to meet the forecast need. This will enable the minerals industry to contribute to the economy as an employer and to provide sufficient raw materials for the construction of buildings and roads and for glass manufacture to promote economic growth. |

**Conclusion**

This policy is not expected to have any direct effects on the majority of the SA objectives because effects will depend upon the location of new mineral extraction sites, which will be determined in accordance with the relevant policy for the allocated site. This policy scores positively for sustainable use of mineral resources and promoting economic growth through the provision of a steady and adequate supply of mineral resources. No changes or mitigation measures are recommended to this policy.

**Alternative options to Policy MP1:**

1. Use the **average production figures for the last ten years** to forecast the quantities of sand and gravel (1.369 million tonnes per annum) and carstone (0.075Mtpa) to be planned for. This would result in a lower quantity to plan for and a need to allocate specific sites to deliver at least 10.131 tonnes of sand and gravel, but no sites for carstone would need to be allocated over the Plan period.
2. Use the **average production figures for the last 20 years** to forecast the quantities of sand and gravel (1.755Mtpa) and carstone (0.11Mtpa) to be planned for. This would result in a higher quantity to be planned for and a need to allocated specific sites to deliver at least 17.079 million tonnes of sand and gravel, and 0.317 million tonnes of carstone over the Plan period.
3. Use the **sub-national guidelines** to forecast the quantity of sand and gravel (2.57Mtpa) and carstone (0.2Mtpa) to plan for. This would result in a higher quantity to plan for and a need to allocate specific sites to deliver at least 31.749 million tonnes of sand and gravel, and 1.937 million tonnes of carstone over the Plan period.

Due to mineral extraction sites varying in depth and quality of mineral resource, it is not possible to directly relate how many sand and gravel sites would be required to provide the tonnages forecast using the alternative policy options. Site proposed for sand and gravel extraction in the NM&WLP vary in the estimated resource from 160,000 tonnes to 4,500,000 tonnes. The mean average quantity in a proposed site is 922,378 tonnes per site, however, the median quantity in a proposed site is only 700,000 tonnes.

For carstone only one specific site has been proposed. Using the average production figures for the last twenty years, one site for carstone would need to be allocated. Using the sub-national guidelines, two sites for carstone would need to be allocated. Using the average production figures for the last ten years, or the average production figures for the

last 10 years plus 10% no carstone sites would need to be allocated due to sufficient reserve in the existing permitted sites.

The following table compares impacts for the four policy options, for the quantities of sand and gravel, and carstone minerals to be planned for, against each Sustainability Appraisal objective.

| SA Objective | 20-year average forecast | 10-year average forecast | 10-year average + 10% | sub-national guidelines forecast | Comments |
|---|---|---|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | 0 | 0 | 0 | No direct effects from the policy options which contain different forecasts for the quantum of minerals needed over the plan period. Effects will depend upon the location of new mineral extraction sites. Applications for new sites will be determined in accordance with the relevant policy for the allocated site. Each proposed extraction site has been assessed separately in the SA. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0 | 0 | 0 | As above |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0 | 0 | 0 | As above |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0 | 0 | 0 | As above |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0 | 0 | 0 | As above |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0 | 0 | 0 | As above |
| SA7: To promote innovative solutions for the restoration and | 0 | 0 | 0 | 0 | No effect |

| SA Objective | 20-year average forecast | 10-year average forecast | 10-year average + 10% | sub-national guidelines forecast | Comments |
|---|---|---|---|---|---|
| after use of minerals sites | | | | | |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | - | 0 | 0 | - | No direct effects from the two alternative policy options which forecast the quantum of minerals needed over the plan period using the 10-year average production figures and 10-year average production figures plus 10%. Using the sub-national apportionment for sand and gravel or the 20-year production average to plan for sand and gravel would plan for too much mineral because the sub-national apportionment has not been met in the last 18 years and the 20-year average has not been reached in the last 13 years. Therefore, these two options could have a negative effect on the countryside if more sites are developed than are needed it will take longer for sites to be worked and restored because the supply will exceed the demand. Effects will depend upon the location of new mineral extraction sites. Applications for new sites will be determined in accordance with the relevant policy for the allocated site. Each proposed extraction site has been assessed separately in the SA. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0 | 0 | 0 | As above |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0 | 0 | 0 | As above |
| SA11: To promote sustainable use of minerals and waste resources | - | - | + | - | Using the 10-year production average plus 10% will enable a steady and adequate supply of minerals to be provided because this is above the 3-year average |

| SA Objective | 20-year average forecast | 10-year average forecast | 10-year average + 10% | sub-national guidelines forecast | Comments |
|---|---|---|---|---|---|
| | | | | | sales figure and will allow for an increase in production.<br>Using the 10-year production average may lead to an insufficient supply of minerals to be provided because the 10-year average is lower than the most recent 3-year average of 1.384Mtpa.<br>Using the sub-national apportionment or the 20-year production average for sand and gravel would plan for too much mineral because the sub-national apportionment for sand and gravel has not been met in the last 10 years and the 20-year average has not been reached for the last 13 years. Therefore, this is not considered to be promote a sustainable use of minerals. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0 | 0 | 0 | No direct effects from the policy options which contain different forecasts for the quantum of minerals needed over the plan period. Effects will depend upon the location of new mineral extraction sites. Applications for new sites will be determined in accordance with the relevant policy for the allocated site. Each proposed extraction site has been assessed separately in the SA. |
| SA13: To encourage employment opportunities and promote economic growth | + | - | + | + | Using the 10-year production average plus 10% will enable a steady and adequate supply of minerals to be provided because this is above the 3-year average sales figure and will enable the minerals industry to contribute to the economy as an employer and to provide sufficient raw materials for the construction of buildings and roads to promote economic growth.<br>Using the 10-year production average may lead to an insufficient supply of minerals to |

| SA Objective | 20-year average forecast | 10-year average forecast | 10-year average + 10% | sub-national guidelines forecast | Comments |
|---|---|---|---|---|---|
| | | | | | be provided to promote economic growth because the 10- year average is below the 3-year production average.<br>Using the sub-national apportionment or the 20-year average would plan for too much mineral because the sub-national apportionment for sand and gravel has not been met in the last 18 years and the 20-year average has not been reached for the last 13 years. However, this would still enable the minerals industry to provide sufficient raw materials for construction to promote economic growth. |

**Conclusion**

The alternative policy options are not expected to have any direct effects on the majority of the SA objectives [SA1, SA2, SA3, SA4, SA5, SA6, SA7, SA9, SA10] because effects will depend upon the location of new mineral extraction sites. Using the sub-national apportionment is expected to have a negative impact on the countryside (SA8) because an over-supply of sites will take longer to work and restore. Using the 10-year average production scores negatively for SA11 and SA13 because it may lead to an insufficient supply of minerals. Using the 10-year average production plus 10% scores positively for SA11 and SA13 because it would lead to the provision of a steady and adequate supply of mineral resources. Using the sub-national guidelines or the 20-year average scores positively for SA13 because an oversupply of mineral would still promote economic growth, but negatively for SA11 because an over-supply is not considered to be a sustainable use of minerals. Therefore, it is concluded that the policy option of using the 10-year production average plus 10% to forecast the need for sand and gravel and carstone is the most sustainable option.

### 4.5 Strategic Alternatives to Policy MP2: Spatial Strategy for Minerals Extraction

The following section details the process that was carried out to define areas of search for future silica sand extraction. However, in the draft Publication version of the Norfolk Minerals and Waste Local Plan areas of search for silica sand have not been allocated and therefore the wording of Policy MP2 does not include the criteria for defining areas of search. The areas of search have not been allocated because they are no longer considered to be a deliverable method to use to plan for future silica sand provision in Norfolk. The reasons for this are detailed in the Silica Sand Topic Paper. In summary, the consultation responses from the Defence Infrastructure Organisation to the NM&WLP continued to raise concerns about bird strike risks to aircraft from the creation of large areas of open water following mineral extraction, whilst Shouldham Warren is designated Open Access Land and forms a significant part of the higher land within Area of Search E. The three remaining Areas of Search (F, I and J) would be too fragmentary to form an appropriately sized area within which to find a potentially viable silica sand extraction site, and therefore the Areas of Search are no longer considered to be a deliverable method to use to plan for future silica sand provision in Norfolk. Therefore the draft Publication version of the NM&WLP contains a criteria-based policy for the consideration of any future planning applications for silica sand extraction instead of allocating areas of search.

The following strategic options were considered for defining areas of search for future silica sand extraction:

- Should areas of search exclude land within 2km of Roydon Common and Dersingham Bog SAC, or should a different distance be used?
- Should areas of search exclude land within 250 metres of The Wash SPA, The Wash Ramsar and The Wash and North Norfolk Coast SAC, or should a different distance be used?
- Should areas of search exclude land within 250 metres of SSSIs or should a different distance be used?
- Should areas of search exclude land within 15 metres of ancient woodland or should a different distance from these sites be used?
- Should areas of search exclude land within 250 metres of designated heritage assets or should a different distance from these sites be used?
- Should areas of search exclude land within 5km of the Norfolk Coast Area of Outstanding Natural Beauty or only exclude land within the AONB?
- Should areas of search exclude land within 125 metres of sensitive receptors for amenity impacts, or should a different distance be used?
- Should areas of search exclude allocated sites and sites with planning permission for non-mineral uses that are located in or adjacent to the silica sand resource, or include this land?
- Should areas of search exclude agricultural land grades 1, 2 and 3 or only exclude land grades 1 and 2?
- Should areas of search exclude land in flood zones 2 and 3, or include this land?
- Should areas of search only include the silica sand resource within the Leziate beds or should the whole silica sand resource, as mapped by the BGS, be included?
- Should an area of search be at least 20 hectares in area, or should all areas of search be considered?

These strategic options were consulted on in the ‘Initial Consultation’ on the Single Issue Silica Sand Review of the Minerals Site Specific Allocations DPD, which took place in March

and April 2015. The Single Issue Silica Sand Review was subsequently found to be 'sound' and legally compliant by an independent Planning Inspector, following an examination in public, and adopted by Norfolk County Council in December 2017.

The Initial Consultation on the NM&WLP included the methodology used to define areas of search for silica sand extraction within Policy MP2. This methodology is included within the Preferred Options Policy MP2; therefore, the strategic alternatives to the methodology are included in this sustainability appraisal. A strategic alternative for the location of sand and gravel and carstone extraction has been considered in this sustainability appraisal; 1) within 5 and 3 miles, or 2) within 10 miles; of urban areas and main towns. The sustainability appraisal of the complete Policy MP2 is included in Appendix A to this report.

The following tables compare the impacts against each sustainability appraisal objective for the two alternative options for dealing with each planning constraint when defining areas of search for future silica sand extraction.

The sustainability impacts have been assessed in a comparative way for the alternative options to dealing with each planning constraint. Therefore, the first option for each constraint is assessed as a baseline and scored as neutral against each sustainability appraisal objective and the alternative option is assessed in comparison to it. Therefore, the alternative option will be assessed as either having the same effect, or a more positive or more negative effect than the first option for each of the sustainability appraisal objectives.

**Should areas of search exclude land within 2km of Roydon Common and Dersingham Bog SAC, or should a different distance be used?**

| **SA Objective** | **Exclude land within 2km of Roydon Common and Dersingham Bog SAC (the baseline option)** | **Exclude land within the hydrological catchments of Roydon Common and Dersingham Bog SAC** |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | -<br>Due to the area of land involved, excluding land within the catchment of Roydon Common and Dersingham Bog could increase transport distances between areas of search for silica sand extraction and the existing processing plant at Leziate because it would remove some potential areas closer to the processing plant. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0<br>No difference between the options is expected. The existing AQMAs are within King's Lynn and would not be affected as potential transport routes do not pass through the AQMAs. There is the potential for an increase in transport distances between areas of search and the existing processing plant at Leziate because some potential areas within the catchment have been removed. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0<br>No difference between the options is expected. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected. |

| SA Objective | Exclude land within 2km of Roydon Common and Dersingham Bog SAC (the baseline option) | Exclude land within the hydrological catchments of Roydon Common and Dersingham Bog SAC |
|---|---|---|
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0<br>No difference between the options is expected, excluding land based on hydrological catchments would not result in significant additional areas of the historic environment being included or excluded.<br>Effects are not expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | +<br>Excluding land based on hydrological catchment would reduce the risk of impacts from extraction on water dependent biodiversity features within the catchment. |
| SA7: To promote innovative solutions for the restoration and after e of minerals sites | 0 | 0<br>No difference between the options is expected. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0<br>No difference between the options is expected. Excluding land based on hydrological catchments would not result in significant additional areas of high landscape value being included or excluded. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>No difference between the options is expected. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0<br>There are no groundwater source protection zones within the silica sand resource.<br>Surface water quality is not expected to be affected by these options. No difference between the options is expected. Excluding land based on hydrological catchments would not result in significant additional areas of higher quality agricultural land being included or excluded. |
| SA11: To promote sustainable use of minerals resources | 0 | -<br>Excluding land within the hydrological catchment of Roydon Common and Dersingham Bog reduces the area of land available to be considered for an area of search because the catchment covers a greater area than a 2km buffer. This provides fewer options for future locations of silica sand extraction. |
| SA12: To reduce the risk of current and future flooding at new | 0 | 0<br>No difference between the options is expected. |

| SA Objective | Exclude land within 2km of Roydon Common and Dersingham Bog SAC (the baseline option) | Exclude land within the hydrological catchments of Roydon Common and Dersingham Bog SAC |
|---|---|---|
| and existing development | | |
| SA13: To encourage employment opportunities and promote economic growth | 0 | -<br>Excluding land within the hydrological catchment of Roydon Common and Dersingham Bog reduces the area of land available to be considered for an area of search closest to the existing processing plant. This provides fewer options for future locations of silica sand extraction.<br>There is the potential for an increase in transport distances between areas of search and the existing processing plant at Leziate because some potential areas within the catchment have been removed |

**Conclusion**

There are no differences between the options for the majority of the sustainability indicators. This is mainly due to the difference in land area between excluding land based on a 2km buffer or based on hydrological catchments around Roydon Common and Dersingham Bog SAC and the location of constraints in relation to these distances. There would be a positive effect on biodiversity by excluding land based on hydrological catchments because it would remove land where the potential to impact on water dependent features is higher.

The potential negative effects are that removing a larger area of land from consideration reduces the options available for future locations of silica sand extraction closest to the Leziate. This might result in greater transport distances to the processing plant. However, overall it is considered that excluding land based on hydrological catchments from an area of search is considered to be an acceptable approach due to the international importance of Roydon Common and Dersingham Bog.

**Should areas of search exclude land within 250 metres of The Wash SPA, The Wash Ramsar and The Wash and North Norfolk Coast SAC, or should a different distance be used?**

| SA Objective | Exclude land within 250m of The Wash (the baseline option) | Exclude land within 1km of The Wash |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | 0<br>No difference between the options is expected. There would not be any difference to transport distances between areas of search for silica sand extraction and the existing processing plant at Leziate. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0<br>No difference between the options is expected. The existing AQMAs are within King's Lynn and would not be affected. There would not be any difference to transport distances between areas of search and the existing processing plant at Leziate. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0<br>No difference between the options is expected. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0<br>No difference between the options is expected because no historic assets would be excluded by using a 1km buffer from The Wash.<br>Effects are not expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0/+<br>No difference between the options is expected regarding geodiversity.<br>There are County Wildlife Sites both within 250m and 1km of The Wash. The main issue raised by Natural England regarding potential impacts on The Wash is disturbance to birds from noise and lighting. Normal practice is for silica sand extraction sites to not have artificial lighting as all processing takes place at Leziate. It would be possible to require this by a planning condition.<br>Due to the scale and operation of silica sand extraction sites, it is considered that the noise from machinery used to dig the silica sand would cause no more disturbances at 250 metres than 1km. It is also possible to control noise levels by a planning condition.<br>There is the potential that mineral extraction within 250 or 1km of The Wash would affect functional |

| SA Objective | Exclude land within 250m of The Wash (the baseline option) | Exclude land within 1km of The Wash |
|---|---|---|
| | | habitat used by the designated bird species of The Wash for foraging. Excluding land within 1km of The Wash would be expected to reduce the area of functional habitat that could potentially be affected. However, either option may not exclude functional habitat for The Wash as bird species may forage further inland.<br>Restoration options for silica sand extraction, for example to deliver ecological benefits, would not be affected by whether or not land within 1km of The Wash is excluded from an area of search. It is however, considered that there could be positive effects for biodiversity if land within 1km of the Wash is excluded. |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | 0<br>No difference between the options is expected. Restoration options for silica sand extraction sites would not be affected by the exclusion of land within 1km of The Wash. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0<br>A small area of land within both 250 metres and 1km of The Wash is also within the Norfolk Coast AONB. However the AONB will be excluded from the areas of search. Excluding land within 1km of The Wash reduces the area of land available to be considered for an area of search. However, the area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect potential landscape impacts. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>No difference between the options is expected. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0<br>There are no groundwater source protection zones within the silica sand resource. Water quality is not expected to be affected by these options.<br>Land within 250 metres of The Wash is not graded within the Best and Most Versatile agricultural land. Some areas of land within 1km of The Wash are within grade 3 agricultural land. However, these areas are not considered to be large enough for a benefit to soil quality to occur if land within 1km of The Wash is excluded. |
| SA11: To promote sustainable use of minerals resources | 0 | -<br>Excluding land within 1km of The Wash reduces the area of land available to be considered for an area of search. This provides fewer options for future locations of silica sand extraction. |

| SA Objective | Exclude land within 250m of The Wash (the baseline option) | Exclude land within 1km of The Wash |
|---|---|---|
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | +<br>Land within both 250 metres and 1km of The Wash falls within flood zones 2 and 3. Excluding land within 1km of The Wash would exclude a larger area of land at flood risk from the areas of search for silica sand extraction. However, silica sand extraction is water compatible development. |
| SA13: To encourage employment opportunities and promote economic growth | 0 | -/0<br>Excluding land within 1km of The Wash reduces the area of land available to be considered for an area of search. This provides fewer options for future locations of silica sand extraction. There would not be a significant difference to transport distances between areas of search and the existing processing plant at Leziate. |

**Conclusion**

There are no differences between the options for the majority of the sustainability indicators. This is mainly due to the difference in land area between excluding land within 250 metres or 1km of The Wash and the location of constraints in relation to these distances from The Wash. It is considered that potential disturbance to birds from noise and light from silica sand extraction operations will be no greater at 250 metres than at 1km. Noise and light can also be controlled by planning conditions. There could potentially be a positive effect from excluding land within 1km of The Wash because this would be expected to reduce the area of functional habitat that could potentially be affected. However, either option may not exclude functional habitat for The Wash as bird species may forage further inland.

The potential negative effect is that removing a larger area of land from consideration reduces the options available for future locations of silica sand extraction. On balance, excluding land within 1km of The Wash from an area of search is considered to be the preferred approach because it may reduce the area of functional habitat that could potentially be affected. The effects on functional habitat will also be assessed at the level of individual areas of search.

**Should areas of search exclude land within 250 metres of SSSIs or should a different distance be used?**

| SA Objective | Exclude land within 250m of SSSIs (the baseline option) | Exclude land within 3km of biological SSSIs (based on Natural England's Impact Risk Zones) |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | -<br>This option would remove such significant amounts of land that it would compromise the ability of the Plan to deliver sufficient glass sand to meet production demands. This in turn could impact on the ability of the UK glass industry to provide sufficient window glass to meet demands for more efficient glazing. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | -<br>The only parts of the resource not excluded by this option would be at the southern extent of the resource. The existing AQMAs are within King's Lynn and would not be affected.<br>If this option was brought forward; there would be significant potential increases in the transport distances between areas of search and the existing processing plant at Leziate compared only excluding land within 250 metres. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0<br>The only parts of the resource not excluded by this option would be at the southern extent of the resource. However, no difference between the options is expected. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>The only parts of the resource not excluded by this option would be at the southern extent of the resource. However, no difference between the options is expected. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | -<br>The only parts of the resource not excluded by this option would be at the southern extent of the resource. The majority of the areas left are of high landscape and/or historic value. Therefore, this option would be likely to disproportionately impact on these designations.<br>Effects are not expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | +<br>The only parts of the resource not excluded by this option would be at the southern extent of the resource. No difference between the options is expected regarding geodiversity.<br>As this option would exclude land within 3km of biological SSSIs, this would be expected to have positive impacts on biodiversity compared to only excluding land within 250 metres of SSSIs |

| SA Objective | Exclude land within 250m of SSSIs (the baseline option) | Exclude land within 3km of biological SSSIs (based on Natural England's Impact Risk Zones) |
|---|---|---|
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | -<br>The only parts of the resource not excluded by this option would be at the southern extent of the resource. The southern extent contains the remnants of historic parkland and it is not considered that restoration in this area is likely to form any enhancement. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | -<br>The only parts of the resource not excluded by this option would be at the southern extent of the resource. The majority of the areas left are of high landscape value. Therefore, this option would be likely to disproportionately impact on the quality of the landscape. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>The only parts of the resource not excluded by this option would be at the southern extent of the resource. However, no difference between the options is expected. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | -<br>There are no groundwater source protection zones within the silica sand resource.<br>Water quality is not expected to be affected by these options.<br>Excluding all parts of the resource apart from the southern extent would result in less non-agricultural and low grade agricultural land being included within potential areas of search. Therefore, the potential for impacts on Best and Most Versatile land is increased. |
| SA11: To promote sustainable use of minerals resources | 0 | --<br>This option significantly reduces the area of land available to be considered for an area of search. This provides such limited options for future locations of silica sand extraction that it could mean that the forecast silica sand needs cannot be met. There would also be an increased transport distances between areas of search and the existing processing plant at Leziate. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | +<br>The land at the southern extent of the resource is mainly at low flood risk. Excluding all other land would exclude the land to the north of the resource which is at the highest risk of flooding. However, silica sand extraction is water compatible development. |

| SA Objective | Exclude land within 250m of SSSIs (the baseline option) | Exclude land within 3km of biological SSSIs (based on Natural England's Impact Risk Zones) |
|---|---|---|
| SA13: To encourage employment opportunities and promote economic growth | 0 | --<br>This option would remove such significant amounts of land that it would compromise the ability of the Plan to deliver sufficient glass sand to meet production demands. This in turn could impact on the ability of the UK glass industry to provide sufficient window glass to meet demands. This could have downstream economic impacts in manufacturing, construction and transport jobs nationally. |

**Conclusion**

Excluding land within 3km of SSSIs with biological features removes a significant area of the silica sand resource. The removal of this area poses major difficulties in being able to define sufficient areas of search to meet the shortfall. There are also potential negative effects on landscape, the historic environment, soil quality and transport impacts. There would be positive impacts on biodiversity by excluding land within 3km of SSSIs, however it is not considered necessary to exclude all land within 3km of SSSIs in order to avoid negative impacts on biodiversity. Due to the significant negative effects and the limited positive effects it is considered appropriate to only exclude land within 250 metres of biological SSSIs. The impacts on individual SSSIs would be better assessed at the level of individual areas of search.

**Should areas of search exclude land within 15 metres of ancient woodland or should a different distance from these sites be used?**

| SA Objective | Exclude land within 15m of ancient woodland (the baseline option) | Exclude land within 250m of ancient woodland |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | 0<br>No difference between the options is expected. There would not be any difference to transport distances between areas of search for silica sand extraction and the existing processing plant at Leziate. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0<br>No difference between the options is expected. The existing AQMAs are within King's Lynn and would not be affected. There would not be any difference to transport distances between areas of search and the existing processing plant at Leziate. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0<br>No difference between the options is expected. |

| SA Objective | Exclude land within 15m of ancient woodland (the baseline option) | Exclude land within 250m of ancient woodland |
|---|---|---|
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0<br>Due to the small number and size of ancient woodland sites within the silica sand resource no difference between the options is expected on the historic environment. Effects are not expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0/+<br>No difference between the options is expected regarding geodiversity.<br>Excluding land within 250 metres of an ancient woodland site is expected to have a positive impact on biodiversity because dust emissions from mineral extraction operations can be mitigated within this distance. Excluding land within 250 metres of ancient woodland sites also increases the protection to sites from changes to groundwater from mineral extraction, although it is recognised that a greater distance may be required between ancient woodland and mineral extraction sites, depending on the details of the extraction depth, groundwater level and method of operating. |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | 0<br>No difference between the options is expected. Restoration options for silica sand extraction sites would not be affected by the exclusion of land within 250 metres of ancient woodland. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0<br>Three of the ancient woodland sites are within the Norfolk Coast AONB. However the AONB will be excluded from the areas of search.<br>Excluding land within 250 metres of the remaining three ancient woodland sites slightly reduces the area of land available to be considered for an area of search. However, the area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect potential landscape impacts. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>No difference between the options is expected. |

| SA Objective | Exclude land within 15m of ancient woodland (the baseline option) | Exclude land within 250m of ancient woodland |
|---|---|---|
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0<br>No difference between the options is expected for water quality or soil quality. |
| SA11: To promote sustainable use of minerals resources | 0 | -/0<br>Excluding land within 250 metres of ancient woodland sites reduces the area of land available to be considered for an area of search. This provides fewer options for future locations of silica sand extraction. However due to the small number and size of ancient woodland sites within the silica sand resource, this would result in only a small difference in available land area.<br>There would not be a significant difference to transport distances between areas of search and the existing processing plant at Leziate. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0<br>No difference between the options is expected. |
| SA13: To encourage employment opportunities and promote economic growth | 0 | -<br>Excluding land within 250 metres of ancient woodland sites reduces the area of land available to be considered for an area of search. This provides fewer options for future locations of silica sand extraction. However due to the small number and size of ancient woodland sites within the silica sand resource, this would result in only a small difference in available land area. |

**Conclusion**

There are no differences between the options for the majority of sustainability indicators. This is mainly due to the small number and size of ancient woodland sites within the silica sand resource. Positive impacts on biodiversity would be expected by excluding land within 250 metres of ancient woodland sites from the areas of search. Negative impacts would be expected on the use of mineral resources and economic growth because excluding land within 250 metres of ancient woodland sites from consideration as an area of search reduces the options available for future locations of silica sand extraction. However, the amount of land that would be excluded is only a very small area of the silica sand resource.

On balance it is considered that the positive biodiversity effects of excluding land within 250 metres of ancient woodland sites outweigh the affect this has on reducing the options available for areas of search.

**Should areas of search exclude land within 250 metres of designated heritage assets or should a different distance from these sites be used?**

| SA Objective | Exclude land within 250m of heritage assets (the baseline option) | Exclude land within 1km of designated heritage assets |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | **--**<br>This option would remove such significant amounts of land that it would compromise the ability of the Plan to deliver sufficient glass sand to meet production demands. This in turn could impact on the ability of the UK glass industry to provide sufficient window glass to meet demands for more efficient glazing. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | **--**<br>The only parts of the resource not excluded by this option would be at the northern and southern extents of the resource. The existing AQMAs are within King's Lynn and would not be affected. If this option was brought forward; there would be significant potential increases in the transport distances between areas of search and the existing processing plant at Leziate compared with the 250m buffer. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | **0**<br>The only parts of the resource not excluded by this option would be at the northern and southern extents of the resource. However, no difference between the options is expected. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | **0**<br>No difference between the options is expected because mineral extraction sites are unlikely to provide improved accessibility to services and facilities and reduce social exclusion. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | -<br>The only parts of the resource not excluded by this option would be at the northern and southern extents of the resource. The majority of the areas left are of high landscape value or have the potential to contain undesignated heritage assets. Therefore this option would be likely to disproportionately impact on these. Effects are not expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | -<br>The only parts of the resource not excluded by this option would be at the northern and southern extents of the resource. This would remove some areas containing national and European environmental designations. However, it would concentrate the search for potential extraction sites towards an area which has the potential to contain functional habitat for birds on The Wash. |

| SA Objective | Exclude land within 250m of heritage assets (the baseline option) | Exclude land within 1km of designated heritage assets |
|---|---|---|
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | -<br>The only parts of the resource not excluded by this option would be at the northern and southern extents of the resource. The potential exists for habitat creation in the northern area similar to the existing Snettisham reserve which is in old gravel workings. The southern extent contains the remnants of historic parkland and it is not considered that restoration in this area is likely to form any enhancement. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | -<br>The northern extent of the resource forms an open landscape, and there are viewpoints from elevated positions on the boundary, extraction in this area would result in significant landscape change, although it is in a landscape which has historically been subject to a great deal of change. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | **0**<br>No difference between the options is expected. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | -<br>There are no groundwater source protection zones within the silica sand resource.<br>Excluding all parts of the resource apart from the northern and southern extents would result in less non-agricultural and low grade agricultural land being included within potential areas of search. Therefore, the potential for impacts on Best and Most Versatile land is increased. |
| SA11: To promote sustainable use of minerals resources | 0 | --<br>This option significantly reduces the area of land available to be considered for an area of search. This provides only limited options for future locations of silica sand extraction and could mean that the forecast silica sand needs cannot be met.<br>There would also be an increased transport distances between areas of search and the existing processing plant at Leziate. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | -<br>The northern extent of the resource is in flood risk zones 2 and 3. Therefore if only the northern and southern extents of the resource are available, this increases the potential for mineral extraction to take place on land at higher flood risk. However, silica sand extraction is water compatible development. |

| SA Objective | Exclude land within 250m of heritage assets (the baseline option) | Exclude land within 1km of designated heritage assets |
|---|---|---|
| SA13: To encourage employment opportunities and promote economic growth | 0 | -<br>This option would remove such significant amounts of land that it would compromise the ability of the Plan to deliver sufficient glass sand to meet production demands. This in turn could impact on the ability of the UK glass industry to provide sufficient window glass to meet demands. This could have downstream economic impacts in manufacturing, construction and transport jobs nationally. |

**Conclusion**

There are a large number of potential negative effects from the exclusion of land within 1km of designated heritage assets. This option would exclude such a large area of land from consideration for silica sand extraction that there could be negative impacts on minerals, the economy and transport. The few areas that would not be excluded are at higher flood risk, higher agricultural land quality, near to The Wash, of high landscape quality and potentially containing undesignated heritage assets. Therefore, there would also be negative impacts on all of these sustainability objectives. The setting of a heritage asset is likely to be different for each heritage asset. Therefore, excluding land within 1km of every designated heritage asset is not an appropriate way to ensure no adverse impacts on heritage assets. Therefore, due to the significant number of negative impacts expected from excluding land within 1km of designated heritage assets it is considered to be appropriate to only exclude land within 250 metres of designated heritage assets. A full assessment of potential impacts on designated heritage assets would be more appropriately carried out at the level of individual areas of search.

**Should areas of search exclude land within 5km of the Norfolk Coast Area of Outstanding Natural Beauty or only exclude land within the AONB?**

| SA Objective | Exclude land within the Norfolk Coast AONB (the baseline option) | Exclude land within 5km of the Norfolk Coast AONB |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | -<br>Excluding land within 5km of the Norfolk Coast AONB would lead to increased transport distances between areas of search for silica sand extraction and the existing processing plant at Leziate. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | -<br>The existing AQMAs are within King's Lynn and would not be affected. However, excluding land within 5km of the Norfolk Coast AONB would lead to increased transport distances between areas of search for silica sand extraction and the existing processing plant at Leziate. |

| SA Objective | Exclude land within the Norfolk Coast AONB (the baseline option) | Exclude land within 5km of the Norfolk Coast AONB |
|---|---|---|
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0/+<br>No difference between the options is expected with regards to noise and vibration. Excluding land within 5km of the AONB is expected to have a positive effect on visual intrusion within the 5km area. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected because mineral extraction sites are unlikely to provide improved accessibility to services and facilities and reduce social exclusion. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0<br>There are heritage assets located within 5km of the AONB. Therefore, there could be a positive effect on heritage assets within this area if this land is excluded from an area of search. However, there are also heritage assets within the area of search outside 5km from the AONB which would potentially be subject to increased pressure for development because some choices will be removed.<br>Effects are not expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0<br>There are biodiversity and geodiversity features within 5km of the AONB including European designated sites. Therefore, there could be a positive effect on biodiversity and geodiversity within this area if this land is excluded from an area of search. However, there are also biodiversity and geodiversity features within the area of search outside 5km from the AONB which would potentially be subject to increased pressure for development because some choices will be removed. |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | 0<br>No difference is expected between the options. Restoration options for silica sand extraction sites would not be affected by the exclusion of land within 5km of the AONB. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0<br>Excluding land within 5km of the AONB is likely to be largely neutral. An AONB has no defined setting. While it is possible that excluding land within 5km of the AONB may prevent degradation of views from within the AONB it is equally likely that for a particular development in a particular location a greater or lesser distance would be required depending on local topography. The type |

| SA Objective | Exclude land within the Norfolk Coast AONB (the baseline option) | Exclude land within 5km of the Norfolk Coast AONB |
|---|---|---|
| | | of mitigation measures proposed are also likely to influence the acceptable distance of a mineral extraction site from the AONB. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>No difference between the options is expected |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0/-<br>There are no groundwater source protection zones within the silica sand resource. No differences are expected in water quality.<br>There is a large area of grade 3 agricultural land within 5km of the AONB. However, there is also large area of low grade agricultural land and non – agricultural land within 5km of the AONB. The resource area remaining contains a larger proportion of grade 3 land. Therefore, there would be a negative impact on soil quality if this land is excluded from the areas of search. |
| SA11: To promote sustainable use of minerals resources | 0 | -<br>Excluding land within 5km of the AONB reduces the area of land available to be considered for an area of search. This provides fewer options for future locations of silica sand extraction. Land within 5km of the AONB has previously been used for silica sand extraction and therefore it is expected that silica sand of a suitable quality could be found within this 5km area.<br>There would also be an increased transport distances between areas of search and the existing processing plant at Leziate. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | +<br>There is land in flood zones 2 and 3 within 5km of the Norfolk Coast AONB which would be excluded from the areas of search if land within 5km of the AONB is excluded. However, silica sand extraction is water compatible development. |
| SA13: To encourage employment opportunities and promote economic growth | 0 | -<br>Excluding land within 5km of the Norfolk Coast AONB reduces the area of land available to be considered for an area of search. This provides fewer options for future locations of silica sand extraction. Land within 5km of the AONB has previously been used for silica sand extraction and therefore it is expected that silica sand of a suitable quality could be found within this 5km area. |

**Conclusion**

Excluding land within 5km of the AONB is expected to have negative effects on economic growth, mineral resources and transport impacts because there would be fewer options for

locations for silica sand extraction and increased transport distances to the processing plant. Also a negative effect on agricultural land, due to the distribution of agricultural land grades.

Excluding land within 5km of the AONB is expected to have positive effects on flood risk due to the large areas of land in flood zones 2 and 3 in this location.

There are no differences between the options for the majority of sustainability indicators because whilst there may be positive effects within the 5km area, there could be negative effects outside it due to fewer options for locations of silica sand extraction and therefore increased pressure for development outside the 5km area.

It is therefore considered appropriate to only exclude the Norfolk Coast AONB itself from the areas of search and include land within 5km of the AONB.

**Should areas of search exclude land within 125 metres of sensitive receptors for amenity impacts, or should a different distance be used?**

| SA Objective | Exclude land within 125m of sensitive receptors (the baseline option) | Exclude land within 250 metres of sensitive receptors |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | 0<br>No difference between the options is expected. There would not be a significant difference to transport distances between areas of search for silica sand extraction and the existing processing plant at Leziate. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0<br>No difference between the options is expected. The existing AQMAs are within King's Lynn and would not be affected. There would not be a significant difference to transport distances between areas of search and the existing processing plant at Leziate. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | +<br>Whilst it is considered that a distance of 125 metres from sensitive receptors for amenity impacts is sufficient, with mitigation measures, increasing that distance to 250 metres will further minimise amenity impacts.<br>It is considered that a distance of 125 metres from sensitive receptors for amenity impacts is sufficient, with mitigation measures. However, increasing that distance to 250 metres will further minimise amenity impacts, with lower levels of mitigation necessary. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected because mineral extraction sites are unlikely to provide improved accessibility to services and facilities and reduce social exclusion. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0<br>There are likely to be heritage assets located both within 125 metres and 250 metres of sensitive receptors. Therefore no difference between the options is expected. Effects are not |

| SA Objective | Exclude land within 125m of sensitive receptors (the baseline option) | Exclude land within 250 metres of sensitive receptors |
|---|---|---|
| | | expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0<br>No difference between the options is expected. |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | 0<br>No difference between the options is expected. Restoration options for silica sand extraction sites would not be affected by the exclusion of land within 250 metres of sensitive receptors. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0<br>No difference between the options is expected. Some land within both 125 metres and 250 metres of sensitive receptors for amenity impacts is within the AONB. However, land within the AONB will be excluded from the areas of search. Excluding land within 250 metres of sensitive receptors for amenity impacts reduces the area of land available to be considered for an area of search. However, the area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect potential landscape impacts. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | +<br>It is considered that a distance of 125 metres from sensitive receptors for amenity impacts is sufficient, with mitigation measures. However, increasing that distance to 250 metres will further minimise impacts with lower levels of mitigation necessary. No difference between the options is expected regarding the potential for amenity gains (such as footpaths or public open space) on restoration. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0<br>No difference between the options is expected. |
| SA11: To promote sustainable use of minerals resources | 0 | -/0<br>Excluding land within 250 metres of sensitive receptors for amenity impacts reduces the area of land available to be considered for an area of search. This provides fewer options for future locations of silica sand extraction.<br>There would not be a significant difference to transport distances between areas of search and the existing processing plant at Leziate. |

| SA Objective | Exclude land within 125m of sensitive receptors (the baseline option) | Exclude land within 250 metres of sensitive receptors |
|---|---|---|
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0<br>No difference between the options is expected. |
| SA13: To encourage employment opportunities and promote economic growth | 0 | -<br>Excluding land within 250 metres of sensitive receptors for amenity impacts reduces the area of land available to be considered for an area of search. This provides fewer options for future locations of silica sand extraction. |

**Conclusion**

There are no differences between the options for the majority of the sustainability indicators. This is mainly due to the location of constraints in relation to sensitive receptors for amenity impacts. Excluding land within 250 metres of sensitive receptors is likely to have positive effects on amenity. However, there are potential negative effects on the use of mineral resources and economic growth because removing a larger area of land from consideration reduces the options available for future locations of silica sand extraction. On balance it is considered that the positive amenity effects of excluding land within 250 metres of sensitive receptors outweigh the affect this has on reducing the options available for areas of search, as specific mitigation methods for amenity impacts on silica sand development within the areas of search are not yet known

**Should areas of search exclude allocated sites and sites with planning permission for non-mineral uses that are located in or adjacent to the silica sand resource, or include this land?**

| SA Objective | Exclude land with planning permission or allocated for non-mineral uses (the baseline option) | Include land with planning permission or allocated for non-mineral uses |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | 0<br>No difference between the options is expected. There would not be a significant difference to transport distances between areas of search for silica sand extraction and the existing processing plant at Leziate. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0<br>No difference between the options is expected. There is not an existing AQMA within the area underlain by the silica sand resource. There would not be a significant difference to transport distances between areas of search and the existing processing plant at Leziate. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0<br>No difference between the options is expected. |

| SA Objective | Exclude land with planning permission or allocated for non-mineral uses (the baseline option) | Include land with planning permission or allocated for non-mineral uses |
|---|---|---|
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0<br>No difference between the options is expected. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0<br>No difference between the options is expected. |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | 0<br>No difference between the options is expected. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0<br>No difference between the options is expected. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>No difference between the options is expected. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0<br>No difference between the options is expected. |
| SA11: To promote sustainable use of minerals resources | 0 | 0<br>No difference between the options is expected. There would not be a significant difference to transport distances between areas of search and the existing processing plant at Leziate. Prior extraction of silica sand could occur through implementation of mineral safeguarding policy CS16 even if the land is not included within an area of search for silica sand extraction. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0<br>No difference between the options is expected. Flood risk assessment would be required as part of the local plan and planning application process for both mineral and non-mineral development. |

| SA Objective | Exclude land with planning permission or allocated for non-mineral uses (the baseline option) | Include land with planning permission or allocated for non-mineral uses |
|---|---|---|
| SA13: To encourage employment opportunities and promote economic growth | 0 | 0<br>No difference between the options is expected. Prior extraction of silica sand could occur through implementation of mineral safeguarding policy CS16 even if the land is not included within an area of search for silica sand extraction. |

**Conclusion**

No difference between the two options is expected because land with planning permission or allocated for non-mineral uses would be expected to be developed for these uses whether or not prior extraction of silica sand takes place. This means that the land would be developed regardless of whether it is within an area of search for silica sand extraction.

Excluding land with planning permission, or allocated for non-mineral uses from the areas of search for silica sand extraction is considered to be the correct approach to take because the implementation of Core Strategy Policy CS16 on mineral safeguarding is the provides a more appropriate method to assess whether prior extraction of silica sand should occur in these locations.

**Should areas of search only include the silica sand resource within the Leziate Beds or should the whole silica sand resource, as mapped by the BGS, be included?**

| SA Objective | Include the Leziate Beds only (the baseline option) | Include the whole silica sand resource as mapped by the BGS |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | 0<br>No difference between the options is expected. There would not be a significant difference to transport distances between areas of search for silica sand extraction and the existing processing plant at Leziate. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0<br>No difference between the options is expected. The existing AQMAs are within King's Lynn and would not be affected. There would not be a significant difference to transport distances between areas of search and the existing processing plant at Leziate. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0<br>No difference between the options is expected. The Leziate Beds cover a smaller land area than the whole silica sand resource. The area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect potential amenity impacts. |

| SA Objective | Include the Leziate Beds only (the baseline option) | Include the whole silica sand resource as mapped by the BGS |
|---|---|---|
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0<br>No difference between the options is expected. The Leziate Beds cover a smaller land area than the whole silica sand resource. There are heritage assets within both the Leziate Beds and the wider silica sand resource. Effects are not expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0<br>No difference between the options is expected regarding geodiversity.<br>No difference between the options is expected regarding biodiversity. The majority of designated sites for ecology at both the local and national level are located within the Leziate Beds. Restoration options for silica sand extraction, for example to deliver ecological benefits, would not be affected by the size of the resource included in the area of search. |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | 0<br>No difference between the options is expected. Restoration options for silica sand extraction sites would not be affected by the size of the resource included in the area of search. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0<br>No difference between the options is expected. Part of the Leziate Beds and the wider silica sand resource is within the AONB, however land within the AONB will be excluded from areas of search. The Leziate Beds cover a smaller land area than the whole silica sand resource. The area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect potential landscape impacts. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>No difference between the options is expected. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0<br>No difference between the options is expected. There are no groundwater source protection zones within the silica sand resource. Water quality is not expected to be affected by these options. |

| SA Objective | Include the Leziate Beds only (the baseline option) | Include the whole silica sand resource as mapped by the BGS |
|---|---|---|
| | | Grade 1 and 2 agricultural land will be excluded from the areas of search anyway. There is some grade 3 agricultural land underlain by both the Leziate Beds and the wider silica sand resource. |
| SA11: To promote sustainable use of minerals resources | 0 | 0<br>Including the whole silica sand resource in the areas of search provides more options for future locations of silica sand extraction. However, it is most likely that suitable locations for the extraction of silica sand, suitable for glass manufacture, will be from within the Leziate Beds. Therefore, including the Leziate Beds only provides more certainty as to where future extraction is likely to take place. There would not be a significant difference to transport distances between areas of search for silica sand extraction and the existing processing plant at Leziate. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0<br>No difference between the options is expected. Including the Leziate Beds only does not remove any significant areas of land at flood risk from the area of search. |
| SA13: To encourage employment opportunities and promote economic growth | 0 | 0<br>Including the whole silica sand resource in the areas of search provides more options for future locations of silica sand extraction. However, it is most likely that suitable locations for the extraction of silica sand, suitable for glass manufacture, will be from within the Leziate Beds. Therefore, including the Leziate Beds only provides more certainty as to where future extraction is likely to take place. |

**Conclusion**

There are no differences between the options for the sustainability indicators. This is because generally, constraints (such as amenity, ecology, landscape and heritage assets) either occur in both the Leziate Beds and the wider silica sand resource, or neither of them (such as groundwater source protection zones).

The Leziate Beds cover a smaller land area than the whole silica sand resource. The area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect the majority of potential impacts.

It is also more likely that suitable locations for the extraction of silica sand, suitable for glass manufacture, will be from within the Leziate Beds. Therefore, including the Leziate Beds only provides more certainty as to where future extraction is likely to take place.

**Should areas of search exclude agricultural land grade 3 (good to moderate), or include this land?**

| SA Objective | Exclude grade 3 agricultural land (the baseline option) | Include grade 3 agricultural land |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | +<br>Including grade 3 agricultural land increases the area of land suitable to be considered for an area of search. There is some grade 3 agricultural land to the south of the existing processing plant. Therefore including grade 3 agricultural land potentially reduces the distance that sand would need to be transported for processing. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0<br>No difference between the options is expected. The existing AQMAs are within King's Lynn and would not be affected. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0<br>No difference between the options is expected. Including grade 3 agricultural land increases the area of land suitable to be considered for an area of search. The area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect potential amenity impacts. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0<br>No difference between the options is expected. There are heritage assets within all grades of agricultural land. Effects are not expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0<br>No difference between the options is expected regarding geodiversity.<br>No difference between the options is expected regarding biodiversity. There are designated sites for ecology within grade 3 land, but also on lower grade and non-agricultural land. Restoration options for silica sand extraction, for example to deliver ecological benefits, would not be affected by whether or not grade 3 land is included within an area of search. |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | 0<br>No difference between the options is expected. |

| SA Objective | Exclude grade 3 agricultural land (the baseline option) | Include grade 3 agricultural land |
|---|---|---|
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0<br>No difference between the options is expected. Some grade 3 agricultural land is within the AONB, however land within the AONB will be excluded from areas of search. Including grade 3 agricultural land in areas of search would cover a larger land area than excluding grade 3 land. The area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect potential landscape impacts. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>No difference between the options is expected. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0/-<br>There are no groundwater source protection zones within the silica sand resource. Therefore, they will not be affected by which grades of agricultural land are included. Water quality is not expected to be affected by the agricultural land grades included in the areas of search.<br>Including grade 3 agricultural land within the areas of search could lead to the loss of grade 3a agricultural land. This loss could be temporary or permanent, depending on the timescale for silica sand extraction and whether the site is subsequently restored back to agricultural use. |
| SA11: To promote sustainable use of minerals resources | 0 | +<br>Including grade 3 agricultural land in the areas of search provides more options for future locations of silica sand extraction.<br>There is some grade 3 agricultural land to the south of the existing processing plant. Therefore, including grade 3 agricultural land potentially reduces the distance that sand would need to be transported for processing. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0<br>A large area in the north of the silica sand resource is both grade 3 land and at risk of flooding. However, there is not this correlation between all grade 3 land and flood risk zones. Silica sand extraction is water compatible development therefore no difference between the options is expected. |

| SA Objective | Exclude grade 3 agricultural land (the baseline option) | Include grade 3 agricultural land |
|---|---|---|
| SA13: To encourage employment opportunities and promote economic growth | 0 | +/-<br>Including grade 3 land increases the area of land suitable to be considered for an area of search. This provides more options for future locations of silica sand extraction. The timescale of the silica sand operations and the type of restoration would affect how long the land would not be in productive agricultural use. |

**Conclusion**

There are no differences between the options for the majority of the sustainability indicators. This is because generally constraints (such as amenity, ecology, landscape and heritage assets) either occur in both grade 3 and other grades of agricultural and non-agricultural land, or none of them (such as groundwater source protection zones).

The main benefits of including grade 3 agricultural land are that this provides more options for future locations of silica sand extraction. The only potential negative effects are the temporary or permanent loss of grade 3 agricultural land to silica sand extraction, depending on the final restoration of the site. Due to the national importance of silica sand this is considered to be an acceptable trade off.

**Should areas of search exclude land in flood zones 2 and 3, or include this land?**

| SA Objective | Exclude land in flood zones 2 & 3 (the baseline option) | Include land in flood zones 2 and 3 |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | 0<br>No difference between the options is expected. Silica sand extraction is water compatible development. Including land in flood zones 2 and 3 would not affect the distance that sand would need to be transported for processing. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0<br>No difference between the options is expected. The existing AQMAs are within King's Lynn and would not be affected. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0<br>No difference between the options is expected. Including land in flood zones 2 and 3 increases the area of land suitable to be considered for an area of search. The area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect potential amenity impacts. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0<br>No difference between the options is expected. There are likely to be heritage assets located in all flood zones. Effects are not expected on the townscape because extraction will not take place in urban areas. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0<br>No difference between the options is expected regarding geodiversity.<br>No difference between the options is expected regarding biodiversity. There are designated sites for ecology within land in flood zones 2 and 3, but also on land in flood zone 1. Restoration options for silica sand extraction, for example to deliver ecological benefits, are unlikely to be affected by whether or not land in flood zones 2 and 3 are included within an area of search. |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | +<br>There is the potential for additional flood storage capacity to be provided on restoration of a silica sand extraction site in flood zones 2 or 3. |
| SA8: To protect and enhance the quality and distinctiveness of the | 0 | 0<br>No difference between the options is expected. Some land in flood zones 2 and 3 is within the |

| SA Objective | Exclude land in flood zones 2 & 3 (the baseline option) | Include land in flood zones 2 and 3 |
|---|---|---|
| countryside and landscape | | AONB, however land within the AONB will be excluded from areas of search. Including land in flood zones 2 and 3 within areas of search would cover a larger land area than excluding them. The area of search is an area within which planning permission may be granted for a more specific parcel of land and therefore the size of the area of search does not affect potential landscape impacts. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>No difference between the options is expected. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0<br>No difference between the options is expected. There are no groundwater source protection zones within the silica sand resource. Water quality is not expected to be affected by the inclusion of grade 2 and 3 flood risk zones.<br>All grades of agricultural land and non-agricultural land fall within flood zones 2 and 3. Therefore there is no direct impact on soil quality from including land in flood zones 2 and 3 within the areas of search. |
| SA11: To promote sustainable use of minerals resources | 0 | **+**<br>Including land in flood zones 2 and 3 in the areas of search provides more options for future locations of silica sand extraction. Including land in flood zones 2 and 3 would not affect the distance that sand would need to be transported for processing. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | **0**<br>Silica sand extraction is water compatible development. However, land in flood zone 1 is preferable for development and the sequential test should be used in the selection of areas for silica sand extraction.<br>There is the potential for additional flood storage capacity to be provided on restoration of a silica sand extraction site in flood zones 2 or 3. |
| SA13: To encourage employment opportunities and promote economic growth | 0 | 0<br>Including land in flood zones 2 and 3 increases the area of land suitable to be considered for an area of search. This provides more options for future locations of silica sand extraction. Silica sand extraction is 'water compatible' development. Therefore, it is not considered that this will affect employment and economic growth. |

**Conclusion**

There are no differences between the options for the majority of the sustainability indicators. This is because generally constraints (such as amenity, ecology, landscape and heritage assets) either occur in all flood zones, or none of them (such as groundwater source protection zones).

The main benefits of including flood zones 2 and 3 are that this provides more options for future locations of silica sand extraction because silica sand is water compatible development. There is also the potential for additional flood storage capacity to be provided on restoration of a silica sand extraction site.

**Should an area of search be at least 20 hectares in area or should all areas of search be considered?**

| SA Objective | Areas of search to be at least 20 hectares in area (the baseline option) | All areas of search to be considered regardless of size |
|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | 0 | +<br>Some of the potential areas of search which are less than 20 hectares in size are located near to the processing plant at Leziate. Therefore, excluding these areas of search potentially increases the distance that silica sand would need to be transported for processing. However, it is considered unlikely that sites of less than 20 hectares in size would be developed. |
| SA2: To improve air quality in line with the National Air Quality Standards | 0 | 0/+<br>The existing AQMAs are within King's Lynn and would not be affected. However, some of the potential areas of search which are less than 20 hectares in size are located near to the processing plant at Leziate. Therefore, excluding these areas of search potentially increases the distances that silica sand would need to be transported for processing. However, it is considered unlikely that sites of less than 20 hectares in size would be developed. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0<br>No difference between the options is expected because the areas of search are all at least 250 metres from sensitive receptors for amenity impacts. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0<br>No difference between the options is expected. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0/+<br>Effects are not expected on the townscape because extraction will not take place in urban areas. The sieve mapping process means that all potential areas of search are at least 250metres from heritage assets. While the setting of an asset |

| SA Objective | Areas of search to be at least 20 hectares in area (the baseline option) | All areas of search to be considered regardless of size |
|---|---|---|
| | | may extend further than 250m this is no more likely for areas under 20 hectares than over. Including areas of search under 20 hectares would mean that the choice of potential locations for extraction was greater. Therefore, more opportunities would be available outside the setting of a heritage asset. However, it is considered unlikely that sites of less than 20 hectares in size would be developed. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0<br>No difference between the options is expected on geodiversity or biodiversity. The smaller sites exhibit the same general relationship with biodiversity and geodiversity sites as the larger sites over 20 hectares. However, it is considered unlikely that sites of less than 20 hectares in size would be developed. |
| SA7: To promote innovative solutions for the restoration and after use of minerals sites | 0 | 0<br>No difference between the options is expected. Restoration options for silica sand extraction sites would not be affected by the minimum size of areas of search. |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0<br>No difference between the options is expected. The areas of search exclude land within the AONB. Including all areas of search regardless of size means that there would be more areas of search covering a greater total land area. The areas of search are areas within which planning permission may be granted for a more specific parcel of land and therefore the aggregated size of the areas of search does not affect potential landscape impacts. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0<br>No difference between the options is expected. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0<br>There are no groundwater source protection zones within the silica sand resource. Surface water quality will not be affected by the options.<br>In terms of soil quality, the areas of search exclude grade 1 and 2 agricultural land. A few of the areas of search of less than 20 hectares are on grade 3 agricultural land. However, it is considered unlikely that sites of less than 20 hectares in size would be developed. |
| SA11: To promote sustainable use of minerals resources | 0 | 0<br>Including all potential areas of search regardless of size will theoretically provide more options for future locations of silica sand extraction. However, |

| SA Objective | Areas of search to be at least 20 hectares in area (the baseline option) | All areas of search to be considered regardless of size |
|---|---|---|
| | | it is unlikely that extraction sites will come forward for less than 20 hectares of land and therefore smaller areas of search are unlikely to be developed. Therefore, it is not considered that this option will affect the supply of silica sand. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0<br>No difference between the options is expected. Only one of the potential areas of search that are less than 20 hectares in size has any land within flood zone 2 or 3. Silica sand extraction is water compatible development. |
| SA13: To encourage employment opportunities and promote economic growth | 0 | 0<br>Including all potential areas of search regardless of size will theoretically provide more options for future locations of silica sand extraction. However, it is unlikely that extraction sites will come forward for less than 20 hectares of land and therefore smaller areas of search are unlikely to be developed. Therefore, it is not considered that this option will affect employment and economic growth. |

**Conclusion**

There are no differences between the options for the majority of sustainability indicators. This is because all areas of search have been defined using the same methodology and therefore areas of search above and below 20 hectares in size will be located at the same minimum distances from a range of planning constraints.

There are potential positive effects if all areas of search are included regardless of size because some of the areas of search of less than 20 hectares are close to the existing processing plant at Leziate.

Including all areas of search regardless of size will theoretically provide more options for future locations of silica sand extraction. However, it is unlikely that extraction sites will come forward for less than 20 hectares of land and therefore smaller areas of search are unlikely to be developed.

### 4.7 Conclusions of the Sustainability Appraisal on the strategic options for sand and gravel and carstone extraction

Policy MP2 contains a preference for sand and gravel, and carstone sites to be located within five miles of urban areas and three miles of main towns. Urban areas and main towns are the primary locations within Norfolk for significant growth in housing and employment facilities. An alternative option for a preference for these mineral extraction sites to be located within ten miles of urban areas and main towns has also been considered.

Due to the distribution of urban areas and main towns in Norfolk, such a distance results in virtually all of Norfolk being within 10 miles and therefore provides no spatial preference for the policy. An assessment table of these options is included on page 83 of this document. The assessment table below considers the spatial strategy for sand and gravel and carstone extraction. The assessment table for the full Policy MP2 is contained in Appendix A to this Sustainability Appraisal Report.

**Policy MP2: Spatial strategy for mineral extraction – sites for carstone and sand and gravel**

| SA Objective | Assessment of short-term effects | Assessment of medium-term effects | Assessment of long-term effects | Comments |
|---|---|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | + | + | + | The spatial strategy for the location of specific sites aims to locate sand and gravel, or carstone, extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk, or be well-related via appropriate transport infrastructure. These requirements are expected to limit the distance that minerals will be transported from extraction sites and the associated emissions to air from road transport, which should reduce contributions to climate change. |
| SA2: To improve air quality in line with the National Air Quality Standards | + | + | + | The spatial strategy for the location of specific sites aims to locate sand and gravel, or carstone, extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk, or be well-related via appropriate transport infrastructure. These requirements are expected to limit the distance that minerals will be transported from extraction sites and the associated emissions to air from road transport. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0 | 0 | The spatial strategy for the location of specific sites aims to locate sand and gravel, or carstone, extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk.<br>This policy is expected to have a neutral effect on noise, vibration and visual intrusion |

| SA Objective | Assessment of short-term effects | Assessment of medium-term effects | Assessment of long-term effects | Comments |
|---|---|---|---|---|
| | | | | because local effects will depend upon the specific location of new sites in relation to sensitive receptors to amenity impacts. Each proposed extraction site has been assessed separately in the SA. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0 | 0 | Mineral extraction sites are unlikely to provide improved accessibility to services and facilities or reduced social exclusion. Therefore, this policy is expected to have a neutral effect on this objective. The effect on employment is assessed under objective SA13. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0 | 0 | There are heritage assets located within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also heritage assets located at greater distances from these settlements. Therefore, the spatial strategy for the location of specific sites will have a neutral effect on heritage assets. The policy states that development should not be located within a designated heritage asset or its setting if the proposed development would cause substantial harm to or the loss of the heritage asset. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0 | 0 | There are designated sites for biodiversity and also locations of geodiversity priority features within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also designated sites for biodiversity and locations of geodiversity priority features at greater distances from Norfolk's urban areas and main towns. The spatial strategy for the location of specific sites is therefore expected to have a neutral effect on biodiversity and geodiversity. The spatial strategy states that development should not be located within an SSSI or habitats site. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA7: To promote innovative solutions for the restoration and | 0 | 0 | 0 | The spatial strategy for the location of specific sites will not have an effect on the restoration and afteruse of mineral sites. |

| SA Objective | Assessment of short-term effects | Assessment of medium-term effects | Assessment of long-term effects | Comments |
|---|---|---|---|---|
| after use of minerals sites | | | | |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0 | 0 | Mineral extraction sites are usually located in rural areas. There are areas of protected landscapes (such as AONB, the Broads and Conservation Areas) and areas of countryside, located within five miles of some of Norfolk's urban areas and three miles of some of Norfolk's main towns. There are also areas of protected landscape and areas of countryside at greater distances from these settlements. Therefore, the spatial strategy for the location of specific sites will have a neutral effect on the countryside and landscape. The policy states that development should not be located within the Broads Authority Area or the AONB, other than in exceptional circumstances. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0 | 0 | The spatial strategy for the location of specific sites aims to locate sand and gravel, or carstone, extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk. This policy is expected to have a neutral effect on the health and amenity of local communities because local effects will depend upon the specific location of new sites in relation to sensitive receptors to health and amenity impacts. Each proposed extraction site has been assessed separately in the SA. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0 | 0 | The majority of agricultural land in Norfolk is grades 2 and 3. Grade 3 agricultural land could be BMV agricultural land if it is grade 3a. There are areas of Grade 2 and 3 agricultural land within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also areas of Grade 2 and 3 agricultural land at greater distances from Norfolk's urban areas and main towns. The spatial strategy for the location of specific sites is therefore expected to have a neutral effect on soil quality. The spatial strategy is also expected to have a neutral effect on water quality. Local effects will depend upon the specific location of new sites. Each |

| SA Objective | Assessment of short-term effects | Assessment of medium-term effects | Assessment of long-term effects | Comments |
|---|---|---|---|---|
| | | | | proposed extraction site has been assessed separately in the SA. |
| SA11: To promote sustainable use of minerals and waste resources | + | + | + | The spatial strategy for the location of specific sites aims to locate mineral extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk. These requirements are expected to ensure that mineral extraction sites are developed in sustainable locations in transport terms. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0 | 0 | There are areas at high risk and areas at low risk of flooding within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also areas at high risk of flooding at greater distances of Norfolk's urban areas and main towns. The spatial strategy in this policy for the location of specific sites is therefore expected to have a neutral effect on flood risk. Sand and gravel extraction is considered to be a 'water compatible' land use which is suitable in all flood zones. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA13: To encourage employment opportunities and promote economic growth | ++ | ++ | ++ | The spatial strategy for the location of specific sites aims to locate mineral extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk. These requirements should provide this raw material in suitable locations to support economic growth in other sectors. New mineral extraction sites may also increase employment levels slightly. |

**Conclusion**

This policy scores positively for effects on climate change, air quality, economic growth and sustainable use of minerals. This policy scores neutrally for all other SA objectives. No changes or mitigation measures are recommended to this policy.

**Policy MP2: Spatial strategy for mineral extraction – alternative options**

| SA Objective | Assessment of 5 miles from urban areas and 3 miles from main towns | Assessment of 10 miles from urban areas and main towns | Comments |
|---|---|---|---|
| SA1: To adapt to and mitigate the effects of climate change by reducing contributions to climate change | + | - | The spatial strategy for the location of specific sites aims to locate sand and gravel, or carstone, extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk, or be well-related via appropriate transport infrastructure. These requirements are expected to limit the distance that minerals will be transported from extraction sites and the associated emissions to air from road transport, which should reduce contributions to climate change. An alternative option, of locating sand and gravel, and carstone extraction within 10 miles of an urban area or main town would have less effect on reducing transport and associated emissions because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these sites. |
| SA2: To improve air quality in line with the National Air Quality Standards | + | - | The spatial strategy for the location of specific sites aims to locate sand and gravel, or carstone, extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk, or be well-related via appropriate transport infrastructure. These requirements are expected to limit the distance that minerals will be transported from extraction sites and the associated emissions to air from road transport. An alternative option, of locating sand and gravel, and carstone extraction within 10 miles of an urban area or main town would have less effect on reducing transport and associated emissions because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these sites. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA3: To minimise noise, vibration and visual intrusion | 0 | 0 | The spatial strategy for the location of specific sites aims to locate sand and gravel, or carstone, extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk. This policy is expected to have a neutral effect on noise, vibration and visual intrusion because local effects will |

| SA Objective | Assessment of 5 miles from urban areas and 3 miles from main towns | Assessment of 10 miles from urban areas and main towns | Comments |
|---|---|---|---|
| | | | depend upon the specific location of new sites in relation to sensitive receptors to amenity impacts. An alternative option, of locating sand and gravel, and carstone extraction within 10 miles of an urban area or main town is also expected to have a neutral effect on noise, vibration and visual intrusion because local effects will depend upon the specific location of new sites in relation to sensitive receptors to amenity impacts. However, virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these sites. Each proposed extraction site has been assessed separately in the SA. |
| SA4: To improve accessibility to jobs, services and facilities and reduce social exclusion | 0 | 0 | Mineral extraction sites are unlikely to provide improved accessibility to services and facilities or reduced social exclusion. Therefore, this policy is expected to have a neutral effect on this objective. The effect on employment is assessed under objective SA13. |
| SA5: To maintain and enhance the character of the townscape and historic environment | 0 | 0 | There are heritage assets located within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also heritage assets located at greater distances from these settlements. Therefore, the spatial strategy for the location of specific sites will have a neutral effect on heritage assets. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA6: To protect and enhance Norfolk's biodiversity and geodiversity | 0 | 0 | There are designated sites for biodiversity and also locations of geodiversity priority features within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also designated sites for biodiversity and locations of geodiversity priority features at greater distances from Norfolk's urban areas and main towns. The spatial strategy for the location of specific sites is therefore expected to have a neutral effect on biodiversity and geodiversity. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA7: To promote innovative solutions for the | 0 | 0 | The spatial strategy for the location of specific sites will not have an effect on the restoration and afteruse of mineral sites. |

| SA Objective | Assessment of 5 miles from urban areas and 3 miles from main towns | Assessment of 10 miles from urban areas and main towns | Comments |
|---|---|---|---|
| restoration and after use of minerals sites | | | |
| SA8: To protect and enhance the quality and distinctiveness of the countryside and landscape | 0 | 0 | Mineral extraction sites are usually located in rural areas. There are areas of protected landscapes (such as AONB, the Broads and Conservation Areas) and areas of countryside, located within five miles of some of Norfolk's urban areas and three miles of some of Norfolk's main towns. There are also areas of protected landscape and areas of countryside at greater distances from these settlements. Therefore, the spatial strategy for the location of specific sites will have a neutral effect on the countryside and landscape. Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA9: To contribute to improved health and amenity of local communities in Norfolk | 0 | 0 | The spatial strategy for the location of specific sites aims to locate sand and gravel, or carstone, extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk. This policy is expected to have a neutral effect on the health and amenity of local communities because local effects will depend upon the specific location of new sites in relation to sensitive receptors to health and amenity impacts. An alternative option, for locating sand and gravel, and carstone extraction within 10 miles of an urban area or main town would have the same effect. Virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these sites. Each proposed extraction site has been assessed separately in the SA. |
| SA10: To protect and enhance water and soil quality in Norfolk | 0 | 0 | The majority of agricultural land in Norfolk is grades 2 and 3. Grade 3 agricultural land could be BMV agricultural land if it is grade 3a. There are areas of Grade 2 and 3 agricultural land within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also areas of Grade 2 and 3 agricultural land at greater distances from Norfolk's urban areas and main towns. The spatial strategy for the location of specific sites is therefore expected to have a neutral effect on soil |

| SA Objective | Assessment of 5 miles from urban areas and 3 miles from main towns | Assessment of 10 miles from urban areas and main towns | Comments |
|---|---|---|---|
| | | | quality. The spatial strategy is also expected to have a neutral effect on water quality.<br>Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA11: To promote sustainable use of minerals and waste resources | + | - | The spatial strategy for the location of specific sites aims to locate mineral extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk. These requirements are expected to ensure that mineral extraction sites are developed in sustainable locations in transport terms.<br>Local effects will depend upon the specific location of new sites. An alternative option, for locating sand and gravel, and carstone extraction within 10 miles of an urban area or main town would have less effect on reducing transport and associated emissions and therefore be less sustainable because virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these sites. Each proposed extraction site has been assessed separately in the SA. |
| SA12: To reduce the risk of current and future flooding at new and existing development | 0 | 0 | There are areas at high risk and areas at low risk of flooding within five miles of Norfolk's urban areas and three miles of Norfolk's main towns. There are also areas at high risk of flooding at greater distances of Norfolk's urban areas and main towns. The spatial strategy in this policy for the location of specific sites is therefore expected to have a neutral effect on flood risk. Sand and gravel extraction is considered to be a 'water compatible' land use which is suitable in all flood zones.<br>Local effects will depend upon the specific location of new sites. Each proposed extraction site has been assessed separately in the SA. |
| SA13: To encourage employment opportunities and promote economic growth | ++ | + | The spatial strategy for the location of specific sites aims to locate mineral extraction sites in proximity to the locations of greatest housing and employment growth in Norfolk. These requirements should provide this raw material in suitable locations to support economic growth in other sectors. An alternative option, of locating sand and gravel, and carstone |

| SA Objective | Assessment of 5 miles from urban areas and 3 miles from main towns | Assessment of 10 miles from urban areas and main towns | Comments |
|---|---|---|---|
| | | | extraction within 10 miles of an urban area or main town could provide the material at greater distances from the locations of greatest housing and employment growth and therefore have increased transport costs. Virtually the entirety of Norfolk is within 10 miles of these locations. Therefore, it provides no spatial preference for the location of these sites. New mineral extraction sites may also increase employment levels slightly. |

**Conclusion**

This policy scores positively for effects on climate change, air quality, economic growth and sustainable use of minerals. This policy scores neutrally for all other SA objectives. No changes or mitigation measures are recommended to this policy. The alternative policy option would score negatively for climate change, air quality, and sustainable use of mineral, positively for economic growth although not as strongly as the preferred policy option. The alternative policy option scores neutrally for all other SA objectives but does not provide a spatial preference for the location of mineral extraction sites because virtually all of Norfolk is within 10 miles of an urban area or main town.

### 4.6 Conclusions of the Sustainability Appraisal on the strategic options for defining areas of search

A summary of the conclusions of the Sustainability Appraisal of the strategic options for defining areas of search for silica sand extraction are as follows and the areas of search have been defined using the following criteria:

#### Exclude land within the hydrological catchments of Roydon Common and Dersingham Bog SAC from the areas of search

There are no differences between the options for the majority of the sustainability indicators. There would be a positive effect on biodiversity by excluding land based on hydrological catchments because it would remove land where the potential to impact on water dependent features is higher. The potential negative effects are that removing a larger area of land from consideration reduces the options available for future locations of silica sand extraction closest to the Leziate. Overall it is considered that excluding land based on hydrological catchments from an area of search is considered to be an acceptable approach due to the international importance of Roydon Common and Dersingham Bog.

#### Exclude land within 1km of The Wash from the areas of search

There are no differences between the options for the majority of the sustainability indicators. There could be a positive effect on biodiversity from excluding land within 1km of The Wash. However, either option may not exclude functional habitat for The Wash as bird species may forage further inland. It is considered that potential disturbance to birds from noise and light from silica sand extraction operations will be no greater at 250 metres than at 1km. Noise and light can also be controlled by planning conditions. The potential negative effect is that removing a larger area of land from consideration reduces the options available for future locations of silica sand extraction. On balance land within 1km of The Wash will be excluded from the areas of search because this would be expected to reduce the area of functional habitat that could potentially be affected. It is also considered that by excluding land within 1km of The Wash, mineral extraction would be unlikely to have an adverse effect on the integrity of The Wash SSSI, SAC, SPA or Ramsar site.

#### Exclude land within 250 metres of SSSIs from the areas of search

Excluding land within 3km of SSSIs with biological features removes a significant area of the silica sand resource which would pose major difficulties in being able to define sufficient areas of search to meet the shortfall. There would be significant negative effects on a number of sustainability objectives and limited positive effects. It is not considered necessary to exclude 3km around all SSSIs to avoid negative effects on biodiversity. Therefore, it is considered appropriate to only exclude land within 250 metres of biological SSSIs; the impacts on individual SSSIs would be better assessed at the level of individual areas of search.

#### Exclude land within 250 metres of ancient woodland from the areas of search

There are no differences between the options for the majority of sustainability indicators. On balance it is considered that the positive biodiversity effects of excluding land within 250 metres of ancient woodland sites outweigh the affect this has on reducing the options available for areas of search because the area of land excluded is a very small area of the silica sand resource.

#### Exclude land within 250 metres of designated heritage assets from the areas of search

Due to the significant number of negative impacts expected from excluding land within 1km of designated heritage assets it is considered to be appropriate to only exclude land within 250 metres of designated heritage assets. The setting of a heritage asset is likely to be different for each heritage asset and therefore excluding land within 1km of every designated heritage assets is not an appropriate way to ensure no adverse impacts on heritage assets. A full assessment of potential impacts on designated heritage assets would be more appropriately carried out at the level of individual areas of search.

**Exclude land within the Norfolk Coast AONB from the areas of search**

Excluding land within 5km of the AONB is expected to have negative effects on economic growth, mineral resources, transport impacts and agricultural land and positive effects on flood risk. There are no differences between the options for the majority of sustainability indicators because whilst there may be positive effects within the 5km area, there could be negative effects outside it due to increased development pressure. It is therefore considered appropriate to only exclude the Norfolk Coast AONB itself from the areas of search and include land within 5km of the AONB.

**Exclude land within 250 metres of sensitive receptors for amenity impacts from the areas of search**

There are no differences between the options for the majority of the sustainability indicators. Excluding land within 250 metres of sensitive receptors is likely to have positive effects on amenity. On balance it is considered that the positive amenity effects of excluding land within 250 metres of sensitive receptors outweigh the affect this has on reducing the options available for areas of search, as specific mitigation methods for amenity impacts on silica sand development within the areas of search are not yet known.

**Exclude land with planning permission or allocated for non-mineral uses from the areas of search**

No difference between the two options is expected. Excluding land with planning permission, or allocated for non-mineral uses from the areas of search for silica sand extraction is considered to be the correct approach to take because the implementation of Core Strategy Policy CS16 on mineral safeguarding is the provides a more appropriate method to assess whether prior extraction of silica sand should occur in these locations.

**Only include the Leziate Beds mineral deposit within the areas of search**

There are no differences between the options for the sustainability indicators. It is more likely that suitable locations for the extraction of silica sand, suitable for glass manufacture, will be from within the Leziate Beds. Therefore, including the Leziate Beds only provides more certainty as to where future extraction is likely to take place.

**Include grade 3 agricultural land within the areas of search**

There are no differences between the options for the majority of the sustainability indicators. The main benefits of including grade 3 agricultural land are that this provides more options for future locations of silica sand extraction. The only potential negative effects are the temporary or permanent loss of grade 3 agricultural land to silica sand extraction, depending on the final restoration of the site. Due to the national importance of silica sand this is considered to be an acceptable trade off.

**Include land within Flood Zones 2 and 3 within the areas of search**

There are no differences between the options for the majority of the sustainability indicators. The main benefits of including flood zones 2 and 3 are that this provides more options for future locations of silica sand extraction because silica sand is water compatible development. There is also the potential for additional flood storage capacity to be provided on restoration of a silica sand extraction site.

**Areas of search to be at least 20 hectares in size**

There are no differences between the options for the majority of sustainability indicators. Including all areas of search regardless of size will theoretically provide more options for future locations of silica sand extraction. However, it is unlikely that extraction sites will come forward for less than 20 hectares of land and therefore smaller areas of search are unlikely to be developed.

However, as stated earlier, Areas of Search are not allocated in the draft Publication NM&WLP and therefore Policy MP2 does not contain the criteria for defining Areas of Search. The assessment table for the full Policy MP2 is contained in Appendix A to this Sustainability Appraisal Report.

## 5. Predicting the Effects of the Minerals and Waste Local Plan, including alternatives (Task B3)

A sustainability appraisal has also been carried out on all of the proposed policies for minerals and waste management development and alternatives. The appraisal tables for each policy are contained in Appendix A to this report. Appraisal tables for the assessment of alternatives to policies WP1, WP2, MP1 and MP2 are contained in section 4 of this report.

A sustainability appraisal has been carried out on all of the proposed specific sites for mineral extraction and the areas of search for future silica sand extraction. The specific sites were all considered as alternatives within the Initial Consultation (2018) and in the Preferred Options document (2019) and the Sustainability Appraisal. The appraisal tables for each proposed site and area are contained in Appendix B to this report.

A sustainability appraisal has been carried out on all of the proposed specific sites for waste management facilities. The specific sites were all considered as alternatives within the Preferred Options document and the Sustainability Appraisal. The appraisal tables for each proposed specific site for waste management are contained in Appendix D to this report.

## 6. Task B4: Evaluating the Effects of the Minerals and Waste Local Plan

### 6.1 Overall Effects of the Minerals and Waste Local Plan

The effects of each of the proposed specific sites and areas of search on the SA/SEA objectives are summarised in Table 6.1 overleaf for the proposed mineral sites. Details of specific effects from the proposed specific sites and areas of search for mineral extraction are provided in the individual site assessment tables in Appendix B.

The effects of each of the proposed specific sites for waste management facilities on the SA/SEA objectives are summarised in Table 6.2. Details of the specific effects from the proposed specific sites for waste management facilities are provided in the individual site assessment Tables in Appendix D.

The overall effects of the NM&WLP planning policies on the SA/SEA objectives are summarised in Table 6.3. Details of specific policy effects are provided in the individual policy assessment tables in Appendix A. Overall, the proposed policies will have mainly positive or neutral effects. This is largely due to the nature of the policies which aim to protect the amenity of local communities, the natural, built and historic environment, the landscape and townscape of Norfolk.

### 6.2 Short, medium and long term effects of the Minerals and Waste Local Plan

The short, medium and long term effects of the proposed planning policies (general policies, waste management specific policies, and minerals specific policies) have been assessed and the assessment tables for all of the policies are contained in Appendix A.

The short and medium term effects of mineral extraction at the proposed specific sites and within the areas of search are assessed under the ‘operational’ stage (the first SA score). Long term effects – restoration and post-restoration stages – are assessed by the second SA score. The assessment tables for the proposed specific sites and areas of search for mineral extraction are contained in Appendix B.

The proposed specific sites for waste management facilities are all proposed to be permanent, therefore only one score has been given because it considered that the effects of the site would be the same in the short term and medium term. The assessment tables for the proposed specific sites for waste management facilities are contained in Appendix D.

### 6.3 Cumulative and synergistic effects of the NM&WLP and consideration of alternatives

The specific sites proposed for mineral extraction were all considered as alternatives within the Initial Consultation document (2018) and again in the Preferred Options document (2019) and the Sustainability Appraisal. The proposed specific sites for waste management were submitted to Norfolk County Council in 2019 and were all included in the Preferred Options document to be

considered as alternatives. The strategic alternatives for policies WP1, WP2, MP1 and MP2 are assessed in section 4 of this report.

The Minerals and Waste Local Plan contains policies MP6 and MW1 which specifically refer to the assessment of cumulative impacts, as follows:

Policy MP6 'Cumulative impacts and phasing of workings' provides details that a proposed mineral extraction site must comply with to ensure that cumulative impacts can be adequately mitigated to enable a proposal to be acceptable.

Policy MW1 'Development Management Criteria' includes a requirement that it must be demonstrated that minerals and/or waste development would not have an unacceptable impact (including cumulative impact in combination with other existing or permitted development) on a list of development management criteria. The supporting text to the policy provides further details on how cumulative impacts will be assessed at the planning application stage.

Cumulative impacts from HGV movements would also need to be assessed under Policy MW2 Transport, which requires HGV movements, taking into account cumulative impacts, to not generate, unacceptable risks to the safety of road users and pedestrians, unacceptable impacts on the capacity and/or efficiency of the highway network, unacceptable impacts on air quality and unacceptable impacts on the highway network ((e.g. road or kerbside damage).

Details of potential cumulative and synergistic effects which could result from the allocated sites in the Minerals and Waste Local Plan are listed below. There will not be any effects from the unallocated sites. For the allocated sites, cumulative and synergistic effects have been considered where the site is located in proximity to another existing or allocated mineral extraction site. The reasons for each site being allocated – or not allocated – are also listed below:

### 6.3.1 Breckland

**Allocated sites**

**MIN 12 Beetley:** This site is proposed as an extension to an existing mineral operation. The Sustainability Appraisal raised potential negative impacts due to the proximity of residential properties to the site boundary. However, land in the north-west and south-west corners of the site (nearest to residential properties) are not proposed to be extracted. The draft specific site policy requires submission of noise and dust assessments and a programme of mitigation measures to deal appropriately with any amenity impacts. The draft site policy also requires the submission of a detailed landscaping and screening scheme to ensure that there are no unacceptable impacts on residents of Chapel Road and Fakenham Road/Church Lane and users of Field Lane. The site will need to be phased with the adjacent permitted site so that only one site is worked for extraction at a time in accordance with a phased and progressive restoration scheme. As an extension to an existing site, the proposed extraction would not lead to additional vehicle movements, but the existing vehicle movements would continue for a further 15 years. The site is allocated in the existing Minerals Site Specific Allocations DPD. It is concluded that the site is suitable to continue to allocate in the NM&WLP, subject to compliance with the policy requirements at the planning application stage.

**MIN 51/ MIN 13 / MIN 08 Beetley:** These three adjacent fields are proposed to be worked as one site in a phased manner. The Sustainability Appraisal raised potential negative impacts due to a few residential dwellings within 250m of the site, and potential negative landscape impacts because the site can currently be seen easily from adjacent roads, but as a flat site it would be relatively easy to screen from view with bunds and hedgerow planting. The site policy requires the submission of noise and dust assessments and mitigation measures to deal with any amenity impacts, it also requires site screening to include boundary hedges. As a new site it would lead to additional HGV movements (30 movements a day – 15 in and 15 out) onto the B1146 Fakenham Road and the Highway Authority consider the site access to be suitable. One of these fields (MIN 51) is allocated in the existing Minerals Site Specific Allocations DPD. It is concluded that the site, consisting of

three adjacent fields, is suitable to allocate, subject to compliance with the policy requirements at the planning application stage.

**Beetley sites: Site MIN 12 and sites MIN51/ MIN 13/ MIN 08** are located in proximity to each other and to other mineral workings. Site MIN 51/ MIN 13/ MIN 08 are located opposite the processing plant site for MIN 12. It is considered that the sites could both be appropriately screened to mitigate any unacceptable adverse landscape impacts and both sites would be restored to agriculture with wide field margins, hedgerows and additional woodland to provide landscape and biodiversity net gains. With regards to the cumulative traffic impact from additional HGV movements from sites MIN51/MIN 13/MIN 08 in addition to the continuation of existing traffic movements from MIN 12 as an extension to the existing mineral workings, the Highway Authority consider that the site access is suitable and a Transport Assessment would be required at the planning application stage. If it was deemed necessary at the planning application stage, the annual production rate at the site could be limited by planning condition to limit the associated traffic movements. It is also considered that there are sufficient policy requirements regarding landscape and amenity mitigation to ensure no unacceptable adverse cumulative impacts.

**MIN 200 Carbrooke:** This site is proposed as an extension to an existing site. The Sustainability Appraisal raised potential negative impacts on the historic environment due to the proximity of listed buildings to the site. The site policy requires the submission of a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required. It also requires the submission of a landscaping and screening scheme to ensure that the settings of nearby listed buildings are protected. There is only one sensitive receptor within 250m of the site which is 144m from the site boundary. The draft specific site policy requires the submission of noise and dust assessments and a programme of mitigation measures to deal appropriately with any amenity impacts. It also requires the site to be phased with the adjacent permitted site so that only one site is worked for extraction at a time in accordance with a phased and progressive working and restoration scheme. As an extension to an existing site, the proposed extraction would not lead to additional vehicle movements, but the existing vehicle movements would continue for a further 12 years. This site is not located near any other allocated sites in the NM&WLP and would be phased with the existing permitted site, therefore unacceptable cumulative effects are not expected. It is concluded that the site is suitable to allocate, subject to compliance with the policy requirements at the planning application stage.

**Not allocated**

**MIN 23 Beeston with Bittering:** This site is concluded to be inappropriate for allocation because:

- mineral extraction at this site would have unacceptable landscape impacts, particularly in relation to views from Beeston. Due to the sloping topography of the site, the use of screening or bunding to mitigate these landscape impacts would be intrusive in their own right and are unlikely to be effective.
- HGV access onto the Mileham Road would not be acceptable as the road is sub-standard with poor visibility at the junction.

**MIN 116 Cranworth:** This site is concluded to be inappropriate for allocation because:

- Visual and amenity impact on the nearby dwellings would be unacceptable;
- Local landscape impacts would be unacceptable;
- The Highway Authority has raised concerns regarding the highway access because the local road network is sub-standard and narrow. Woodrising Road would require widening and a right turn lane would be required at its junction with the B1108 to be made acceptable;
- There is not a mineral operator promoting the proposed site and therefore the site is less deliverable than other sites that have been proposed for extraction.

**MIN 35 Quidenham:** This site is concluded to be inappropriate for allocation because mineral extraction at this site would have unacceptable local landscape impacts and screening and bunding could be intrusive in its own right. Whilst it may be possible to mitigate adverse landscape impacts

through advance planting and bunding, this is uncertain and there are more acceptable alternative sites for sand and gravel extraction proposed in the plan.

**MIN 102 Snetterton:** This site is concluded to be inappropriate for allocation because:

- There is not a mineral operator promoting the proposed site and therefore the site is less deliverable than other sites that have been proposed for extraction;
- Due to the proximity of the site to Swangey Fen SSSI (part of the Norfolk Valley Fens SAC), there is the potential for unacceptable adverse effects on the SSSI from the proposed mineral extraction;
- Whilst it may be technically possible to design a site where there would not be any adverse effects on the SSSI or SAC, this is a significant constraint to the development of the site and therefore the site is considered to be less deliverable than other sites that have been proposed for extraction.

**MIN 201 Snetterton & Quidenham:** This site is concluded to be inappropriate for allocation because:

- There is a scheduled monument 20 metres from the southern boundary of the site on the opposite side of North Road; it is considered that the site would be within the setting of this monument and that mineral extraction and the probable location of the processing plant site would harm the setting of the monument and its significance and cause unacceptable impacts to the historic environment.
- Due to the proximity of the site to Swangey Fen SSSI (part of the Norfolk Valley Fens SAC), there is the potential for unacceptable adverse effects on the SSSI from the proposed mineral extraction;
- Whilst it may be technically possible to design a site where there would not be any adverse effects on the SSSI or SAC, this is a significant constraint to the development of the site and therefore the site is considered to be less deliverable than other sites that have been proposed for extraction.

**WS1 Carbrooke:** This site is concluded to be inappropriate for allocation because, as a mineral working with an approved restoration scheme, once restored the site will be classified as open countryside, which is not an appropriate location for permanent waste management operations.

**WS2 Snetterton & Quidenham:** This site is concluded to be inappropriate for allocation because, as a mineral working with an approved restoration scheme, once restored the site will be classified as open countryside, which is not an appropriate location for permanent waste management operations. The site is currently a mineral extraction void which would need to be restored to a uniform ground level before a permanent waste management facility could be developed. This would require an engineering solution so as not to compromise the existing adjacent dilute and disperse landfill site. This is a significant constraint to the site and is considered likely to affect the deliverability of a permanent waste management facility in the medium term.

### 6.3.2 Broadland

**Allocated sites**

**MIN 202 Attlebridge:** This site is proposed as a new extraction site for sand and gravel. The Sustainability Appraisal raised potential negative impacts on a County Wildlife Site which is partly within the site and on a plantation on ancient woodland which is adjacent to and partly within the site. The draft site policy requires a minimum of a 15-metre buffer to be left unworked adjacent to the ancient woodland and planted with native woodland species as part of the site restoration and the submission of an arboricultural impact assessment. It also requires the submission of a progressive restoration scheme to healthland to provide landscape and biodiversity gains. The site access road crosses Marriott's way; the access road is existing as the site was previously used for mineral extraction. The site is screened from views in all directions by woodland. This site is not located near any other allocated sites in the NM&WLP or any other existing sites and therefore

cumulative effects are not expected. It is concluded that the site is suitable to allocate, subject to compliance with the policy requirements at the planning application stage.

**MIN 37 Frettenham & Buxton with Lammas:** The site is proposed as an extension to an existing site for sand and gravel extraction. The Sustainability Appraisal raised potential negative impacts due to the proximity of a number of residential dwellings to the site boundary. The draft site policy requires the submission of a Landscape and Visual Impact Assessment to identify potential impacts and suggest appropriate mitigation measures, particularly regarding views from properties along Buxton Road and surrounding roads, including a combination of advanced planting with native species and bunds. The site policy also requires the submission of acceptable noise and dust assessments and a programme of mitigation measures to deal appropriately with any amenity impacts. The site policy also requires the site to be phased with the adjacent permitted site so that only one site is worked for restoration at a time in accordance with a phased and progressive working and restoration scheme. As an extension to an existing site, the proposed extraction would not lead to additional vehicle movements, but the existing vehicle movements would continue for a further 15 years. The site is allocated in the existing Minerals Site Specific Allocations DPD. It is concluded that the site is suitable to continue to allocate in the NM&WLP, subject to compliance with the policy requirements at the planning application stage. This site received planning permission for mineral extraction in June 2021.

**MIN 64 Horstead with Stanninghall:** The site is proposed as an extension to an existing site for sand and gravel extraction. The Sustainability Appraisal raised potential negative impacts due to the proximity of a number of residential dwellings to the site boundary. The draft site policy requires the submission of a Landscape and Visual Impact Assessment to identify any potential impacts to the wider landscape and suggest appropriate mitigation measures, particularly regarding views from nearby properties and surrounding roads. The mitigation measures should include a combination of advance planting of boundary hedges and woodland planting with native species. The draft site policy also requires the submission of noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts. The draft site policy also requires the site to be phased with the adjacent permitted site so that only one site is worked for extraction at a time. As an extension to an existing site, the proposed extraction would not lead to additional vehicle movements, but the existing vehicle movements would continue for a further 13 years. The site would continue to use the existing processing plant and highway access. The site is allocated in the existing Minerals Site Specific Allocations DPD. It is concluded that the site is suitable to continue to allocate in the NM&WLP, subject to compliance with the policy requirements at the planning application stage. This site received planning permission for mineral extraction in August 2021.

**MIN 65 Horstead with Stanninghall:** The site is proposed as an extension to an existing site for sand and gravel extraction. The Sustainability Appraisal raised potential negative impacts due to the proximity of a number of residential dwellings to the site boundary and on the historic environment due to the proximity of listed buildings and a scheduled monument. The draft site policy requires the submission of noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts. It also requires the submission of a Landscape and Visual Impact Assessment to identify potential impacts and suggest appropriate screening and stand-off areas to mitigate any identified impacts to an acceptable level. The draft site policy also requires the submission of a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required. The draft site policy also requires the site to be phased with the adjacent permitted site so that only one site is worked for extraction at a time. As an extension to an existing site, the proposed extraction would not lead to additional vehicle movements, but the existing vehicle movements would continue for a further 13 years. The site would continue to use the existing processing plant and highway access. It is concluded that the site is suitable to allocate, subject to compliance with the policy requirements at the planning application stage. This site received planning permission for mineral extraction in May 2021.

**Sites MIN 37, MIN 64 and MIN 65** are all located relatively close to each other and therefore there is the potential for cumulative impacts. However, all are proposed as extensions to existing mineral workings and therefore each site will not lead to additional vehicle movements, just a continuation of the existing vehicle movements. It is considered that there are sufficient policy requirements regarding landscape and amenity mitigation to also ensure no unacceptable adverse cumulative impacts. In addition, all three of these sites have now been granted planning permission for mineral extraction.

**MIN 96 Spixworth & Horsham St Faith & Newton St Faith:** This site is proposed as an extension to an existing site for sand and gravel extraction. The Sustainability Appraisal raised potential negative impacts due to the proximity of a number of residential dwellings to the site boundary and impacts on the historic environment due to the location of listed buildings in proximity to the site. The draft site policy requires the submission of noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts, including a standoff area and screening of properties 1 and 2 Church Lane. It also requires the submission of a Landscape and Visual Impact Assessment to identify potential impacts and suggest appropriate mitigation measures, particularly regarding views from nearby properties, Marketfield Lane, surrounding roads and provide protection to the setting of nearby listed buildings. The draft site policy also requires the submission of a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures if required. The draft site policy also requires the site to be phased with the adjacent permitted site so that only one site is worked for extraction at a time. As an extension to an existing site, the proposed extraction would not lead to additional vehicle movements, but the existing vehicle movements would continue for a further 11 years. The site policy requires the highway access to change from the existing route to be via the A1270 Broadland Northway roundabout at Norwich Airport and relocation of the processing plant. This site is not located near any other allocated sites in the NM&WLP and is required to be phased with the adjacent permitted site and therefore unacceptable adverse cumulative effects are not expected. The site is allocated in the existing Minerals Site Specific Allocations DPD. It is concluded that the site is suitable to continue to allocate in the NM&WLP, subject to compliance with the policy requirements at the planning application stage.

**Not allocated**

**MIN 55 Attlebridge:** This site is concluded to be inappropriate for allocation because:

- The estimated mineral resources at the site (527,000 tonnes) is based on a very deep extraction which, due to the small area of the site is not considered to be practicable and would be very difficult to restore to a suitable landform. At a more reasonable extraction depth, the site would have an estimated mineral resource of less than 200,00 tonnes which is unlikely to be considered viable for a new site.
- There is not a mineral operator promoting the site, and therefore the site is less deliverable than other sites hat have been proposed for extraction.
- The site is surrounded on most sites by a restored landfill site and it is considered that this would make engineering a mineral extraction site problematic due to the small size of the proposed site.

**MIN 48 Felthorpe:** This site is concluded to be inappropriate for allocation because:

- There is not a mineral operator promoting the site and therefore the site is less deliverable than other sites that have been proposed for extraction
- Due to the close proximity to Swannington Update Common SSSI, there is the potential for unacceptable adverse effects on the SSSI from the proposed mineral extraction. Whilst it may be technically possible to design a site where there would not be any adverse effects on the SSSI, this is a significant constraint to the development of the site and therefore the site is considered to be less deliverable than other sites that have been proposed for extraction.

**MIN 213 Stratton Strawless:** This site is concluded to be inappropriate for allocation because it is considered that the high-water table would render the proposed restoration (to a holiday lodge

development surrounded by heathland and retained woodland) unfeasible. The holiday lodge development already benefits from an implemented planning permission. There are more acceptable alternative sites for sand and gravel extraction proposed in the Plan.

**WS3 Weston Longville & Morton-on-the-Hill:** This site is not allocated because the Waste Management Capacity Assessment has identified that no capacity gap exists for the forecast waste arisings in Norfolk during the Plan period. Therefore, no need exists for the site to be allocated. The site is on an existing industrial estate and as such the site would be in accordance with the types of land suitable in principle for waste management facilities contained in criteria-based Policy WP3 if a planning application was to be submitted in the future.

**WS4 Ludham:** This site is concluded to be inappropriate for allocation because the road network between the site and the A149 is not to the required standard for the proposed use and a required right-hand turn land on the A149 is not deliverable.

### 6.3.3 Great Yarmouth

**Not allocated**

**MIN 203 Burgh Castle:** This site is concluded to be inappropriate for allocation because the highway access is considered unsuitable by the Highway Authority. The local road network is sub-standard and narrow and due to the properties either side of the road there would be little opportunity for suitable highway improvements. There are more acceptable alternative sites for sand and gravel extraction proposed in the Plan.

**MIN 38 Fritton and St Olaves:** This site is concluded to be inappropriate for allocation because:

- The harm to the significance of Waveney Forest as an example of a WW2 training area could not be appropriately mitigated, as the significance relates to the area as a whole.
- The site is located within the Broads; there are more acceptable alternative sites for sand and gravel extraction proposed in the Plan in accordance with paragraph 205 (a) of the NPPF and there are not exceptional circumstances for mineral extraction at this site in accordance with paragraph 172 of the NPPF.

### 6.3.4 King's Lynn and West Norfolk

**Allocated sites**

**MIN 6 Middleton:** The site is proposed as an extension to an existing site for Carstone extraction. The site is in an area with a number of existing mineral workings and landfill sites and there is the potential for cumulative effects. However, the draft site policy requires phasing of the site with other Carstone quarries nearby so that extraction only commences on site once extraction is completed on other workings and the site is screened from public view by an existing tree belt and hedging. The draft site policy also requires the submission of noise and dust assessments and mitigation measures to deal appropriately with any amenity impacts and the submission of a scheme of working, which mitigates landscape impacts, to include progressive restoration. Highway access is required to be via an internal haul route to the adjacent existing quarry entrance on the East Winch Road, and traffic routing via East Winch Road to the A47. Therefore, the adjacent PROW would not be affected by traffic. As an extension to an existing site the number of vehicle movements is expected to remain the same as existing but continue for a longer period of 18 years. The site is allocated in the existing Minerals Site Specific Allocations DPD. It is concluded that the site is suitable to continue to allocate in the NM&WLP, subject to compliance with the policy requirements at the planning application stage.

**MIN 206 Tottenhill:** The site is proposed as an extension to an existing site for sand and gravel extraction. The Sustainability Appraisal raised negative impacts due to nearby residential dwellings and Tottenhill Conservation Area. The draft site policy requires the submission of noise and dust assessments and mitigation measures to deal with any amenity impacts. The draft site policy also requires the submission of a Heritage Statement to assess the potential for impacts and identify appropriate mitigation measures. The site policy requires the site to be phased with other sites in

the area so that only one site is worked for extraction at a time. The draft site policy also required the submission of a Landscape and Visual Impact Assessment to include the identification of any area where enhanced planting is required. As an extension to an existing site the number of vehicle movements is expected to remain the same as existing but continue for a longer period of 9 years. This site is in an area with other mineral workings and therefore is the potential for cumulative landscape and amenity impacts. Due to the site phasing, restoration to an agricultural afteruse and landscape and amenity requirements in the site policy is it considered that there will not be unacceptable adverse cumulative impacts from mineral extraction at this site. It is concluded that the site is suitable to allocate, subject to compliance with the policy requirements at the planning application stage.

**MIN 40 East Winch:** The site is proposed as an extension to an existing site for silica sand extraction. The Sustainability Appraisal raised potential negative impacts due to the proximity of a number of residential properties to the site boundary and a Public Right of Way crossing the site. The SA also raised potential negative effects on the historic environment due to the local of a listed buildings on the opposite site of the A47 to the site. The part of the site nearest to East Winch is not proposed to be extracted which increases the distance between most of the houses at East Winch and the extraction area. The draft site policy requires the submission of noise, dust and air quality assessments and a programme of mitigation measures to deal appropriately with any amenity impacts. The draft site policy also requires the submission of Landscape and Visual Impact Assessment to identify potential impacts and suggest appropriate mitigation measures, particularly regarding views from properties along Gayton Road, the PRoW and surrounding roads and protecting the setting of listed buildings. The site policy also requires the submission of a Heritage Statement to identify heritage assets and their settings (including the Grade II* Listed All Saints' Church, East Winch), assess the potential for impacts and identify appropriate mitigation measures. The site policy also requires the submission of acceptable restoration scheme which minimises areas of open water, and in particular the eastern field opposite All Saints' Church must be restored to arable agricultural land. The site policy also requires the submission of a suitable scheme for the temporary diversion and reinstatement of the PROW and the use of conveyor and internal haul routes to the current processing plant site, therefore the site will not lead to an increase in HGV movements. The site extraction phase is expected to last for four years. There is the potential for cumulative landscape impacts with other silica sand workings (current and restored) in the local area which is dealt with through the restoration requirement in the policy. It is considered that the potential impacts could be suitably mitigated in accordance with the site policy requirements. The site is allocated in the existing Minerals Site Specific Allocations DPD. It is concluded that the site is suitable to continue to allocate in the NM&WLP, subject to compliance with the policy requirements at the planning application stage.

**SIL 01 Bawsey:** This site is proposed for silica sand extraction with the material transported to the existing processing plant by conveyor, therefore there will not be any additional HGV movements associated with mineral extraction at this site. The Sustainability Appraisal raised negative impacts on a County Wildlife Site that is partly within the boundary of the extraction area and on heritage assets due to the proximity of a listed building. The majority of the site is screened form the Listed Building by established woodland. The draft site policy requires the submission of a Landscape and Visual impact assessment to include heritage assets and their settings together with mitigation measures to address the impacts and conserve the significance of those assets. The draft site policy also requires the submission of Heritage Statement to identify heritage assets and their settings, to assess the potential for impacts and identify appropriate mitigation if required. The draft site policy also requires the submission of a Biodiversity Survey and Report, an Arboricultural Impact Assessment and a restoration plan to include ecological enhancement and biodiversity net gains on restoration. This site is not located near any other allocated sites in the NM&WLP.. It is located near a former silica sand site where extraction has ceased but is currently being restored. Therefore, no unacceptable adverse cumulative effects are expected. The site is allocated in the existing Minerals Site Specific Allocations DPD. It is concluded that the site is suitable to continue to allocate in the NM&WLP, subject to compliance with the policy requirements at the planning application stage. This site received planning permission for mineral extraction in August 2021.

**Not allocated**

**MIN 45 East Rudham:** This site is concluded to be inappropriate for allocation because:

- the site is on a Plantation on Ancient Woodland and there are not wholly exceptional reasons for the development. It is considered unlikely that the proposed development would be in accordance with national policy because the public benefit of sand and gravel extraction on this site would not clearly outweigh the loss of the ancient woodland site.
- It has not been proved that soil translocation would have no detrimental effects to the quality of the PAWS. The Joint Nature Conservation Committee states that the uncertainty of habitat translocation means that it should be viewed only as a measure of last resort in partial compensation for damaging developments. Ancient woodland is irreplaceable and the Natural England and Forestry Commission standing advice on ancient woodland states that the proposed compensation measures should not be considered as part of the assessment of the merits of the development proposal; therefore, the proposed soil translocation and woodland restoration scheme cannot be taken into account when assessing any potential public benefits of the proposed development.

**MIN 204 Feltwell:** This site is concluded to be inappropriate for allocation because:

- Due to the proximity of the site to the Breckland Forest SSSI (part of the Breckland SPA) and the location of the site within the Protection Zone for Stone Curlews, there is the potential for unacceptable adverse effects on the SSSI from the proposed mineral extraction.
- Whilst it may be possible to design and operate a site where there would not be any adverse effects on the SSSI or SAC, this uncertainty is a significant constraint to the development of the site and therefore the site is considered to be less deliverable than other sites that have been proposed for extraction.

**MIN 19 / MIN 205 Pentney:** This site is concluded to be inappropriate for allocation because the site is within a Core River Valley and the restoration would not result in enhancement to the landscape sufficient to justify mineral extraction.

**MIN 74 Tottenhill:** This site is concluded to be inappropriate for allocation because:

- Any mineral working on this site would have unacceptable impacts on the landscape. It is not considered that screening/bunding would be able to appropriately mitigate such impacts and would be intrusive in its own right.
- Any mineral working on this site would have unacceptable impacts on the historic environment, due to its location adjacent to the Tottenhill Row Conservation Area. It is not considered that screening/bunding would be able to appropriately mitigate such impacts and would be intrusive in its own right.

**MIN 77 Tottenhill:** This site is concluded to be inappropriate for allocation because mineral extraction on this site would cause unacceptable landscape and ecological impacts due to the loss of a significant area of mature mixed deciduous woodland.

**MIN 32 West Dereham:** This site is concluded to be inappropriate for allocation because any mineral working on this site would have unacceptable impacts on the landscape. It is considered that screening / bunding proposed to mitigate such impacts would be intrusive in its own right.

**SIL 02 Shouldham & Marham:** This site is concluded to be inappropriate for allocation due to the size of the extraction site proposed within 5km of RAF Marham and the likelihood of the site being restored to open water, there is a high risk of unacceptable adverse impacts on aviation safety and the Ministry of Defence (Defence Infrastructure Organisation) has objected to the proposal.

**AOS E (Wormegay, Shouldham, Marham and Shouldham Thorpe):** This area of search is concluded to be inappropriate for allocation because:

- Mineral extraction within the agricultural land north of Shouldham Warren would have a relatively severe impact on the setting of heritage assets at Wormegay and mineral

extraction in the eastern part of the AoS would have a relatively severe impact on the setting of Pentney Priory.

- The remaining land within AOS E is lower lying and likely to have a high water-table. The Ministry of Defence (Defence Infrastructure Organisation) have raised concerns about the risk of birdstrike from wet extraction and the creation of large areas of open water on restoration making large areas of this AOS undeliverable for future silica sand extraction (due to the depth of the silica sand resources in relation to the groundwater).
- Mineral extraction would be likely to lead to a loss of access to public open space (Public Rights of Way and Shouldham Warren) in the area of the AoS which is at a higher elevation and least likely to be worked wet or restored to open water.
- Together, this means that AOS E ceases to be an Area of Search with any realistic potential for providing a future silica sand site within part of it.

**AOS F (Runcton Holme and Stow Bardolph):** This area of search is concluded to be inappropriate for allocation because of concerns raised by the Ministry of Defence (Defence Infrastructure Organisation) about the risk of birdstrike from wet extraction and the creation of large areas of open water on restoration, making this location undeliverable for future silica sand extraction (due to the depth of the silica sand resources in relation to the groundwater). In addition, areas of search F, I and J are too fragmentary to form an appropriately sized area of search within which to find a potentially viable silica sand extraction site and it is therefore unlikely that these areas provide any greater certainty of development than any other part of the silica sand resource.

**AOS I (Runcton Holme, Shouldham Thorpe and Tottenhill):** This area of search is concluded to be inappropriate for allocation because of concerns raised by the Ministry of Defence (Defence Infrastructure Organisation) about the risk of birdstrike from wet extraction and the creation of large areas of open water on restoration, making this location undeliverable for future silica sand extraction (due to the depth of the silica sand resources in relation to the groundwater). In addition, areas of search F, I and J are too fragmentary to form an appropriately sized area of search within which to find a potentially viable silica sand extraction site and it is therefore unlikely that these areas provide any greater certainty of development than any other part of the silica sand resource.

**AOS J (Tottenhill and Wormegay):** This area of search is concluded to be inappropriate for allocation because of concerns raised by the Ministry of Defence (Defence Infrastructure Organisation) about the risk of birdstrike from wet extraction and the creation of large areas of open water on restoration, making this location undeliverable for future silica sand extraction (due to the depth of the silica sand resources in relation to the groundwater). In addition, areas of search F, I and J are too fragmentary to form an appropriately sized area of search within which to find a potentially viable silica sand extraction site and it is therefore unlikely that these areas provide any greater certainty of development than any other part of the silica sand resource.

**WS5 Middleton:** This site is concluded to be inappropriate for allocation because, as a mineral working with an approved restoration scheme, once restored the site will be classed as open countryside, which is not an appropriate location for permanent waste management operations.

**WS6 West Dereham & Crimplesham:** This site is concluded to be inappropriate for allocation because, as a mineral working with an approved restoration scheme, once restored the site will be classed as open countryside, which is not an appropriate location for permanent waste management operations.

### 6.3.5 North Norfolk

**Allocated sites**

**MIN 115 North Walsham:** The site is proposed as a new site for sand and gravel extraction. The Sustainability Appraisal raised potential negative effects due to the location of the site within a plantation woodland and close to a County Wildlife Site. However, the site is required to be worked dry (above the water table) and with normal dust mitigation measures then no impacts on the CWS are expected. In terms of the plantation woodland the retention of woodland buffer zones would

make the site acceptable in landscape terms and the draft site policy requires an appropriately wide screen of trees to be left around the site to minimis amenity impacts on users of a nearby footpath. The site policy also requires the submission a Biodiversity survey and report and an arboricultural impact assessment with appropriate mitigation measures if required. .The draft site policy also requires a progressive restoration to a mix of deciduous woodland and heathland with public access to provide biodiversity net gains. Therefore, it is considered that any potential impacts can be appropriately mitigated in line with the site policy requirements. This site is not located near any other allocated sites in the NM&WLP or near any existing permitted sites and therefore cumulative effects are not expected. The site is allocated in the existing Minerals Site Specific Allocations DPD. It is concluded that the site is suitable to continue to allocate in the NM&WLP, subject to compliance with the policy requirements at the planning application stage.

**MIN 207 Edgefield:** The site is proposed as an extension to an existing site for sand and gravel extraction to form an agricultural reservoir. The Sustainability Appraisal raised potential negative impacts on the Glaven Valley Conservation Area which the site is located within. The purpose of the mineral extraction is to form an agricultural reservoir and the site would be well-screened from public views, so the local landscape impacts are not considered significant. The agricultural reservoir would replace a proposed second agricultural reservoir (which already has planning permission) in the adjacent field. Therefore, the landscape change would be similar to that already permitted. The draft specific site policy requires the submission of a Landscape and Visual Impact Assessment to identify potential landscape impacts together with suitable mitigation measures to address the impacts. As an extension to an existing site, the proposed extraction would not lead to additional vehicle movements, but the existing vehicle movements would continue for a further 6 years. This site is not located near any other allocated sites in the NM&WLP and is required to be phased with the adjacent permitted site and therefore unacceptable adverse cumulative effects are not expected. It is concluded that the site is suitable to allocate, subject to compliance with the policy requirements at the planning application stage. This site received planning permission for mineral extraction in August 2019.

**MIN 69 Aylmerton:** The site is proposed as an extension to an existing site for sand and gravel extraction. The Sustainability Appraisal raised potential negative effects due to nearby residential properties, however a reduced extraction area is proposed and some of the residential properties are on the opposite side of the A148. Potential negative effects were also raised due to the site's location within the AONB and on the adjacent geological SSSI. The draft site policy requires the submission of a noise and dust assessment and mitigation measures to deal with any amenity impacts. The draft site policy also requires the site to be phased with the adjacent permitted site so that only one site is worked for extraction at a time. The site policy also requires additional advanced planning along the southern and eastern boundaries of the land to further screen the site from public viewpoints and a Landscape and Visual Impact Assessment along with a very high-quality working and a heathland led restoration scheme to maximise benefits on restoration. The area where mineral extraction in the existing and proposed site joins should be minimised so that the geological SSSI is not adversely affected. It is considered that there would be limited landscape and amenity harm from a site in this location and the opportunity to facilitate an improved working and restoration scheme for the existing adjacent site as well as site MIN 69 and that there are exceptional circumstances to allocate the site within the AONB. As an extension to an existing site, the proposed extraction would not lead to additional vehicle movements, but the existing vehicle movements would continue for a further 20 years. It is concluded that the site is suitable to allocate, subject to compliance with the policy requirements at the planning application stage. The northern part of this site received planning permission for mineral extraction of 1 million tonnes of sand and gravel in October 2020.

**MIN 208 East Beckham:** The site is proposed as an extension to an existing site for sand and gravel extraction. The Sustainability Appraisal raised potential negative impacts on the adjacent Public Right of Way and some potential landscape impacts that could be mitigated by additional site screen planting. There are a few nearby residential properties and a listed building to the south. The draft site policy requires the submission of noise and dust assessments and mitigation

measures to deal with any amenity impacts and a progressive restoration scheme. The draft site policy also requires a Heritage Statement and a Landscape and Visual Impact Assessment to identify impacts and include appropriate mitigation measures to address these. The draft site policy also requires the site to be phased with the adjacent permitted site so that only one site is worked for extraction at a time and requires the existing processing plant and highway access to be used. As an extension to an existing site, the proposed extraction would not lead to additional vehicle movements, but the existing vehicle movements would continue for a further 14 years. It is concluded that the site is suitable to allocate, subject to compliance with the policy requirements at the planning application stage.

**MIN 69 and MIN 208** are in proximity to each other along the A148. Both sites are proposed as extensions to existing mineral workings and therefore they would not lead to additional vehicle movements, but the existing vehicle movements would continue for a longer period of time. MIN 208 is well screened and the existing mineral working at Aylmerton is also well screened. The extension areas to Aylmerton (MIN 69) are well screened by tree and hedge planting from most directions which would be required to be improved in advance of planning permission. It is not considered that there would be cumulative landscape impacts. It is considered that with the mitigation measures required in the site policies there would not be adverse cumulative impacts from these two sites and the existing mineral extraction sites in these locations.

**Not allocated**

**MIN 71 Holt:** This site is concluded to be inappropriate for allocation because:

- Due to the proximity of the site to Holt Lowes SSSI (part of the Norfolk Valley Fens SAC) there is the potential for unacceptable adverse effects on the SSSI from the proposed mineral extraction.
- Whilst it may be technically possible to design a site where there would not be any adverse effects on the SSSI or SAC, this uncertainty is a significant constraint to the development of the site and therefore the site is considered to be less deliverable than other sites that have been proposed for mineral extraction.
- The site is located within the Glaven Valley Conservation Rea and there are clear views of the site from public viewpoints. Whilst it may be possible to mitigate adverse landscape impacts through advance planting and reduction of the operational site area, there are more acceptable alternative sites for sand and gravel extraction proposed in the Plan in accordance with paragraph 205 (a) of the NPPF.

### 6.3.6 South Norfolk

**Allocated sites**

**MIN 25 Haddiscoe:** The site is proposed as a new sand and gravel extraction site, although the mineral extracted is proposed to be processed at an existing site at Norton Subcourse. The Sustainability Appraisal raised potential negative effects due to the proximity of residential dwellings to the site boundary, the location of a Public Right of Way through part of the site and the proximity of listed buildings to the site. The site policy requires the submission of a noise and dust assessment and mitigation measures to deal with any amenity impacts including setting back the working at least 100 metres from the nearest residential properties. The draft site policy also requires the submission of a suitable scheme for the temporary diversion and reinstatement of the Public Right of Way. The draft site policy also requires the submission of a Heritage Statement to identify heritage assets and their settings, assess the potential for impacts and identify appropriate mitigation measures. The site is well screened by mature hedges on all sides of the site apart from a section of the eastern boundary closest to Manor Farm. The site is separated from the Church of St Mary buy the B1136 Loddon Road and the screen planting along the road. Therefore, with the addition of bunding during the operational phases it is considered that mineral extraction at the site would not affect the setting of the listed buildings. This site is not located near any other allocated sites in the NM&WLP and is sufficiently distant from the nearest mineral extraction site at Norton Subcourse, which is also well screened by mature planting, that unacceptable adverse cumulative

effects are not expected. It is concluded that the site is suitable to allocate, subject to compliance with the policy requirements at the planning application stage.

**Not allocated**

**MIN 92 Heckingham:** This site is concluded to be inappropriate for allocation because:

- The site is adjacent to the boundary of the Broads Authority Executive Area on three sides. Screening the site from the more open views from the road to the west and from the Broads to the south-west in particular, would be difficult due to the sloping nature of the site, therefore working this site would lead to unacceptable landscape impacts.
- It is considered that the retention of the line of mature oaks in the centre of the site would make an acceptable working scheme unlikely, and a working scheme that resulted in the removal of the oaks would have an unacceptable landscape impact, especially given the proximity of the Broads Authority Executive Area.

**MIN 79 Swardeston:** The site is concluded to be inappropriate for allocation because:

- The Highway Authority objects to the proposed access route. The Highway Authority could not support a new access to the A140 which forms part of the Major Road Network and it would also be unacceptable for quarry traffic to utilise the Byway Open to All Traffic.
- There is not a mineral operator promoting the site and therefore the site is less deliverable than other sites that have been proposed for extraction

**MIN 212 Mundham:** This site is concluded to be inappropriate for allocation because of highway impacts. The proposal would necessitate 14 HGV movements a day over 11 years travelling through Trowse (along The Street and White Horse Lane) and then onto Caister St Edmund Quarry off Stoke Road. Whilst the Highway Authority did not object to the location of the proposed mineral working, they raised concerns about the location of the plant site at Caistor St Edmund which necessitates the routing of HGVs through Trowse village. Therefore, there are other more acceptable sites for sand and gravel extraction proposed in the Plan.

### 6.4 Significant Environmental Effects – Conclusion

Overall, the choice of allocated sites could have a number of significant environmental effects without appropriate mitigation. Due to the duration of mineral extraction most of the impacts will be of medium term during only. Phasing of sites, mitigation measures (eg screening, tree planting and HGV routing and progressive workings and restoration should ensure that impacts will be minimised to acceptable levels. Over the longer term, restoration will provide opportunities for ecological improvements and biodiversity net gains over the current state, although the nature of mineral extraction will result in long term landscape change as restoration may be to a lower level or include some areas of open water.

The draft policies within the M&WLP, including the site allocation policies should ensure that appropriate mitigation measures (such as to reduce amenity, biodiversity, historic environment and landscape impacts) are contained in future planning applications and enforced through planning conditions on future mineral extraction within the allocated specific sites to ensure that extraction could take place without significant environmental effects.

**Table 6.1. Summary of Sustainability Effects of the proposed mineral extraction sites, areas of search and proposed waste management sites**

| Site | SA1 | SA2 | SA3 | SA4 | SA5 | SA6 | SA7 | SA8 | SA9 | SA10 | SA11 | SA12 | SA13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MIN 12** | ++ / 0 | 0 / 0 | -- / 0 | 0 / 0 | - / 0 | 0 / 0 | 0 / + | - / 0 | -- / 0 | 0/- / 0 | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 51 & MIN 13 & MIN 08** | ++ / 0 | - / 0 | - / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / + | - / 0 | - / 0 | 0/- / 0 | ++ / 0 | 0 / 0 | + / 0 |
| **MIN 23** | + / 0 | - / 0 | - / 0 | 0 / 0 | -- / -- | 0 / 0 | 0 / ? | -- / - | - / 0 | 0/- / 0 | + / 0 | ++ / 0 | + / 0 |
| **MIN 200** | ++ / 0 | 0 / 0 | - / 0 | 0 / 0 | -- / - | 0 / 0 | 0 / + | - / 0 | - / 0 | 0/- / - | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 116** | + / 0 | - / 0 | -- / 0 | 0 / 0 | -- / - | 0 / 0 | 0 / + | - / - | -- / 0 | 0/- / 0 | + / 0 | ++ / 0 | + / 0 |
| **MIN 35** | ++ / 0 | - / 0 | -- / 0 | 0 / 0 | -- / - | - / 0 | 0 / + | - / 0 | -- / 0 | 0 / 0 | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 102** | ++ / 0 | - / 0 | 0 / 0 | 0 / 0 | 0 / 0 | -- / ? | 0 / ? | -- / - | 0 / 0 | -/0 / 0 | ++ / 0 | 0 / 0 | + / 0 |
| **MIN 201** | ++ / 0 | - / 0 | -- / 0 | 0 / 0 | -- / - | -- / ? | 0 / + | - / - | -- / 0 | -/- / 0 | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 55** | ++ / 0 | - / 0 | 0 / 0 | 0 / 0 | 0 / 0 | - / 0 | 0 / ? | 0 / 0 | - / 0 | 0/- / 0/- | ++ / 0 | 0 / 0 | + / 0 |
| **MIN 202** | ++ / 0 | - / 0 | - / 0 | 0 / 0 | 0 / 0 | -- / - | 0 / + | - / 0 | - / 0 | 0 / 0 | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 48** | ++ / 0 | - / 0 | -- / 0 | 0 / 0 | -- / - | - / 0 | 0 / + | - / 0 | -- / 0 | 0 / 0 | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 37** | + / 0 | 0 / 0 | -- / 0 | 0 / + | 0 / 0 | - / 0 | 0 / + | - / 0 | -- / 0 | 0/- / 0 | + / 0 | ++ / 0 | + / 0 |
| **MIN 64** | + / 0 | 0 / 0 | -- / 0 | 0 / 0 | - / 0 | 0 / 0 | 0 / + | - / 0 | -- / 0 | 0/- / 0 | + / 0 | ++ / 0 | + / 0 |
| **MIN 65** | + / 0 | 0 / 0 | -- / 0 | 0 / 0 | -- / - | - / 0 | 0 / + | - / 0 | -- / 0 | 0/- / 0 | + / 0 | ++ / 0 | + / 0 |
| **MIN 96** | ++ / 0 | 0 / 0 | -- / 0 | 0 / 0 | -- / - | - / 0 | 0 / ? | - / 0 | -- / 0 | 0/- / 0/- | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 213** | + / 0 | - / 0 | -- / 0 | - / 0 | -- / 0 | - / 0 | 0 / ? | 0 / 0 | - / 0 | 0/0/ 0 | +/0 | 0/0 | +/ 0 |
| **MIN 203** | ++ / 0 | 0 / 0 | - / 0 | 0 / 0 | 0 / 0 | - / 0 | 0 / + | 0 / 0 | - / 0 | -/- / 0/- | ++ / 0 | ++ / + | + / 0 |
| **MIN 38** | + / 0 | - / 0 | -- / 0 | 0 / 0 | -- / -- | - / 0 | 0 / + | - / 0 | -- / 0 | -/- / 0/- | + / 0 | ++ / 0 | + / 0 |
| **MIN 6** | ++ / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | 0 / + | 0 / 0 | - / 0 | 0/0 / 0 | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 45** | + / + | 0 / 0 | 0 / 0 | 0 / 0 | 0 / 0 | -- / -- | 0 / -- | - / 0 | - / 0 | 0/- / 0/- | + / 0 | ++ / 0 | + / 0 |
| **MIN 204** | 0 / 0 | 0 / 0 | -- / 0 | 0 / 0 | 0 / 0 | -- / - | 0 / + | - / 0 | -- / 0 | 0 / 0 | 0 / 0 | + / 0 | + / 0 |
| **MIN 19 & 205** | + / 0 | 0 / 0 | 0 / 0 | 0 / + | 0 / 0 | - / 0 | 0 / - | --/ - | - / 0 | -/- / 0/- | + / 0 | - / + | + / 0 |
| **MIN 74** | +/ 0 | 0 / 0 | -- / 0 | 0 / 0 | -- / -- | - / 0 | 0 / - | -- / 0 | -- / 0 | -/- / -/0 | + / 0 | ++ / 0 | + / 0 |
| **MIN 77** | + / 0 | 0 / 0 | -- / 0 | 0 / 0 | - / - | - / 0 | 0 / 0 | - / - | -- / 0 | -/- / 0/- | + / 0 | ++ / 0 | + / 0 |
| **MIN 206** | + / 0 | 0 / 0 | -- / 0 | 0 / 0 | - / - | - / 0 | 0 / - | 0 / 0 | -- / 0 | -/- / 0 | + / 0 | ++ / 0 | + / 0 |
| **MIN 32** | ++ / 0 | 0 / 0 | -- / 0 | 0 / 0 | -- / -- | 0 / 0 | 0 / + | -- / - | -- / 0 | 0/- / 0 | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 40** | ++ / 0 | 0 / 0 | -- / 0 | 0 / 0 | -- / -- | - / 0 | 0 / + | - / 0 | -- / 0 | -/0 / 0/0 | ++ / 0 | ++ / 0 | + / 0 |
| **SIL 01** | ++ / 0 | 0 / 0 | 0 / 0 | 0 / 0 | - / - | - / 0 | 0 / + | 0 / 0 | - / 0 | 0/0 / 0/0 | ++ / 0 | ++ / + | + / 0 |

| Site | SA1 | SA2 | SA3 | SA4 | SA5 | SA6 | SA7 | SA8 | SA9 | SA10 | SA11 | SA12 | SA13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AOS E** | - / + | - / 0 | 0 / 0 | 0 / ? | - / - | - / 0 | 0 / ? | - / - | -- / ? | - / 0/- | - / 0 | - / + | + / 0 |
| **AOS F** | - / + | - / 0 | 0 / 0 | 0 / ? | - / - | - / 0 | 0 / ? | - / - | 0 / 0 | - / 0/- | - / 0 | + / + | + / 0 |
| **AOS I** | - / + | - / 0 | 0 / 0 | 0 / ? | 0 / - | 0 / 0 | 0 / ? | 0 / 0 | 0 / 0 | - / 0/- | - / 0 | ++ / + | + / 0 |
| **AOS J** | - / + | - / 0 | 0 / 0 | 0 / ? | - / - | 0 / 0 | 0 / ? | 0 / 0 | 0 / 0 | 0 / 0 | - / 0 | ++ / + | + / 0 |
| **SIL 02** | + / 0 | 0 / 0 | 0 / 0 | 0 / 0 | -- / -- | - / 0 | 0 / ? | -- / - | -- / - | -/- / 0/- | 0 / 0 | -- / 0 | + / 0 |
| **MIN 69** | ++ / 0 | 0 / 0 | -- / 0 | 0 / 0 | 0 / 0 | - / 0 | 0 / + | -- / - | -- / + | 0/- / 0/- | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 71** | ++ / 0 | 0 / 0 | -- / 0 | 0 / 0 | -- / -- | -- / 0 | 0 / ? | -- / - | -- / 0 | 0/- / 0/- | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 115** | ++ / 0 | - / 0 | 0 / 0 | 0 / 0 | 0 / - | - / 0 | 0 / ? | - / 0 | 0 / ? | 0 / 0 | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 207** | ++ / 0 | 0 / 0 | 0 / 0 | 0 / 0 | -- / - | 0 / 0 | 0 / + | -- / - | 0 / 0 | 0/- / 0/- | ++ / 0 | ++ / 0 | + / 0 |
| **MIN 208** | + / 0 | 0 / 0 | - / 0 | 0 / 0 | - / - | - / 0 | 0 / + | - / - | - / 0 | 0/- / 0/- | + / 0 | ++ / 0 | + / 0 |
| **MIN 25** | 0 / 0 | - / 0 | -- / 0 | 0 / 0 | -- / -- | - / 0 | 0 / + | - / 0 | -- / 0 | -/- / 0/- | 0 / 0 | + / 0 | + / 0 |
| **MIN 92** | 0 / 0 | 0 / 0 | -- / 0 | 0 / 0 | 0 / 0 | - / 0 | 0 / + | -- / - | - / 0 | 0/- / 0/- | 0 / 0 | ++ / 0 | + / 0 |
| **MIN 212** | 0 / 0 | - / 0 | - / 0 | 0 / 0 | - / - | - / 0 | 0 / + | - / - | - / 0 | -/- / 0/- | 0 / 0 | -- / + | + / 0 |
| **MIN 79** | ++ / 0 | - / 0 | -- / 0 | 0 / 0 | - / - | 0 / 0 | 0 / + | - / 0 | -- / 0 | - / 0 | ++ / 0 | 0 / 0 | + / 0 |
| **Site** | **SA1** | **SA2** | **SA3** | **SA4** | **SA5** | **SA6** | **SA7** | **SA8** | **SA9** | **SA10** | **SA11** | **SA12** | **SA13** |
| **WS1** | + | - | - | 0 | -- | 0 | -- | -- | - | -/- | ++ | ++ | + |
| **WS2** | + | - | -- | 0 | -- | - | -- | -- | -- | -/0 | + | ++ | + |
| **WS3** | ++ | - | - | 0 | - | - | 0 | - | -- | -/0 | + | ++ | + |
| **WS4** | 0 | - | - | 0 | - | 0 | 0 | - | - | -/0 | 0 | ++ | + |
| **WS5** | + | - | 0 | 0 | - | 0 | -- | -- | - | -/0 | + | ++ | + |
| **WS6** | + | - | -- | 0 | -- | 0 | -- | -- | -- | -/- | ++ | ++ | + |

**Table 6.2. Summary of Sustainability Effects of the proposed planning policies in the NM&WLP**

| Policy | SA1 | SA2 | SA3 | SA4 | SA5 | SA6 | SA7 | SA8 | SA9 | SA10 | SA11 | SA12 | SA13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MW1** | + | + | + | + | ++ | + | + | ++ | + | ++ | + | ++ | + |
| **MW2** | + | + | + | + | 0 | 0 | 0 | + | 0 | 0 | + | 0 | +/- |
| **MW3** | ++ | ++ | 0 | 0 | 0 | + | 0 | 0 | 0 | ++ | + | + | 0 |
| **MW4** | 0 | 0 | 0 | 0 | 0 | ++ | 0 | + | + | 0 | 0 | 0 | +/- |
| **MW5** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ++ | 0 | ++ | 0 | 0 | +/0 |
| **WP1** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | + |
| **WP2** | + | + | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | + |
| **WP3** | + | 0 | + | 0 | + | + | 0 | + | 0 | + | + | + | + |
| **WP4** | 0 | 0 | + | 0 | + | + | 0 | + | 0 | + | + | + | + |
| **WP5** | + | 0 | + | 0 | + | + | 0 | + | 0 | + | + | + | + |
| **WP6** | 0 | 0 | + | 0 | + | + | 0 | + | 0 | + | + | + | + |
| **WP7** | + | 0 | + | + | + | + | 0 | + | 0 | + | + | + | + |
| **WP8** | + | 0 | + | 0 | + | + | 0 | + | 0 | + | + | + | + |
| **WP9** | + | 0 | + | 0 | + | + | 0 | + | 0 | + | + | + | + |
| **WP10** | + | 0 | + | 0 | + | + | 0 | + | 0 | + | + | + | + |
| **WP11** | 0 | 0 | + | + | + | + | + | + | + | + | + | + | + |
| **WP12** | 0 | 0 | + | 0 | + | + | + | + | + | + | + | + | + |
| **WP13** | 0 | 0 | + | 0 | + | + | 0 | + | + | + | + | + | + |
| **WP14** | 0 | 0 | + | 0 | + | + | 0 | + | 0 | + | 0 | + | + |
| **WP15** | - | - | + | 0 | 0 | 0 | 0 | + | 0 | + | + | + | + |
| **WP16** | ++ | 0 | + | + | ++ | + | 0 | ++ | 0 | + | 0 | + | 0 |
| **WP17** | 0 | 0 | + | 0 | + | + | 0 | + | 0 | + | + | 0 | +/- |
| **MP1** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | + |
| **MP2** | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | ++ |
| **MPSS1** | + | + | + | 0 | + | + | + | + | 0 | + | ++ | + | ++ |
| **MP3** | ++ | ++ | + | 0 | + | + | 0 | + | 0 | + | ++ | 0 | + |
| **MP4** | 0 | + | + | 0 | + | + | 0 | + | 0 | + | + | + | + |
| **MP5** | 0 | 0 | ++ | 0 | + | ++ | + | ++ | + | + | 0 | ++ | +/- |
| **MP6** | 0 | + | + | + | + | + | 0 | + | + | + | 0 | + | -- |
| **MP7** | + | 0 | + | + | + | ++ | ++ | ++ | + | + | 0 | + | + |
| **MP8** | 0 | 0 | 0 | + | + | + | + | + | + | + | 0 | 0 | + |
| **MP9** | + | 0 | + | 0 | + | + | 0 | + | 0 | + | + | + | + |

| Policy | SA1 | SA2 | SA3 | SA4 | SA5 | SA6 | SA7 | SA8 | SA9 | SA10 | SA11 | SA12 | SA13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MP10** | ++ | ++ | + | 0 | + | + | 0 | + | 0 | + | + | 0 | +/- |
| **MP11** | 0 | 0 | + | 0 | + | + | 0 | + | 0 | + | + | 0 | +/- |

# 7. Task B5: Mitigation of Adverse Effects and Maximising Benefits

## 7.1 Recommendations and mitigation

In accordance with SA guidance, measures to prevent, reduce or offset significant adverse effects of implementing the Norfolk Minerals and Waste Local Plan have been considered. General mitigation measures are addressed in sections 7.2 and 7.3 below, with measures for sites and areas of search set out in the individual site and area assessments. Typically these might include requirements for particular HGV routing arrangements, advanced planting of boundary trees and a restoration scheme including particular habitat creation/ re-creation. Appropriate location of mineral extraction sites and waste management facilities is the most significant way that potential impacts can be mitigated.

## 7.2 Possible mitigation measures for mineral extraction sites

**Objective SA1:** To adapt to and mitigate the effects of climate change by reducing contributions to climate change

**Possible mitigation measures:**
Research possible renewable energy sources to power activities at the site. Consider offsetting the $CO_2$ release through a legitimate project. Consider carbon capture of operational $CO_2$ release. Buildings and sites should incorporate energy and water efficient designs, including using sustainable drainage systems, rainwater harvesting and stormwater harvesting, and incorporate trees in site layouts where possible.

**Objective SA2:** To improve air quality in line with the National Air Quality Standards

**Possible mitigation measures:**
Increased traffic volumes will result in an increase in exhaust fumes (e.g. $NO_x$, $PM_{10}$ etc.) in the immediate vicinity. Fumes can be reduced on site by employing an on-site speed limit and ensuring engines are turned off when stationary. Developments should incorporate proposals for sustainable travel, including by employees.

**Objective SA3:** To minimise noise, vibration and visual intrusion

**Possible mitigation measures:**
Ensure adequate bunds/screens/planting against noise, vibration and visual impact are erected while the site is in operation / in construction. Monitor noise to ensure that it does not exceed the relevant noise level limit.
Design bunds/ screening to be sensitive to the surrounding area to reduce visual impact.
Structures should be placed where they will have the least impact.

**Objective SA4:** To improve accessibility to jobs, services and facilities and reduce social exclusion

**Possible mitigation measures:**
Mineral extraction sites are unlikely to provide improved access to services and facilities and reduce social exclusion.

**Objective SA5:** To maintain and enhance the character of the townscape and historic environment

**Possible mitigation measures:**
Effects on nearby heritage assets can be reduced/avoided with careful design of the extraction site.
Having special regard to the protection of the historic environment, only where potential impacts can be successfully mitigated is an extraction site likely to be found acceptable.
Archaeological investigations are usually required prior to mineral extraction.
Location of access routes, large plant and obtrusive structures should be placed to avoid impact on the townscape and historic environment.

**Objective SA6:** To protect and enhance Norfolk's biodiversity and geodiversity

**Possible mitigation measures:**
Carry out ecological surveys of the site prior to development and act upon suggestions for limiting impacts to local biodiversity. For example, the protection of certain habitats, such as veteran trees, or the provision of compensatory habitat.
If mineral extraction is proposed below the water table and/or dewatering is proposed as part of the extraction operations, the impact of this activity on biodiversity must also be assessed and mitigated appropriately. For example, through artificial recharge of the groundwater levels.
Schemes of working should take into account geodiversity by permitting access for recording and sampling during the active phase, and retaining geological sections for scientific and educational study, and potentially also benefit biodiversity, in the restoration phase.
Restoration schemes for mineral extraction sites should be designed to provide biodiversity net gains.

**Objective SA7:** To promote innovative solutions for the restoration and afteruse of minerals sites

**Possible mitigation measures:**
Mineral extraction is a temporary use of land. Development associated with mineral extraction would only be permitted for the life of the mineral extraction operation. The proposed restoration scheme should be beneficial to the area after extraction is finished, in terms of landscape, biodiversity, geodiversity and public access.

**Objective SA8:** To protect and enhance the quality and distinctiveness of the countryside and landscape

**Possible mitigation measures:**
Location of access routes, large plant and obtrusive structures should be placed to minimise impact on the countryside and landscape. Screening against noise, vibration and visual intrusion should be appropriate to the local area.

**Objective SA9:** To contribute to improved health and amenity of local communities in Norfolk.

**Possible mitigation measures:**
Mitigation measures against dust release from mineral extraction and processing must be employed on the site. These are likely to including installing windbreaks, irrigation systems and wheel washing.
Increased traffic volumes will result in an increase in exhaust fumes (e.g. NOx, PM10 etc.) in the immediate vicinity. Fumes can be reduced on site by employing an on-site speed limit and ensuring engines are turned off when stationary.
The route taken by HGVs from the extraction site onto the strategic highway network should avoid unsuitable roads. Junction or highway improvements may be required or off-highway haul routes may be required to enable a suitable route to be provided. Developments should incorporate proposals for sustainable travel, including by employees.

**Objective SA10:** To protect and enhance water and soil quality in Norfolk

**Possible mitigation measures:**
Design drainage systems for the site to deal with any run-off, preventing it from reaching any nearby watercourse or drinking water source. Include bunds and sumps where necessary.
Any agriculturally valuable land on site will be temporarily unavailable as a result of extraction. Soils should therefore be suitably stored and replaced as part of the site restoration. A well designed restoration scheme may reduce the long term impacts of development on the site.

**Objective SA11:** To promote sustainable use of minerals resources

**Possible mitigation measures:**
N/A. The purpose of the mineral extraction operation would be to provide mineral resources.

**Objective SA12:** To reduce the risk of current and future flooding at new and existing development

**Possible mitigation measures:**
Locate development in areas of lowest flood risk from all sources. Incorporate flood mitigation measures such as bunding, into the design of the development to reduce, or avoid, issues with flooding.
Where sites or areas are within flood risk zones 3 or 2 or over 1 hectare in size, carry out a full flood risk assessment prior to development and act upon suggestions for limiting the impact of flooding on-site and off-site.

**Objective SA13:** To encourage employment opportunities and promote economic growth

**Possible mitigation measures:**
The supply of mineral resources is required in the construction industry (sand and gravel and carstone) and in glass manufacture (silica sand). Therefore, the provision of mineral extraction sites will contribute to employment and economic growth.

### 7.3 Possible mitigation measures for waste management sites

The mitigation measures detailed below are relevant to all waste management operations, unless otherwise specified.

**Objective SA1:** To adapt to and mitigate the effects of climate change by reducing contributions to climate change

**Possible mitigation measures:**
In-vessel composting limits the release of emissions (such as Volatile Organic Compounds (VOCs), ammonia and particulates) due to the contained nature of the composting process.
Operation of an anaerobic digestion facility will produce biogas rich in $CH_4$ and $CO_2$. This can be used as a replacement for fossil fuels in energy generation.
Operation of a thermal treatment facility may produce syngas rich in carbon monoxide and hydrogen. This can be used as a replacement for fossil fuels in energy generation.
However thermal treatment processes also produce $CO_2$, $CH_4$ and other hydrocarbon gases which will require monitoring.
Operation and construction of a landfill site will involve $CO_2$ and landfill gas release if the site is accepting biodegradable waste. Landfill gas should be collected and used to generate electricity.
Construction and operation of a waste management site will involve $CO_2$ release, through on-site operations and vehicle movements. Consider offsetting construction release through a legitimate project.
Buildings and sites should incorporate energy and water efficient designs, including using sustainable drainage systems, rainwater harvesting and stormwater harvesting, and incorporate trees in site layouts where possible.

**Objective SA2:** To improve air quality in line with the National Air Quality Standards

**Possible mitigation measures:**
Increased traffic volumes will result in an increase in exhaust fumes (e.g. NOx, PM10 etc.) in the immediate vicinity. Fumes can be reduced on site by employing an on-site speed limit and ensuring engines are turned off when stationary. Developments should incorporate proposals for sustainable travel, including by employees.

**Objective SA3:** To minimise noise, vibration and visual intrusion

**Possible mitigation measures:**
Ensure suitable building design and adequate bunds/screens/ planting against noise, vibration and visual impact are erected while the site is operation / in construction.
Design screening to be sensitive to the surrounding area to reduce visual impact. Structures should be placed where they will have the least impact. Structure design should also be of minimum impact.

**Objective SA4**: To improve accessibility to jobs, services and facilities and reduce social exclusion

**Possible mitigation measures:**
N/A, except for household waste recycling centres (HWRCs). HWRCs are publicly accessible. Access to the site can be improved by carrying out appropriate road improvements (such as widening, improving junctions etc.). These measures would require separate site specific assessment.
A one-way system could also be implemented on the site where the public enter the site through once entrance and leave via a separate exit. The location of HWRCs in relation to population centres can improve accessibility, and the internal design of HWRCs, such as height and location of areas for waste collection can also improve accessibility.

**Objective SA5:** To maintain and enhance the character of the townscape and historic environment

**Possible mitigation measures:**
Effects on nearby listed buildings can be reduced/avoided with careful design of the constriction phase of the site.
Having special regard to the protection of the historic environment, only where potential impacts can be successfully mitigated is an extraction site likely to be found acceptable.
Archaeological investigations may be required prior to the development of a new waste management facility.
Location of access route, large plant and obtrusive structures should be placed to avoid impact on the townscape and cultural heritage. The design of buildings and the wider site should be appropriate to the local area.

**Objective SA6:** To protect and enhance Norfolk's biodiversity and geodiversity

**Possible mitigation measures:**
Carry out ecological surveys of the site prior to development and act upon suggestions for limiting impacts to local biodiversity.
For landfill sites, schemes of working should take into account geodiversity by permitting access for recording and sampling during the active phase. Restoration schemes for landfill sites should be designed to provide biodiversity net gains.

**Objective SA7:** To promote innovative solutions for the restoration and afteruse of waste sites

**Possible mitigation measures:**
Proposed restoration schemes will only mitigate negative impacts if the proposed waste management facility is in place temporarily. Landfill operations usually take place as part of the restoration of a quarry.

**Objective SA8:** To protect and enhance the quality and distinctiveness of the countryside and landscape

**Possible mitigation measures:**
Location of access route, large plant and obtrusive structures should be placed to minimise impact on the countryside and landscape. The design of buildings and the wider site should be appropriate to the local area. Screening against noise, vibration and visual impacts should be appropriate to the local area.

**Objective SA9:** To contribute to improved health and amenity of local communities in Norfolk.

**Possible mitigation measures:**
Carrying out waste management operations in a building where appropriate will reduce emissions to air affecting local communities.
Mitigation measures against dust release must be employed on the site. These are likely to include installing windbreaks, irrigation systems, wheel washing and covered work areas.
In-vessel composting allows for the odour emissions to be controlled with bio-filters within the buildings, limiting the loss in amenity of local communities.

Odour from landfills taking degradable waste must be controlled through odour management systems, so as not to impact upon the surrounding communities. Good leachate management practices will also reduce odour.
Increased traffic volumes will result in an increase in exhaust fumes (eg NOx, CO etc) in the immediate vicinity. Fumes can be reduced on site by employing an on-site speed limit and ensuring engines are turned off when stationary. Developments should incorporate proposals for sustainable travel, including by employees.

**Objective SA10:** To protect and enhance water and soil quality in Norfolk

**Possible mitigation measures:**
Design sealed drainage systems for the site to deal with run-off preventing it from reaching any nearby watercourse or drinking water source.
Landfill sites must be engineered in accordance with the appropriate regulations to contain the waste and reduce potential pollution to water and soil. If leachate is removed from landfill sites, suitable treatment and discharge methods must be used to ensure that leachate does not enter watercourses or drinking water sources, due to its highly polluting nature.
If the site is on agriculturally valuable land, which will be lost with the development, a well-designed restoration scheme may reduce the long term impacts of development on the site, but is only applicable to temporary site usage. If the site will take place on land previously used for quarry operations, and does not delay agreed site restoration, then there will be no additional land lost.

**Objective SA11**: To promote sustainable use of waste resources

**Possible mitigation measures:**
For waste transfer stations, mixed waste processing facilities and HWRCs ensure that waste that can be recovered /recycled is separated at the site and only waste that cannot be recovered/recycled is sent for disposal.
Composting, anaerobic digestion and recycling facilities will be recycling and recovery waste, therefore no mitigation is required. Thermal treatment facilities should ensure that as much recyclable waste as practicable is separated before or after (in the case of metals) treatment, to ensure waste is treated as far up the waste hierarchy as possible. Waste should be pre-treated prior to landfill, to ensure waste is managed as far up the waste hierarchy as possible.

**Objective SA12:** To reduce the risk of current and future flooding at new and existing development

**Possible mitigation measures:**
Locate facilities in areas of lowest flood risk from all sources. Incorporate flood mitigation measures such as bunding, into the design of the development to reduce or avoid flood risk issues. Where sites are within flood zones 3 or 2 or over 1 hectare in size carry out a site specific flood risk assessment prior to development and act upon suggestions for limiting the impact of flooding from all sources on-site and off-site.

**Objective SA13:** To encourage employment opportunities and promote economic growth

**Possible mitigation measures:**
There are opportunities for employment in waste management facilities. Recycling and recovery operations can generate increased levels of economic growth compared to landfill sites, as these facilities can also provide secondary materials which are marketable, and/or fuel or increased levels of energy generation.

## 8. Task B6: Monitoring Proposals

### 8.1 Proposals for monitoring the Norfolk Minerals and Waste Local Plan

Section 35 of the Planning and Compulsory Purchase Act 2004 (amended by the Localism Act 2011) requires every local planning authority to prepare a Monitoring Report. This should contain information on the implementation of the Local Development Scheme and the extent to which the policies in the adopted Minerals and Waste Local Plan are being achieved.

Additionally, the Sustainability Appraisal on the Norfolk Minerals and Waste Local Plan must also be monitored and reported in accordance with the SEA Regulations. This allows for the effects of the implementation of the Local Plan on sustainability to be continuously monitored against the sustainability baseline. Monitoring of the SA will be integrated into the Minerals and Waste Local Plan Monitoring Reports.

The monitoring report will describe any changes to the sustainability baseline arising from the implementation of the Norfolk Minerals and Waste Local Plan, and how the County Council will work to mitigate any adverse effects identified. The SA/SEA process has assisted in developing a framework for monitoring. Indicators have been developed which will be used to monitor implementation of the Minerals and Waste Local Plan, to check whether policies are delivering the predicted effects. The monitoring process will incorporate the following:

- Geographic Information Systems (GIS);
- Comparison of the current state against the baseline;
- Analysis of changes to indicators (positive or negative); and
- Analysis of performance against targets and objectives.

Table 8.1 below describes the envisaged monitoring regime for this SA/SEA. The table describes which indicators will be reviewed and when this information will be collected. It also delineates which indicators are contextual (denoted by a 'C'), relating to the general state of the environment, and which are related directly to and/or affected by the performance of the plan (denoted by a 'P'). The baseline data in this table is for the period from 1 April 2019 to 31 March 2020 unless otherwise specified.

Data on the number of sites located within the specified proximity of environmental and landscape designations are for safeguarded sites only. Safeguarded mineral and waste sites are those considered to be significant enough to the county's mineral or waste capacity that they should be offered a degree of protection under Policies WP17, MP10 and MP11 in the draft Minerals and Waste Local Plan (currently safeguarded through existing Core Strategy policy CS16). This means that smaller sites are not currently included in the assessment of these indicators.

Please note that whilst some sites may be within the indicator distance of environmental, landscape, or historic environment designations, this does not indicate that an adverse effect on the designations is expected.

**Table 8.1 Monitoring indicators**

| SA Objective | Type | Indicator | Baseline |
|---|---|---|---|
| **SA1:** To adapt and mitigate the effects of climate change by reducing contributions to climate change | P | Carbon dioxide emissions by Local Authority Area | http://naei.beis.gov.uk/data/local-authority-co2-map<br>6,559 kt generated in Norfolk (2013)<br>5,309 kt generated in Norfolk (2019) |
| **SA2:** To improve air quality in line with the National Air Quality Standards | C | Area of AQMAs in Norfolk<br>Number of AQMAs in Norfolk | The total area of all AQMAs in Norfolk is 284 hectares, 4 AQMAs in total (AMR 2019/20) |

| SA Objective | Type | Indicator | Baseline |
|---|---|---|---|
| **SA2:** To improve air quality in line with the National Air Quality Standards | P | Number of minerals and waste management sites within an AQMA | None (AMR 2019/20) |
| **SA3:** To minimise noise, vibration and visual intrusion | P | Number of substantiated complaints about amenity impacts from minerals and waste activities | 15 complaints (AMR 2019/20) |
| **SA4:** To improve accessibility to jobs, services and facilities and reduce social exclusion | C | Index of multiple deprivation: % lower super output areas in Norfolk in the 20% most deprived nationally | 14.2% (2019) |
| **SA4:** To improve accessibility to jobs, services and facilities and reduce social exclusion | C | Employment Deprivation: % lower super output areas in Norfolk in the 10% most deprived nationally | 6.5% (2019) |
| **SA5:** To maintain and enhance the character of the townscape and historic environment | P | Number of minerals or waste sites adjacent to (within 250 metres of) a Listed Building | 14 safeguarded mineral sites<br>5 safeguarded waste sites<br>22 water Recycling Centres<br>(AMR 2019/20) |
| **SA5:** To maintain and enhance the character of the townscape and historic environment | P | Number of minerals or waste sites within or adjacent to (within 250 metres of) a Scheduled Monument | 11 Safeguarded mineral sites<br>7 Safeguarded waste sites<br>2 Water Recycling Centres (2021) |
| **SA5:** To maintain and enhance the character of the townscape and historic environment | P | Number of minerals or waste sites within or adjacent to (within 250 metres of) a Conservation Area | 5 safeguarded mineral sites<br>8 safeguarded waste sites<br>11 Water Recycling Centres<br>(AMR 2019/20) |
| **SA5:** To maintain and enhance the character of the townscape and historic environment | P | Number of minerals or waste sites within or adjacent to (within 250 metres of) a registered historic park or garden | 0 safeguarded mineral sites<br>0 safeguarded waste sites<br>1 Water Recycling Centre<br>(AMR 2019/20) |
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Number of minerals or waste sites within 2km of a SSSI | 30 safeguarded mineral sites<br>43 safeguarded waste sites<br>28 Water Recycling Centres<br>(AMR 2019/20) |
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Number of minerals or waste sites within 5km of a Special Protection Area (SPA) | 12 safeguarded mineral sites<br>28 safeguarded waste sites<br>23 Water Recycling Centres<br>(AMR 2019/20) |
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Number of minerals or waste sites within 5km of a Special Area of Conservation (SAC) | 24 safeguarded mineral sites<br>51 safeguarded waste sites<br>34 Water Recycling Centres<br>(AMR 2019/20) |
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Number of minerals or waste sites within 5km of a Ramsar site | 12 safeguarded mineral sites<br>19 safeguarded waste sites<br>17 Water Recycling Centres<br>(AMR 2019/20) |

| SA Objective | Type | Indicator | Baseline |
|---|---|---|---|
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Number of minerals or waste sites within 2km of a National Nature Reserve (NNR) | 0 safeguarded mineral sites<br>4 safeguarded waste sites<br>8 Water Recycling Centres<br>(AMR 2019/20) |
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Number of minerals or waste sites within or adjacent to (within 250 metres of) a Local Nature Reserve | 0 safeguarded mineral sites<br>1 safeguarded waste site<br>2 Water Recycling Centres<br>(AMR 2019/20) |
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Number of minerals or waste sites within or adjacent to (250 metres of) a County Wildlife Site | 17 safeguarded mineral sites<br>11 safeguarded waste sites<br>21 Water Recycling Centres<br>(AMR 2019/20) |
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Number of minerals or waste sites within 250 metres of a County Geodiversity site | 1 safeguarded mineral site<br>0 safeguarded waste sites<br>0 Water Recycling Centres<br>(AMR 2019/20) |
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Number of planning permissions granted contrary to biodiversity or geodiversity objections from statutory consultees | 0 (2019/20) |
| **SA6:** To protect and enhance Norfolk's biodiversity and geodiversity | P | Type and area of new habitats created or enhanced post restoration of allocated mineral extraction sites [indicator requested by NE] | New indicator. |
| **SA7:** To promote innovative solutions for the restoration and afteruse of minerals and waste sites | P | % of mineral workings covered by progressive restoration schemes. | All new permissions (2015/16)<br>No new mineral extraction sites were permitted in 2016/17<br>No new mineral extraction sites were permitted in 2017/18<br>3 new mineral extraction sites permitted in 2019/20, two with progressive restoration and one being restored to an agricultural reservoir (2019/20) |
| **SA8:** To protect and enhance the quality and distinctiveness of the countryside and landscape | P | Number of minerals or waste sites within 250 metres of an ancient woodland | 7 safeguarded mineral sites<br>1 safeguarded waste site<br>1 Water Recycling Centres (2021) |
| **SA8:** To protect and enhance the quality and distinctiveness of the countryside and landscape | P | Number of minerals or waste sites within the AONB | 5 (2019/20) |
| **SA8:** To protect and enhance the quality and distinctiveness of the countryside and landscape | P | Number of minerals or waste sites within the Heritage Coast Area | None (AMR 2019/20) |

| SA Objective | Type | Indicator | Baseline |
|---|---|---|---|
| **SA8:** To protect and enhance the quality and distinctiveness of the countryside and landscape | P | Number of minerals or waste sites within the Broads Authority Executive Area | 1 safeguarded mineral site<br>2 safeguarded waste sites<br>(AMR 2019/20) |
| **SA8:** To protect and enhance the quality and distinctiveness of the countryside and landscape | P | Number of minerals or waste sites within a Core River Valley | 5 safeguarded mineral sites<br>7 safeguarded waste sites<br>12 Water Recycling Centres<br>(AMR 2019/20) |
| **SA8:** To protect and enhance the quality and distinctiveness of the countryside and landscape | P | Number of minerals and waste planning applications refused on grounds of design or landscape | 0 (2019/20) |
| **SA9:** To contribute to improved health and amenity of local communities in Norfolk | C | % lower super output areas in Norfolk in the 10% most health deprived nationally | 7% (Index of Multiple Deprivation 2019) |
| **SA9:** To contribute to improved health and amenity of local communities in Norfolk | C | % lower super output areas in Norfolk in the 10% most living environment deprived nationally | 10% (Index of Multiple Deprivation 2019) |
| **SA10:** To protect and enhance water and soils quality in Norfolk | P | Number of minerals or waste sites in Grade 1 or 2 agricultural land | 16 safeguarded mineral sites<br>21 safeguarded waste sites<br>16 water recycling centres (2021) |
| **SA10:** To protect and enhance water and soils quality in Norfolk | P | Number of minerals or waste sites within Groundwater Source Protection Zone 1 | 3 safeguarded mineral sites<br>7 safeguarded waste sites<br>0 Water Recycling Centre<br>(AMR 2019/20) |
| **SA11:** To promote sustainable use of minerals and waste resources | P | Sand and gravel:<br>Production (tonnes)<br>10-year sales average (tonnes)<br>Permitted reserve (tonnes)<br>Landbank (years) | <br>1.31mt (2020)<br>1.37mt (2020)<br>14.51mt (2020)<br><br>10.6 years (December 2020) |
| **SA11:** To promote sustainable use of minerals and waste resources | P | Carstone:<br>Production (tonnes)<br>10-year sales average (tonnes)<br>Permitted reserve (tonnes)<br>Landbank (years) | <br>55,907t (2020)<br>75,138t (2020)<br><br>1.66mt (2020)<br>22 years (December 2020) |
| **SA11:** To promote sustainable use of minerals and waste resources | P | Silica sand:<br>3-year sales average (tonnes)<br>10-year sales average (tonnes)<br>Permitted reserve (tonnes)<br>Landbank (years) | <br>814,625t (2020)<br>800,051 (2020)<br><br>3.2mt (2020)<br>4 years (December 2020) |

| SA Objective | Type | Indicator | Baseline |
|---|---|---|---|
| **SA11:** To promote sustainable use of minerals and waste resources | P | % Local Authority Collected Waste:<br>- Recycling<br>- Composted<br>- Energy recovered<br>- Refuse Derived Fuel<br>- Landfilled | (2020/21)<br>Recycled: 21.57%<br>Composted 19.73%<br>Energy recovery 14.39%<br>RDF 39.45%<br>Landfill 2.46%<br>Other 2.32% |
| **SA11:** To promote sustainable use of minerals and waste resources | P | Local Authority Collected Waste arisings (tonnes) | 424,725 (2020/21) |
| **SA12:** To reduce the risk of current and future flooding at new and existing development | P | Number of 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 (AMR 2019/20) |
| **SA13:** To encourage employment opportunities and promote economic growth | C | Unemployment rate (persons aged 16-64) | 4.5% (July 2021) |

## 9. Sequential Flood Risk at Potential Mineral Sites

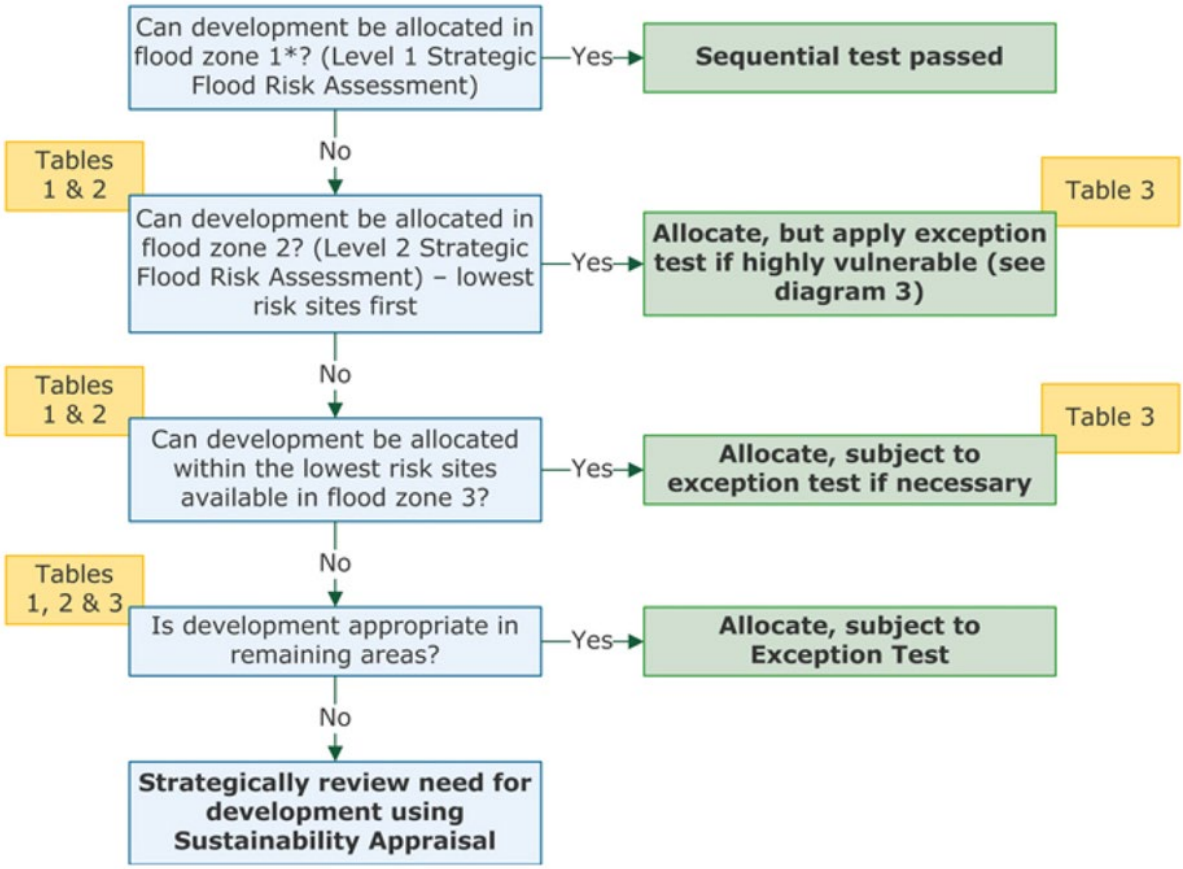
National planning policy on development and flood risk is set out in section 14 on the NPPF (2021) and the flood risk and coastal change section of the PPG. Paragraphs 161 and 162 of the NPFF states that “all plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change” and “the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source”.

### 9.1 Strategic Flood Risk Assessment

In accordance with the PPG, Norfolk County Council as a Minerals and Waste Planning Authority has developed the Norfolk Minerals and Waste Local Plan with due regard to regional Flood Risk Appraisals and available Strategic Flood Risk Assessments.

The status of district council Strategic Flood Risk Assessments in Norfolk is as follows:

| Local Planning Authority | Status |
|---|---|
| Breckland District Council | Complete |
| Great Yarmouth Borough Council | Complete |
| Borough Council of King’s Lynn and West Norfolk | Complete |
| Broadland District Council | Complete |
| Broads Authority | Complete |
| Norwich City Council | Complete |
| North Norfolk District Council | Complete |
| South Norfolk Council | Complete |




**Application for the Sequential Test for Local Plan preparation**

### 9.2 The Sequential Test

The PPG require that local planning authorities should demonstrate through evidence that it has considered a range of options in the site allocation process, using the Strategic Flood Risk Assessment to apply the Sequential Test and the Exception Test where necessary. This can be undertaken directly or, ideally, as part of the sustainability appraisal. Where other sustainability criteria outweigh flood risk issues, the decision-making process should be transparent with reasoned justifications for any decision to allocate land in areas at high flood risk in the sustainability appraisal report.

This general approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. The aim should be to keep development out of medium and high flood risk areas (Flood Zones 2 and 3) and other areas affected by other sources of flooding where possible.

The Sequential Test ensures that a sequential approach is followed to steer new development to areas with the lowest probability of flooding. The flood zones as refined in the Strategic Flood Risk Assessment for the area provide the basis for applying the Test. The aim is to steer new development to Flood Zone 1 (areas with a low probability of river or sea flooding). Where there are no reasonably available sites in Flood Zone 1, local planning authorities in their decision making should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2 (areas with a medium probability of river or sea flooding), applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.

| Flood Zone | Definition |
|---|---|
| Zone 1 Low Probability | Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3) |
| Zone 2 Medium Probability | Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map) |
| Zone 3a High Probability | Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.(Land shown in dark blue on the Flood Map) |
| Zone 3b The Functional Floodplain | This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map) |

**Flood Zones: from PPG Table 1 (Reference ID: 7-065-20140306)**

The methodology followed for undertaking the sequential test (and for considering whether any exception tests were needed) was that set out in the PPG.

PPG Table 2 divides the vulnerability of development into five broad categories (essential infrastructure, highly vulnerable, more vulnerable, less vulnerable and water compatible development) which reflect the level of risk to users. This takes account of both the type of development and also the vulnerability of its users (children, the elderly, people with mobility problems may have more difficulty escaping from fast flowing water). By using table 2 in conjunction with table 1 the vulnerability of development is considered as part of the sequential approach.

Extract with references to minerals and waste development only (excludes "Essential Infrastructure" and "Highly Vulnerable" classifications).

| Vulnerability | Infrastructure Type |
|---|---|
| More Vulnerable | Landfill* and sites used for waste management facilities for hazardous waste |
| Less Vulnerable | Waste treatment (except landfill* and hazardous waste facilities).<br>Minerals working and processing (except for sand and gravel working).<br>Water treatment works which do not need to remain operational during times of flood.<br>Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place |
| Water-compatible Development | Sand and gravel working |

**Flood Risk Vulnerability Classifications: from PPG Table 2 (Ref ID: 7-066-20140306)**

### 9.3 Screening of sites in Norfolk identified as suitable for allocation for minerals development

The degree of Flood Risk at each minerals site has been noted, using the District Councils' Strategic Flood Risk Assessments as prepared to inform their own Local Development Frameworks. The Environment Agency's flood risk maps have also been used.

The results of the appraisal of flood risk at the sites are contained in Table 9.1 which lists all the sites, whether or not they are identified as suitable for allocation, and irrespective of the level of flood risk at each.

Table 9.1 also includes a section headed "summary reasons for non-allocation of site" which sets out in very brief summary form the key reasons where sites are not allocated. For the full reasons in each case reference should be made to the Sustainability Appraisal. The individual site appraisals illustrate why some of the lower risk sites considered for allocation are not reasonably available or suitable as alternatives to the allocation of higher risk sites.

The County Council has concluded that the site selection process satisfies the Sequential Test, and that no site has been identified for allocation where there would be a suitable alternative in an area in a lower category of risk of flooding.

### 9.4 The Exception Test

In accordance with the NPPF (para 164) and PPG, the Exception Test is to be applied following a sequential test, when "more vulnerable" development and "essential infrastructure" cannot be located in areas of lower flood risk. Where development is, exceptionally, necessary in areas at higher flood risk, the aim is to make it safe without increasing and, where possible, reducing, flood risk elsewhere.

| Flood Zone | Essential infrastructure | Highly vulnerable | More vulnerable | Less vulnerable | Water compatible |
|---|---|---|---|---|---|
| Zone 1 | ✓ | ✓ | ✓ | ✓ | ✓ |
| Zone 2 | ✓ | Exception Test required | ✓ | ✓ | ✓ |
| Zone 3a † | Exception Test required † | ✗ | Exception Test required | ✓ | ✓ |
| Zone 3b * | Exception Test required * | ✗ | ✗ | ✗ | ✓ |

**Key**: ✓ Development is appropriate ✗ Development should not be permitted.

**Table 3 of the PPG classifies flood risk vulnerability (Reference ID: 7-067-20140306)**

Paragraph 161 of the NPPF states that any residual risk should be managed by:

(a) applying the sequential test and then, if necessary, the exception test as set out below;

(b) safeguarding land from development that is required, or likely to be required, for current or future flood management;

(c) using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding, (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and

(d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.

**9.5 Consideration of need for application of Exception Test to the sites identified as suitable for allocation:**

A total of 19 sites are considered to be suitable for allocation. Of these, all 19 are entirely within EA Flood Zone 1, where all uses of land are appropriate in the context of flood risk.

The other sites proposed for sand and gravel extraction have either been found less acceptable in the context of other planning constraints or are not deliverable within the plan period, as summarised in Table 9.1.

In the context of table 3 of the PPG, sand and gravel extraction is water compatible development. The exception test is not therefore applicable to any of the sites proposed for allocation for minerals development.

**9.6 Conclusion:**

The selection of sites suitable for allocation for minerals development in the Norfolk Minerals and Waste Local Plan is consistent with the objective of NPPF and PPG to ensure that flood risk is taken into account in all stages of the planning process, to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk.

**Table 9.1: Minerals Sites Specific Allocations Sequential Test Table**

| Site Ref, Parish, District | Proposed mineral extraction | Result of site selection process | EA Flood Zones (SFRA if different) | SFRA Areas susceptible to groundwater flooding | SFRA climate change scenario flood zones | Surface Water Flooding | Reservoir Flooding |
|---|---|---|---|---|---|---|---|
| MIN 12, Beetley, Breckland | Sand and gravel 1,175,000t | **Allocated** | 100% FZ 1 | Majority of the site is within the <25% zone however the SE corner is within the >=75% zone. | No area assessment in the Breckland plan | No areas of risk of the site at risk of flooding from surface water | None |
| MIN 51 & MIN 13 & MIN 08, Beetley, Breckland | Sand and gravel 1,830,000t | **Allocated** | 100% FZ 1 | North field is <25%, south field is >=25%<50% | No area assessment in the Breckland plan | Few locations of surface water pooling in 1 in 30 and 1 in 100-year rainfall events. In a 1 in 1000-year rainfall event there is a surface water flow path across the south-western corner of the site. | None |
| MIN 23, Beeston, Breckland | Sand and gravel 500,000t | Not Allocated due to landscape and highways | 100% FZ 1 | <25% in the north of the site | No area assessment in the Breckland plan | One location of surface water pooling in a 1 in 30 year and 1 in 100-year rainfall event at the southern corner of the site. There is a surface water flow path crossing the southern corner of the site in a 1 in 1000-year rainfall event | None |
| MIN 200, Carbrooke, Breckland | Sand and gravel 300,000t | **Allocated** | 100% FZ 1 | >=50%<75% | No area assessment in the Breckland plan | Two locations of surface water pooling in a 1 in 30 year and 1 in 100 rainfall event and a third location in a 1 in 1000-year rainfall event. | None |
| MIN 116, Cranworth, Breckland | Sand and gravel 950,000t | Not Allocated due to landscape, amenity, | 100% FZ 1 | <25% | No area assessment in the Breckland plan | Areas of surface water pooling in a 1 in 1000-year rainfall event | None |

| Site Ref, Parish, District | Proposed mineral extraction | Result of site selection process | EA Flood Zones (SFRA if different) | SFRA Areas susceptible to groundwater flooding | SFRA climate change scenario flood zones | Surface Water Flooding | Reservoir Flooding |
|---|---|---|---|---|---|---|---|
| | | highways, and deliverability | | | | | |
| MIN 35, Quidenham, Breckland | Sand and gravel 500,000t | Not Allocated due to landscape | 100% FZ 1 | <25% | No area assessment in the Breckland plan | No areas of risk of the site at risk of flooding from surface water | None |
| MIN 102, Snetterton, Breckland | Sand and gravel 980,000t | Not Allocated due to deliverability and ecology | 2% in FZ 3<br>3% in FZ 2<br>97% in FZ 1 | >=50%<75% | No area assessment in the Breckland plan | Few locations of surface water pooling in a 1 in 30 and 1 in 100-year rainfall event. In a 1 in 1000-year event a surface water flow path develops between the north of the site and the River Thet. | None |
| MIN 201, Snetterton, Breckland | Sand and gravel 590,000t | Not Allocated due to heritage impact and ecology | 100% Flood Zone 1 | <25% | No area assessment in the Breckland plan | One location of surface water pooling in a 1 in 30 and 1 in 100-year rainfall event. Few locations of a 1 in 1000-year event. | None |
| MIN 55, Attlebridge, Broadland | Sand and gravel 527,000t | Not Allocated due to deliverability | 100% Flood Zone 1 | None | Few locations of 1 in 100-year surface water flooding event with 40% climate change allowance. | Areas of surface water pooling on the site in a 1 in 30-year rainfall event and a 1 in 100-year rainfall event. In a 1 in 1000-year rainfall event there are larger areas of surface water pooling and a surface water flow path within the site. | None |
| MIN 202, Attlebridge, Broadland | Sand and gravel 545,000t | **Allocated** | 100% FZ 1 | None | Four small locations of 1 in 100-year surface water flooding event with 40% climate change allowance. | Small areas of surface water pooling in a 1 in 1000-year rainfall event | None |

| Site Ref, Parish, District | Proposed mineral extraction | Result of site selection process | EA Flood Zones (SFRA if different) | SFRA Areas susceptible to groundwater flooding | SFRA climate change scenario flood zones | Surface Water Flooding | Reservoir Flooding |
|---|---|---|---|---|---|---|---|
| MIN 48, Felthorpe, Broadland | Sand and gravel 1,900,000t | Not Allocated due to deliverability and ecology | 100% FZ 1 | Small northern area of site within >=25%<50% | No risk of flooding with a climate change scenario applied. | One location of surface water pooling in a 1 in 1000-year rainfall event. | None |
| MIN 37, Buxton with Lammas, and Frettenham, Broadland | Sand and gravel 1,450,000t | **Allocated** | 100% FZ 1 | The site is predominately in zone <25%, a small proportion is within >=25%<50% | Few locations associated to the flow path of 1 in 100-year surface water flooding event with 40% climate change allowance. | Two locations of surface water pooling in a 1 in 30 and 1 in a 100-year rainfall event. In a 1 in 1000-year rainfall event there is a surface water flow path across the widest part of the site west-east. | None |
| MIN 64, Horstead with Stanninghall, Broadland | Sand and gravel 650,000t | **Allocated** | 100% FZ 1 | Most of the site is within >=25%<50%, southeast corner is within <25% zone | No risk of flooding with a climate change scenario applied. | One location of surface water pooling in a 1 in 30-year rainfall event Two locations of surface water pooling in a 1 in 100 year and three locations of 1 in 1000-year rainfall event. | None |
| MIN 65, Horstead with Stanninghall, Broadland | Sand and gravel 3,745,000t | **Allocated** | 100% FZ 1 | None | Few small locations of 1 in 100-year surface water flooding event with 40% climate change allowance. | Few locations of surface water pooling in a 1 in 1000-year rainfall event | None |
| MIN 96, Spixworth, Horsham St Faith, Newton St Faith, Broadland | Sand and gravel 1,600,000t | **Allocated** | 100% FZ 1 | <25% | No risk of flooding with a climate change scenario applied. | Two very small locations of surface water pooling in a 1 in 1000-year rainfall event | None |

| Site Ref, Parish, District | Proposed mineral extraction | Result of site selection process | EA Flood Zones (SFRA if different) | SFRA Areas susceptible to groundwater flooding | SFRA climate change scenario flood zones | Surface Water Flooding | Reservoir Flooding |
|---|---|---|---|---|---|---|---|
| MIN 213, Stratton Strawless, Broadland | Sand and gravel 1,000,000t | Not Allocated due to uncertain deliverability of acceptable restoration | 100% FZ 1 | <25% | Few locations predominately in the southwest of 1 in 100-year surface water flooding event with 40% climate change allowance. | Few locations of surface water pooling of a 1 in 30 and 1 in 100-year rainfall e vent. Flow path south of the site including a few additional areas of a 1 in 1000 rainfall event. | None |
| MIN 203, Burgh Castle, Great Yarmouth | Sand and gravel 280,000t | Not Allocated due to highways | 100% FZ 1 | <25% | One location of 1 in 100-year surface water flooding event with 40% climate change allowance. | One area of surface water pooling in a 1 in 100 year and 1 in 1000 rainfall event | None |
| MIN 38, Fritton and St Olaves, Great Yarmouth | Sand and gravel 1,870,000t | Not Allocated due to heritage impact and located within the Broads | 3.5% in FZ3<br>4% in FZ 2<br>96% in FZ 1 (Partially within FZ 3b and 3a). | None | Partially within 1 in 200-year and 1 in 100-year AEP Tidal Climate Change along western boundary and pockets of 1 in 100-year AEP surface water with 40% Climate change. | Three locations of surface water pooling in a 1 in 30-year rainfall event. Additional areas of a 1 in 100 and a 1 in 100-year rainfall event. | None |
| MIN 6, Middleton, KL&WN | Carstone 1,416,000t | **Allocated** | 100% FZ 1 | None | Three locations of 1 in 100-year surface water flooding event with 40% climate change allowance. | Three locations of surface water pooling in a 1 in 30 and 1 in 100-year rainfall event. Few locations of a 1 in 1000-year rainfall event. | None |

| Site Ref, Parish, District | Proposed mineral extraction | Result of site selection process | EA Flood Zones (SFRA if different) | SFRA Areas susceptible to groundwater flooding | SFRA climate change scenario flood zones | Surface Water Flooding | Reservoir Flooding |
|---|---|---|---|---|---|---|---|
| MIN 45, East Rudham, KL&WN | Sand and gravel 700,000t | Not Allocated due to ecology | 100% FZ 1 | <25% | No risk of flooding with a climate change scenario applied. | Minor surface water flow path along the southern boundary of the site in a 1 in 1000-year rainfall event | None |
| MIN 204, Feltwell, KL&WN | Sand and gravel 575,000t | Not Allocated due to ecology | 100% FZ 1 | None | Few locations of 1 in 100-year surface water flooding event with 40% climate change allowance. | Two surface water pooling areas of 1 in 30-year rainfall event. Wider areas three water pooling areas of 1 in 100-year and 1 in 1000-year rainfall event. | None |
| MIN 19 & MIN 205, Pentney, KL&WN | Sand and gravel 850,000t | Not Allocated due to landscape | 6% in FZ 2 94% in FZ 1 (FZ 3b and 3a: flow encroaching from the south). | None | Few locations of 1 in 100-year surface water flooding event with 40% climate change allowance. Flow path running along the south of the site is at risk of 1 in 100-year fluvial event with 35% climate change allowance. A large proportion of the site is at risk of 1 in 100-year (65% climate change) and 1 in 1000-year (25% climate change) fluvial event. | Three pooling areas of a 1 in 100-year rainfall event, several areas of 1 in 1000-year rainfall event. | None |

| Site Ref, Parish, District | Proposed mineral extraction | Result of site selection process | EA Flood Zones (SFRA if different) | SFRA Areas susceptible to groundwater flooding | SFRA climate change scenario flood zones | Surface Water Flooding | Reservoir Flooding |
|---|---|---|---|---|---|---|---|
| MIN 74, Tottenhill, KL&WN | Sand and gravel 160,000t | Not Allocated due to landscape and historic environment | 100% FZ 1 | >=25%<50% | No risk of flooding with a climate change scenario applied. | No areas of risk of the site at risk of flooding from surface water | None |
| MIN 77, Tottenhill, KL&WN | Sand and gravel 630,000t | Not Allocated due to landscape and ecology | 100% FZ 1 | Northern area: >=50%<75% Southwestern area: >75% South-eastern area: >=25%<50% | Small area on the southern boundary of 1 in 100-year surface water flooding event with 40% climate change allowance. | Flow path along the southern boundary of the site in a 1 in 30-year rainfall event which increases in size in a 1 in 100 and 1 in 1000 year rainfall event | None |
| MIN 206, Tottenhill, KL&WN | Sand and gravel 780,000t | **Allocated** | 100% FZ 1 | >=50%<75% | Few locations of 1 in 100-year surface water flooding event with 40% climate change allowance. | One small location of surface water pooling in a 1 in 30-year rainfall event and a 1 in 100-year rainfall event. In a 1 in 1000-year rainfall event there are additional small areas of surface water pooling. | None |
| MIN 32, West Dereham, KL&WN | Sand and gravel 560,000t | Not Allocated due to landscape | 100% FZ 1 | None | No risk of flooding with a climate change scenario applied. | surface water flow path just encroaching the south of the site in a 1 in 1000-year rainfall event | None |
| MIN 40, East Winch, KL&WN | Silica sand 3,000,000t | **Allocated** | 100% FZ 1 | None | No risk of flooding with a climate change scenario applied. | One small location of surface water pooling in a 1 in 1000-year rainfall event | None |
| SIL01, Bawsey, KL&WN | Silica sand 1,100,000t | **Allocated** | 100% FZ 1 | Southern area of site has a <25% chance | Few locations of 1 in 100-year surface water flooding event with 40% climate change allowance. | Few locations of surface water pooling in a 1 in 100 and 1 in 1000-year rainfall event | None |

| Site Ref, Parish, District | Proposed mineral extraction | Result of site selection process | EA Flood Zones (SFRA if different) | SFRA Areas susceptible to groundwater flooding | SFRA climate change scenario flood zones | Surface Water Flooding | Reservoir Flooding |
|---|---|---|---|---|---|---|---|
| AOS E, Shouldham, Wormegay, Marham, Shouldham Thorpe, KL&WN | Area of search for silica sand | Not Allocated due to historic environment, loss of open space, aviation safety, deliverability | 38% in FZ 3<br>43% in FZ 2<br>57% in FZ 1 (Partially within FZ 3a) | None | Few locations of 1 in 100-year surface water flooding event with 40% climate change allowance. | Few locations of surface water pooling in a 1 in 30-year,1 in 100 and 1 in 1000-year rainfall event | Large location in the northern area of the site |
| AOS F, Runcton Holme, Stow Bardolph, KL&WN | Area of search for silica sand | Not Allocated due to deliverability and aviation safety | 100% FZ 1 | None | Small locations of 1 in 100-year surface water flooding event with 40% climate change allowance | Two surface water pooling areas in a 1 in 30-year rainfall event. Few locations of surface water pooling 1 in 100 and 1 in 1000-year rainfall event. | None |
| AOS I, Runcton Holme, Shouldham Thorpe, Tottenhill, KL&WN | Area of search for silica sand | Not Allocated due to deliverability and aviation safety | 100% FZ 1 | None | Few locations of 1 in 100-year surface water flooding event with 40% climate change allowance | There is a surface water flow path across the south-western part of the AOS which contains areas of 1 in 30, 1 in 100 and 1 in 1000 rainfall events. | None |
| AOS J, Tottenhill, Wormegay KL&WN | Area of search for silica sand | Not Allocated due to deliverability and aviation safety | 100% FZ 1 | None | Few small locations of 1 in 100-year surface water flooding event with 40% climate change allowance | There is an area of surface water pooling in a 1 in 30-year rainfall event, which increase in size in a 1 in 100-year rainfall event and a 1 in 1000-year rainfall event. There is also a surface water flow path through the AOS in a 1 in 1000-year rainfall event. | None |
| SIL02, Shouldham and Marham, KL&WN | Silica sand extraction 16,000,000t | Not Allocated due to aviation safety and historic | 41% in FZ 3<br>59% in FZ 2<br>41% in FZ 1 | None | Few locations of 1 in 100-year surface water flooding event with 40% climate | Few locations of surface water pooling, mainly in the south of the site, in a 1 in 30-year rainfall event. There are | Large location in the northern |

| Site Ref, Parish, District | Proposed mineral extraction | Result of site selection process | EA Flood Zones (SFRA if different) | SFRA Areas susceptible to groundwater flooding | SFRA climate change scenario flood zones | Surface Water Flooding | Reservoir Flooding |
|---|---|---|---|---|---|---|---|
| | | environment | (Partially within Flood Zone 3a) | | change allowance. Area covering the northeast section of the site is at risk of a 1 in 100-year fluvial event with 35% climate change allowance. A small location located to he north at risk of 1 in 100-year fluvial event with 65% climate change allowance. | additional locations of surface water pooling in a 1 in 100-year rainfall event. The number of locations of surface water pooling increase significantly in a 1 in 1000-year rainfall event and there are a number of surface water flow paths in the southern part of the proposed area. | area of the site |
| MIN 69, Aylmerton, North Norfolk | Sand and gravel 2,000,000t | **Allocated** | 100% FZ 1 | None | Two small locations of 1 in 100-year surface water flooding event with 40% climate change allowance | The site has a low risk of surface water flooding, with one location of surface water pooling in a 1 in 30-year rainfall event, and two locations of surface water pooling in a 1 in 100-year and 1 in 1000-year rainfall event. | None |
| MIN 71, Holt, North Norfolk | Sand and gravel 1,100,000t | Not Allocated due to ecology and landscape | 100% FZ 1 | None | Two locations of 1 in 100-year surface water flooding event with 40% climate change allowance | Two small locations of surface water pooling in a 1 in 100-year rainfall event which expand in a 1 in 1000-year rainfall event. | None |
| MIN 115, North Walsham, North Norfolk | Sand and gravel 1,100,000t | **Allocated** | 100% FZ 1 | None | No risk of flooding with a climate change scenario applied. | One very small location of surface water pooling in a 1 in 1000-year rainfall event | None |

| Site Ref, Parish, District | Proposed mineral extraction | Result of site selection process | EA Flood Zones (SFRA if different) | SFRA Areas susceptible to groundwater flooding | SFRA climate change scenario flood zones | Surface Water Flooding | Reservoir Flooding |
|---|---|---|---|---|---|---|---|
| MIN 207, Briston, North Norfolk | Sand and gravel 400,000t | **Allocated** | 100% FZ 1 | The majority of the site is susceptible to <25% groundwater flooding | No risk of flooding with a climate change scenario applied. | No areas of the site are at risk of surface water flooding | None |
| MIN 208, East Beckham, North Norfolk | Sand and gravel 1,320,000t | **Allocated** | 100% FZ 1 | None | No risk of flooding with a climate change scenario applied. | The site has a low risk of surface water flooding, with two small areas of surface water pooling in a 1 in 1000-year rainfall event. | None |
| MIN 25, Haddiscoe, South Norfolk | Sand and gravel 1,300,000t | **Allocated** | 100% FZ 1 | <25% Small area of southern corner covers | Four small locations of a 1 in 100-year surface water flooding event with 40% climate change allowance. | The site has a low risk of surface water flooding with two areas of surface water pooling in a 1 in 30 and 1 in 100-year rainfall event. There are additional areas of surface water pooling in a 1 in 1000-year rainfall event. | None |
| MIN 92, Heckingham, South Norfolk | Sand and gravel 570,000t | Not Allocated due to landscape | 100% FZ 1 | <25% covers all of the site | No risk of flooding with a climate change scenario applied. | Two minor surface water flow paths developing within the site in a 1 in 100 and 1 in 1000-year rainfall event | None |
| MIN 212, Mundham, South Norfolk | Sand and gravel 325,000t | Not Allocated due to highways | 15% in FZ 3<br>17% FZ 2<br>83% in FZ 1 | <25% covers half of the site | Flow path on eastern boundary of a 1 in 100-year surface water flooding event with 40% climate change allowance | Flow path running through the eastern part of the site (north-south) at risk of a 1 in 30 year rainfall event. The area of the site included within this flow path increases in 1 in 100 and 1 in 1000-year rainfall events | None |

## 10. Glossary

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

**Aftercare:** The treatment of land for a period (usually five years) following restoration to bring the land to the required standard so that it is fit for its agreed after-use.

**Afteruse:** the use (usually for agriculture, forestry or amenity) that land is put to once restored following mineral working, or temporary waste management operations such as landfill.

**Aggregates:** Materials such as sand and gravel and crushed rock, used in the construction industry for purposes such as concrete, mortar or roadstone.

**Agricultural waste:** Waste that is specifically generated by agricultural activities. It includes manure and other wastes from farms, poultry houses and slaughter houses; harvest waste, and pesticides.

**Amenity:** a positive element or elements that contribute to the overall character or enjoyment of an area.

**Anaerobic Digestion:** Anaerobic digestion is the biological treatment of biodegradable organic waste in the absence of oxygen, utilising microbial activity to break down the waste in a controlled environment. Anaerobic digestion results in the generation of:
- Biogas, which is rich in methane and can be used to generate heat and/or electricity;
- Fibre, (or digestate) which is nutrient rich and can potentially be used as a soil conditioner; and
- Liquor, which can potentially be used as a liquid fertiliser.

**Ancient woodland:** An area of woodland which has had a continuous history of tree cover since at least 1600. It includes ancient semi-natural woodland and plantations on ancient woodland (PAWS).

**Appropriate Assessment:** The Conservation of Habitats and Species Regulations 2017 require an Appropriate Assessment to be undertaken to assess the impacts of a land-use plan against the conservation objectives of a designated Habitats Site and to ascertain whether it would adversely affect the integrity of that site.

**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.

**Biodegradable waste:** any waste that is capable of undergoing natural decomposition, such as food and garden waste, paper and cardboard.

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

**Borrow pit:** A temporary mineral working to supply material for a specific construction project.

**Buffer:** Buffers are areas of land within the allocation which would remain unworked for mineral extraction to mitigate potential impacts (for example, on amenity, landscape or ecology). The exact distances and coverage of any buffer, if required, would be determined following assessment of the detail of potential impacts as part of any future planning application.

**Carstone:** Carstone is a ferrunginous brown sandstone quarried in West Norfolk. It is used primarily for construction fill. When the iron content is high it can meet higher specifications. Traditionally in West Norfolk it was used as a building material.

**Climate change:** Changes in climate resulting from an increase in greenhouse gases in the atmosphere (e.g. emissions from transport and industry), global changes to land surface, such as from deforestation, and an increase in atmospheric concentrations of aerosols.

**Composting:** A process where organic wastes (such as garden and kitchen waste) are broken down aerobically (in the presence of air) to create a product that can be applied to land to improve soil structure and enrich the nutrient content of the soil.

**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.

**Construction, Demolition and Excavation waste (CD&E):** CD&E waste can be in the form of certain types of: Construction wastes (e.g. surplus supplies of materials specifically required for a single project as well as waste originating from site preparation), Demolition wastes (e.g. used material resulting from demolition activities); or Excavation wastes (e.g. usually consisting of soils and stones which cannot be used beneficially, such as from tunnelling operations, the soil component may not be inert).

**Commercial and industrial waste (C&I):** Waste from shops, industrial and business premises.

**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:** Statutory documents described in 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.

**Development Plan Documents:** A term brought in by the Planning and Compulsory Purchase Act 2004. They set out spatial planning policies and proposals for an area. Development Plan Documents are also referred to as Local Plans.

**Development Framework:** Collective term for the Development Plan Documents, the Local Development Scheme, the Statement of Community Involvement, Annual Monitoring Report, and any supplementary planning documents.

**Disposal:** Waste disposal operations include: deposit into or onto land (e.g. landfill), incineration, permanent storage, treatment operations where the final compound or mixture will be disposed of.

**Ecological network:** Areas of semi-natural habitat that are linked by corridors or “stepping stones”, and thus enable wildlife to move through the wider landscape.

**Energy from Waste (EfW):** Utilising the embodied energy of waste materials to generate electricity and heat through direct combustion or indirect combustion of biogas.

**Energy recovery:** The generation of heat and power from the thermal treatment of waste, the production of fuels from other forms of treatment and the combustion of landfill gas and gas from anaerobic digestion to create electricity.

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

**Gasification:** A process whereby carbon based wastes are heated in the presence of air or steam to produce fuel-rich gases.

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

**Geomorphology:** The study of landforms and the formative processes that shape the physical landscape.

**Green Infrastructure:** A network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities.

**Greenhouse gas:** Gases such as carbon dioxide and methane which, when their atmospheric concentrations exceed certain levels, can contribute to climate changes buy forming a barrier in the earth's atmosphere that traps the sun's heat.

**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.

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

**Habitats Regulations Assessment (Appropriate Assessment):** The Conservation of Habitats and Species Regulations 2017 require an Appropriate Assessment to be undertaken to assess the impacts of a land-use plan against the conservation objectives of a designated Habitats Site and to ascertain whether it would adversely affect the integrity of that site.

**Hazardous waste:** As defined by The List of Wastes Regulations 2005, eg asbestos, acids, oils, petroleum products, paint, mercury, solvents, un-depolluted end-of-life vehicles. It is waste that poses potential threats to public health or the environment (when improperly treated, stored, transported or disposed). This can be due to the quantity, concentration or characteristics of the waste. This type of waste includes elements of healthcare waste.

**Heritage asset:** Includes World Heritage Sites, Scheduled Monuments, Listed Buildings, Protected Wreck Sites, Registered Parks and Gardens, Registered Battlefields or Conservation Areas designated under the relevant legislation. Heritage assets can also be undesignated.

**Historic Environment:** All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora

**Historic Parks and Gardens:** Sites included in the *Register of Parks and Gardens of special historic interest in England,* compiled by Historic England via the Historic Buildings and Ancient Monuments Act 1953. The main purpose of this register is to help ensure that the features and qualities which make the landscapes registered to be of national importance are safeguarded during ongoing management or if any change is being considered which could affect them.

**Household waste:** Household waste includes all mixed waste that is collected from households; all materials taken to local bring banks or collected at the doorstep or kerbside for recycling and composting; all waste (apart from rubble) that is taken to the County Council operated Recycling Centres; litter and street sweepings.

**Household waste recycling centres:** Provided by Waste Disposal Authorities as places where the public can deliver their household waste for recycling or disposal. These sites usually incorporate skips, collection areas for waste refrigeration and metal appliances, and recycling banks. Some sites have containers for materials such as waste batteries, paint, oil and wood. These facilities do not generally accept trade waste.

**Inert waste:** Waste that does not undergo any significant physical, chemical or biological, transformations; does not dissolve, burn or otherwise physically or chemically react, biodegrade or

adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health; and, in particular, does not endanger the quality of any surface water or groundwater.

**Inert waste recycling:** Includes the recycling of secondary aggregates at centralised processing facilities or where the material arises. Material is delivered by skip or bulk vehicle for crushing, screening and grading for re-use. Unusable residues may be used in landfill engineering. Hardstanding is required for stockpiles of material, and for locating crushing, screening and grading machinery. Some elements of the operation and storage may be enclosed, but it is mostly undertaken in the open air.

**In-Vessel Composting:** The aerobic decomposition of shredded and mixed organic waste within an enclosed container, where the control systems for material degradation are fully automated. Moisture, temperature and odour can be regulated, and a stable compost can be produced much more quickly than outdoor windrow composting.

**Initial Consultation:** A stage of the Local Plan preparation process where community engagement is sought from individuals and organisations to inform the identification of key issues and the potential options for addressing them.

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

**Landfill:** The term landfill relates to waste disposal mainly below ground level whereas landraise, also generically referred to as landfill, refers to waste disposal mainly above pre-existing ground levels. Modern landfill practice requires a significant degree of engineering in order to contain the waste, control emissions and minimise potential environmental effects. The primary by-products of landfilling, where biodegradable materials are disposed of, are landfill gas and leachate (a liquor resulting from water passing through the waste mass) and much landfill engineering is geared towards dealing with these substances. As such, landfill sites require containment lining systems and abstraction systems for both landfill gas and leachate.

**Landfill gas:** A by-product from the decomposition of biodegradable wastes. The gas is a mixture of up to 65% methane and 35% carbon dioxide plus trace gases and vapours.

**Landscape character:** A distinct and consistent pattern of elements in the landscape that makes one landscape different to another.

**Leachate:** A liquor resulting from water passing through the waste mass and therefore containing contaminants.

**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 Authority Collected Waste (LACW):** Waste collected from households and some business premises by local authorities, including waste from household waste recycling centres, public parks and public bins.

**Local Development Scheme:** Describes the Local Development 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.

**Materials Recovery Facility:** A specialised building for separating, processing and storing recyclable materials from waste collected either separately or mixed.

**Mechanical Biological Treatment (MBT):** A form of waste processing facility that combines a sorting facility (the 'mechanical' element) with a form of biological treatment such as composting or anaerobic digestion.

**Methane:** A colourless, odourless, flammable gas, formed during the decomposition of biodegradable waste.

**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 defined by the Mineral Planning Authority to identify a mineral resource which would be subject to safeguarding to prevent unnecessary sterilisation by non-mineral developments; used in conjunction with Mineral Consultation Areas.

**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.

**Monitoring Report:** Records progress in implementing the Local Development Scheme and the performance of policies against targets in the Local Plan. Indicates what action an authority needs to take if it is not on track or policies need to be revised/ replaced.

**Municipal Waste:** Waste arising from households as well as other waste (such as commercial and industrial waste) which because of its nature or composition is similar to waste from households.

**National Planning Policy Framework:** This document sets out the Government's planning policies for England and the most recent version was published in July 2021. 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 (PPG):** A web-based resource published by the Department for Communities and Local Government (DCLG) in 2014 and updated as needed. It is available at: https://www.gov.uk/government/collections/planning-practice-guidance

**Non-hazardous waste:** All non-hazardous waste as defined by The List of Wastes Regulations 2005. Included are for example municipal (household), commercial and industrial wastes.

**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.

**Primary aggregates:** Naturally occurring sand, gravel and crushed rock used for construction purposes.

**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.

**Ramsar Site:** A Site of Special Scientific Interest of international importance as waterfowl habitat designated under the Ramsar International Convention on Wetlands (1971).

**Recovery:** Includes recycling and composting operations as well as anaerobic digestion, thermal treatment operations which produce energy from waste (including fuel, heat and power) and some backfilling operations.

**Recycled aggregates:** Aggregates produced from recycled construction waste such as crushed concrete, planings from road surfacing etc.

**Recycling:** The process by which materials are collected and used as 'raw' materials for new products.

**Refuse Derived Fuel (RDF):** consists of residual waste that complies with the specifications in a written contract between the producer of the RDF and a permitted end-user for the thermal treatment of the waste in an energy from waste facility or a facility undertaking co-incineration such as cement and lime kilns. The written contract must include the end-user's technical specifications relating as a minimum to the calorific value, the moisture content, the form and quantity of the RDF.

**Renewable energy:** Renewable energy is energy derived from resources that are regenerative (e.g. biomass) or for all practical purposes cannot be depleted (e.g. solar or wind power).

**Residual waste:** The elements of the waste streams that remain following recovery, recycling or composting operations.

**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.

**Route hierarchy:** Norfolk County Council's route hierarchy categorises roads by use, or desired use, influencing signage, improvement programmes, and maintenance priorities. At the top of the hierarchy are the:

- Principal Roads (generally A roads); followed by
- Distributor Roads (generally B roads); followed by
- Local Access
- HGV (heavy goods vehicle) access
- Tourist accesses (generally class C roads)
- Other roads (normally unclassified or C roads)

**Safeguarding:** Protecting existing, permitted and allocated sites that have potential for relevant development (waste and minerals) from other incompatible development.

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

**Screening:** Screening may take a number of forms, which may include bunds, or planting, or a combination of these and may in some circumstances incorporate a standoff to ensure that the screening is not itself intrusive. The form of screening which would be appropriate, if required, along with the distances and coverage of any screening would be determined following assessment of the detail of potential impacts, as part of any future planning application.

**Secondary aggregates:** aggregates obtained as a by-product of other quarrying and mining operations, or aggregates obtained as a by-product of other industrial processes, such as coal fired power station ash, incinerator ash and spent foundry sand.

**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.

**Specific Sites (for mineral extraction):** 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 notified and protected under the Wildlife and Countryside Act 1981 on account of their flora, fauna, geological or physiographical features.

**Spatial planning:** Concerned with the physical aspects of places, but not restricted to land use decisions controlled through the planning process. Includes physical aspects about how a place functions and develops.

**Special Areas of Conservation (SAC):** An SSSI of international importance defined by regulation 3 of the Conservation of Habitats and Species Regulations 2017 which has been given special protection as important conservation sites.

**Special Protection Areas (SPA):** An SSSI of international importance classified under regulation 15 of the Conservation of Habitats and Species Regulations 2017 which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of 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.

**Surface water** All lakes, rivers, streams, springs, ponds, impounding reservoirs, wetlands, marshes, water sources, drainage systems on the Earth's surface.

**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.

**Thermal treatment:** Can include incineration, gasification and pyrolysis. Techniques used include various moving grate systems and fluidised bed processes.

**Transport assessment:** This is a process which considers total travel demand; patterns of public transport in the area; how development impacts upon them; and if required how infrastructure or services could be improved to address the impacts (of a development).

**Transport statement:** Where transport issues are such that a full Transport Assessment is not required, a Transport Statement may be acceptable

**Treatment:** Involves the physical, chemical or biological processing of waste to reduce their volume, for segregation to reduce the harmfulness of the waste.

**Waste arisings:** The amount of waste generated in any given locality over a given period of time.

**Waste Collection Authority:** A local authority with a statutory responsibility to provide a waste collection service to each household in its area, and on request, to local businesses; in Norfolk the relevant district, borough or city council is the WCA.

**Waste Disposal Authority:** A local authority that is legally responsible for the safe disposal of municipal waste collected by the WCAs and the provision of Household Waste and Recycling Sites; in Norfolk the County Council is the WDA.

**Waste management:** The means of dealing with waste, including waste disposal, transfer, processing, recovery/recycling operations, incineration and other technologies.

**Waste Planning Authority:** An organisation with statutory planning powers relating to waste management development, in most areas the County or Unitary Council.

**Waste transfer:** Waste transfer is the process by which waste is taken from waste producers for treatment, recycling and/or disposal. Then, to minimise the cost of transport and to reduce environmental impacts, transfer stations are used to sort waste and to transfer it to larger vehicles for onward transport. The waste is usually sorted into wastes that can be recycled (such as metal, wood, soil and rubble) and the remaining waste that will be landfilled.

**Wastewater (sewage):** Comprises liquid and solid waste discharged by domestic residences, commercial properties, industry and agricultural activities, which is then carried to Water Recycling Centre via a network of foul sewers.

**Windrow Composting:** The anaerobic decomposition of shredded and mixed organic waste using open linear heaps known as ‘windrows’, which are approximately three metres high and four to six metres across. The process involves mechanical turning of waste until the desired temperature and residence times are achieved to enable effective degradation. This results in a bulk-reduced, stabilised residue known as compost. Windrow composting can take place outdoors or within a large building and the process takes around three months.