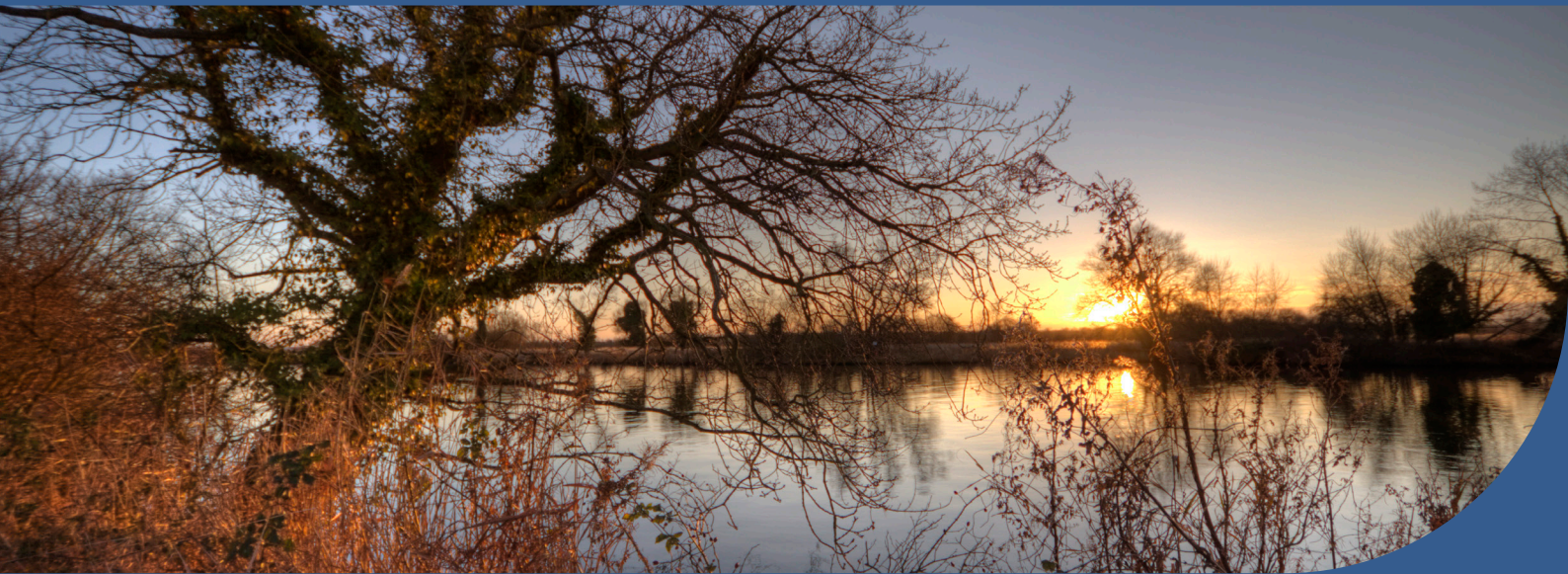


Sustainability Appraisal and Strategic Environmental Assessment of the Greater Norwich Local Plan

Volume 2 of 3: Regulation 19 SA Report

January 2021



LEPUS CONSULTING
LANDSCAPE, ECOLOGY, PLANNING & URBAN SUSTAINABILITY

Sustainability Appraisal and Strategic Environmental Assessment of the Greater Norwich Local Plan

Volume 2 of 3: Regulation 19 SA Report

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sustainability impacts of the Greater Norwich Local Plan and meets the requirements of the SEA Directive. It is not intended to be a substitute for an Environmental Impact Assessment (EIA) or Appropriate Assessment (AA).

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Acronyms & Abbreviations

A&E	Accident and Emergency
ALC	Agricultural Land Classification
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
BMV	Best and Most Versatile
C of E	Church of England
CAMS	Catchment Abstraction Licensing Strategy
CCC	Committee on Climate Change
CGS	County Geological Site
CO₂	Carbon dioxide
CWS	County Wildlife Site
DBEIS	Department for Business, Energy and Industrial Strategy
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DM	Development Management
DMRB	Design Manual for Roads and Bridges
dph	Dwellings per hectare
EA	Environment Agency
EU	European Union
G&T	Gypsy and Traveller
GHG	Greenhouse Gas
GI	Green Infrastructure
GI RAMS	Green Infrastructure Recreational Impact Avoidance and Mitigation Strategy
GIS	Geographic Information System
GNDP	Greater Norwich Development Partnership
GNLP	Greater Norwich Local Plan
GP	General Practice
GWh	GigaWatt hours
HELAA	Housing and Economic Land Availability Assessment
HGV	Heavy Goods Vehicle
HRA	Habitats Regulations Assessment
IMD	Indices of Multiple Deprivation
IRZ	Impact Risk Zone
JCS	Joint Core Strategy
LAQM	Local Air Quality Management
LCA	Landscape Character Area
LCT	Landscape Character Type
LNR	Local Nature Reserve
LSOA	Lower layer Super Output Areas
LVIA	Landscape and Visual Impact Assessment
MHCLG	Ministry of Housing, Communities and Local Government
MWh	MegaWatt hours
NCA	National Character Area
NERC	Natural Environment and Rural Communities

NHS	National Health Service
NNR	National Nature Reserve
NO₂	Nitrogen Dioxide
NPPF	National Planning Policy Framework
NVQ	National Vocational Qualification
OAN	Objectively Assessed Need
OS	Ordnance Survey
PM	Particulate Matter
PPG	Planning Practice Guidance
PPP	Policies Plans and Programmes
PRoW	Public Right of Way
RBMP	River Basin Management Plans
RNR	Roadside Nature Reserve
RPG	Registered Park and Garden
SA	Sustainability Appraisal
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SHMA	Strategic Housing Market Area
SM	Scheduled Monument
SPA	Special Protection Area
SPD	Supplementary Planning Document
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
TAG	Transport Analysis Guidance
UNFCCC	United Nations Framework Convention on Climate Change
WCS	Water Cycle Study
WRMP	Water Resource Management Plan
ZOI	Zone of Influence

1 Introduction

1.1 Background

1.1.1 Lepus Consulting Ltd (Lepus) has been instructed to undertake a Sustainability Appraisal (SA) of the Greater Norwich Local Plan (GNLP) on behalf of Greater Norwich Development Partnership (GNDP), which includes Broadland District Council, Norwich City Council and South Norfolk Council. This document presents an assessment of the likely sustainability impacts of proposals in the GNLP as well as the potential impacts of reasonable alternatives for each proposal.

1.2 Sustainability Appraisal/ Strategic Environmental Assessment

1.2.1 The Planning and Compulsory Purchase Act¹ requires Sustainability Appraisal to be carried out on Development Plan Documents. Additionally, the Environmental Assessment of Plans and Programmes Regulations (SEA Regulations)² require Strategic Environmental Assessments (SEA) for a wide range of plans and programmes, including Local Plans. This SA report incorporates the requirements of SEA.

1.2.2 Planning Practice Guidance (PPG) on SEA and SA³ states: *“Sustainability Appraisals incorporate the requirements of the Environmental Assessment of Plans and Programmes Regulations 2004 (commonly referred to as the ‘Strategic Environmental Assessment Regulations’). Sustainability Appraisal ensures that potential environmental effects are given full consideration alongside social and economic issues”*.

1.3 Purpose of this report

1.3.1 This report has been prepared to summarise the SA process to date and inform the examination stage of the preparation of the GNLP. There are four key purposes of the SA/SEA process, these are: ensuring that the Local Plan is sustainable and responsive to environmental impacts by identifying potential significant impacts and setting out ways to mitigate adverse impacts; documenting the story of the plan making process; influencing the plan making process particularly at the reasonable alternatives and mitigation stages; and focusing on key issues and impacts.

1.3.2 This report is one of a series of documents that have been prepared to document the iterative SA process. Such an approach enables the Councils to demonstrate that they have identified, described and evaluated reasonable alternatives during the making of the GNLP. **Chapter 2** provides further details of the SA process to date.

¹ Planning and Compulsory Purchase Act 2004. Available at: <https://www.legislation.gov.uk/ukpga/2004/5/contents> [Date Accessed: 08/10/20]

² The Environmental Assessment of Plans and Programmes Regulations 2004. Available at: <http://www.legislation.gov.uk/uksi/2004/1633/contents/made> [Date Accessed: 08/10/20]

³ Ministry of Housing, Communities & Local Government (2015) Guidance: Strategic environmental assessment and sustainability appraisal. Available at: <https://www.gov.uk/guidance/strategic-environmental-assessment-and-sustainability-appraisal> [Date Accessed: 08/10/20]

1.4 The Plan area: Greater Norwich

1.4.1 The city of Norwich is a major regional centre for employment, tourism and culture and is Norfolk's highest-ranking retail centre. Within the district there are numerous primary and secondary educational facilities. Besides schools, there are a number of higher and further education centres, including the University of East Anglia, Norwich University College of the Arts, City College and Easton College.

1.4.2 Greater Norwich comprises the three districts of Norwich, Broadland and South Norfolk (see **Figure 1.1**). The districts of Broadland and South Norfolk are predominantly rural in nature, with isolated towns and villages separated by large areas of open farmland. The Broads National Park, a nationally important landscape, is located to the east of the Greater Norwich Local Plan area. The Broads is a visually and culturally distinctive part of Norfolk which have an important effect on landscape character. The River Yare, River Bure and River Waveney form the district boundaries between Broadland and South Norfolk.

1.4.3 The GNLP will guide development across the three districts up to 2038, providing both strategic policies and site allocations to meet demand for housing and employment, as well as other land use matters. It is being produced by the three councils of Broadland, Norwich and South Norfolk, supported by Norfolk County Council. It takes the adopted Joint Core Strategy (JCS) for Broadland, Norwich and South Norfolk, which covers all three districts from 2008 up to 2026, as its starting point.

1.5 The Greater Norwich Local Plan

1.5.1 The aim of the GNLP is to *“support growth of a diverse low carbon economy which will compete globally through its world class knowledge-intensive jobs in the Cambridge Norwich Tech Corridor”*. The GNLP is set out in two documents: ‘The Strategy’ and ‘The Sites’. The contents of ‘The Strategy’ is as follows:

- Foreword;
- Chapter 1 – Introduction;
- Chapter 2 – Greater Norwich Profile;
- Chapter 3 – Vision and Objectives;
- Chapter 4 – Delivery and Climate Change Statements;
- Chapter 5 – The Strategy; and
- Chapter 6 – Appendices.

1.5.2 The contents of ‘The Sites’ is as follows:

- Introduction;
- Norwich;
- Urban Fringe;
- Main Towns;
- Key Service Centres;
- Broadland Village Clusters;
- South Norfolk Village Non-Residential Sites; and
- Costessey Contingency Policy.

1.5.3 The vision is set out in Chapter 3 of the GNLP and focuses on the following key themes: economy, communities, homes, infrastructure, delivery and environment. **Table 1.1** presents the objectives of the GNLP by each of these themes. The objectives of the GNLP were assessed against the SA Framework within the Interim SA Report⁴.

Table 1.1: The objectives of the GNLP

GNLP Objective 1: Economy theme <ul style="list-style-type: none">• To support and promote clean growth and progress towards a post-carbon economy through the expansion of internationally important knowledge-based industries in the Cambridge Norwich Tech Corridor as part of an entrepreneurial, enterprising, creative and broad-based economy with high productivity and a skilled workforce.
GNLP Objective 2: Communities theme <ul style="list-style-type: none">• To grow vibrant, healthy communities giving people a high quality of life in well-designed developments with good access to jobs, services and facilities, helping to close the gap between life chances in disadvantaged and other communities
GNLP Objective 3: Homes theme <ul style="list-style-type: none">• To enable delivery of high-quality homes of the right density, size, mix and tenure to meet people's needs throughout their lives and to make efficient use of land.
GNLP Objective 4: Infrastructure theme <ul style="list-style-type: none">• To promote the timely delivery of infrastructure to support existing communities, growth and modal shift in transport use; and to improve connectivity to allow access to economic and social opportunities.
GNLP Objective 5: Delivery Theme <ul style="list-style-type: none">• To promote the delivery of housing, jobs and infrastructure to meet identified needs, supported by intervention mechanisms where the market is unable to deliver.
GNLP Objective 6: Environment theme <ul style="list-style-type: none">• To protect and enhance the built, natural and historic environments, make best use of natural resources, and to significantly reduce emissions to ensure that Greater Norwich is adapted to climate change and plays a full part in meeting national commitments to achieve net zero greenhouse gas emissions by 2050.

⁴ See pages 17 to 21 of the Greater Norwich Development Partnership (2018) Interim Sustainability Appraisal of the Greater Norwich Local Plan. Available at: <https://gnlp.oc2.uk/docfiles/46/Reg.-18-Interim-Sustainability-Appraisal-of-the-GNLP.pdf> [Date Accessed: 31/07/20]

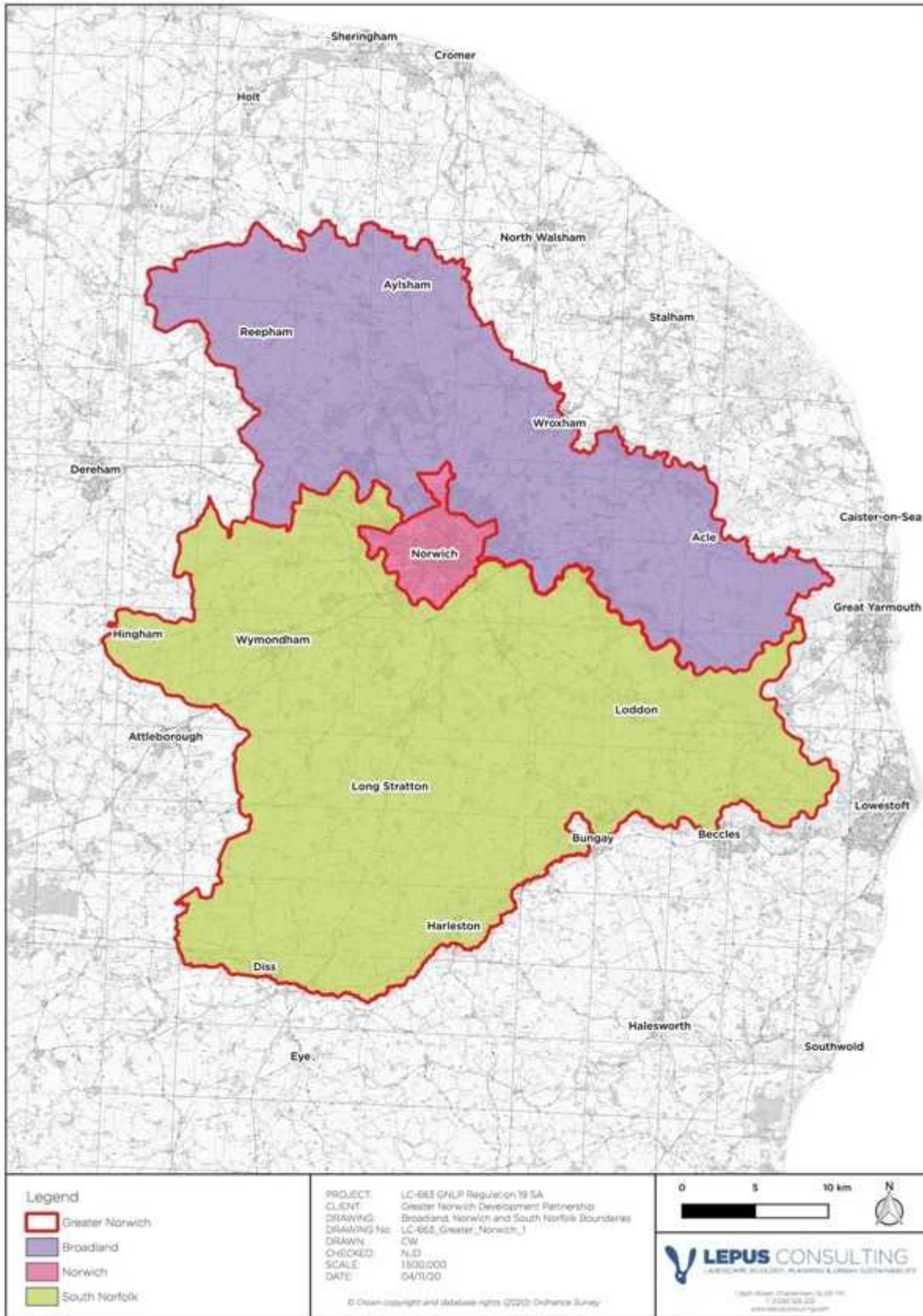


Figure 1.1: Broadland District, Norwich City and South Norfolk District boundaries

1.6 Using this document

1.6.1 This report should be read alongside the GNLP. The appendices of this report provide essential contextual information to the main body of the report. The contents of this SA Report are listed below:

- **Non-Technical Summary** provides a summary of the Regulation 19 SA work.
- **Chapter 1** presents an introduction to this report.
- **Chapter 2** sets out the SA process to date.
- **Chapter 3** presents details on the scoping stage.
- **Chapter 4** sets out the methodology.
- **Chapter 5** presents details of reasonable alternatives considered throughout the process.
- **Chapter 6** presents details on the preferred approach.
- **Chapters 7 to 15** presents the likely significant effects on the environment.
- **Chapter 16** presents the cumulative effects assessment.
- **Chapter 17** sets out monitoring recommendations.
- **Chapter 18** presents how the SA influenced the preparation of the Plan, and the residual positive and negative effects of the GNLP.
- **Chapter 19** sets out the next steps.
- **Chapter 20** presents a glossary.
- **Appendix A** presents the SA Framework.
- **Appendix B** presents an update to the Policy, Plans and Programmes review.
- **Appendix C** presents an assessment of the GNLP strategic policies.
- **Appendix D** presents the assessment of additional 107 reasonable alternative sites.
- **Appendix E** presents the post-mitigation assessment of all 392 reasonable alternative sites.
- **Appendix F** presents the assessment of the 138 site policies.
- **Appendix G** sets out the reasons for selection the allocated sites and rejecting other reasonable alternative sites.

1.7 Meeting the requirements of the SEA Directive

1.7.1 There are certain requirements that this report must satisfy in order for it to qualify as an 'environmental report', as set out in the SEA Directive. These requirements, and where in the report they have been met, are presented in **Figure 1.2**.



a) Provide an outline of the contents, main objectives of the plan or programme, and relationship with other relevant plans and programmes.

See section 1.5; section 3.2; and Appendix B



b) Understand the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.

See the SA Scoping Report, Chapters 7 to 15 and section 3.5



c) The environment characteristics of areas likely to be significantly affected.

See Chapters 7 to 15



d) Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Birds and Habitats Directives.

See section 3.4 and Chapters 7 to 15



e) The environmental protection objectives, established at international, Community or national level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation.

See Appendix B



f) The likely significant effects on the environment: biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural and architectural heritage. These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

See Chapters 7 to 16



g) The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.

See Chapters 7 to 15



h) An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties in compiling the required information.

See Chapters 5 and 6



i) A description of measures envisaged concerning monitoring.

See Chapter 17



j) A non-technical summary of the information provided under the above headings.

See the Non-technical Summary

Figure 1.2: Requirements of the SEA Directive and where to find them in this report

2 The SA process to date

2.1 About this chapter

2.1.1 The purpose of this chapter is to provide chronological details of the SA process to date. Presently, the plan making stage is at Regulation 19, known as ‘Publication’ in the Local Plan Regulations 2012⁵. This is shown as Stage C of **Figure 2.1**. Previously, there have been several other rounds of appraisal, as listed in **Table 2.1**. This chapter presents a summary of the appraisal process up to, and including, Regulation 19.

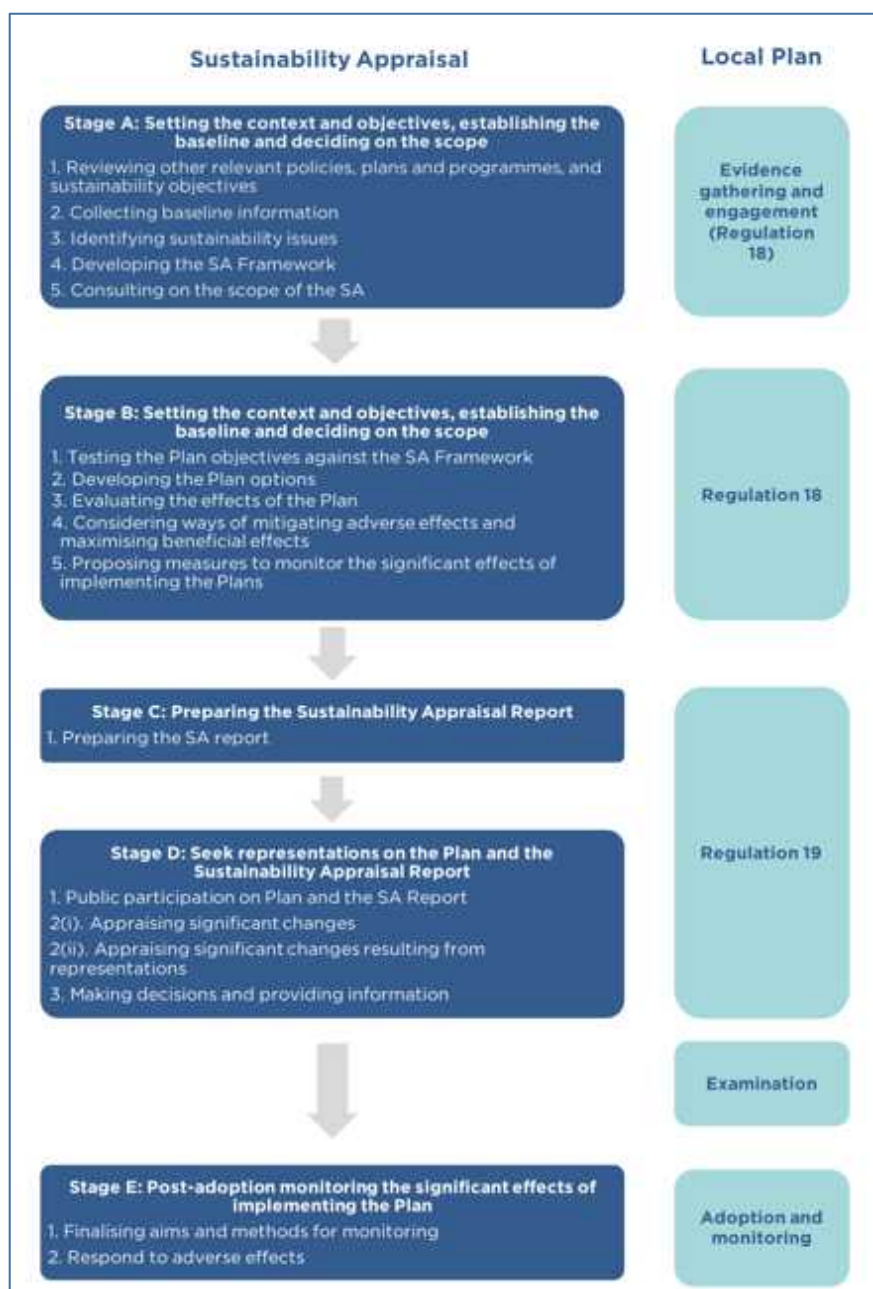


Figure 2.1: Sustainability appraisal process (source: Planning Practice Guidance)

⁵ The Town and Country Planning (Local Planning) (England) Regulations 2012. SI 767

2.2 GNLP progress

2.2.1 **Table 2.1** below presents a timeline of stages of the GNLP and SA process so far.

Table 2.1: The Local Plan and SA process so far

Date	Local Plan Stage	Sustainability Appraisal
2016 to 2018	Call for Sites (GNDP) This process enabled landowners who wished to promote parcels of land for a particular use or development to submit the land for consideration.	
September 2016	Stakeholder Workshops These workshops discussed relevant issues in relation to the GNLP and informed the early stages of the plan making.	
March 2017		SA Scoping Report (GNDP) This report identified the scope and level of detail to be included in the SA.
January to March 2018	Stage A Regulation 18 Consultation of Site Proposals, Growth Options and the Interim Sustainability Appraisal	Interim Sustainability Appraisal (GNDP) This report assessed the GNLP options for growth, which included six options for the spatial strategy and policy options.
October to December 2018	Stage B Regulation 18 Site Proposals Addendum and HELAA Addendum	No SA report prepared.
January 2020	Stage C Regulation 18 Draft Strategy consultation Draft strategy including vision, objectives and strategic policies, a sites document and supporting evidence documents.	Regulation 18C SA Report (Lepus) This report assessed 285 reasonable alternative sites and eleven draft strategic policies.
January 2021	Publication Draft Plan The GNLP is split into two documents: The Strategy and Site Allocations. The Strategy Document sets out the profile of Greater Norwich, the Plan vision and objectives, and the strategic policies. The Site Allocations Document sets out the site allocations of the GNLP.	Regulation 19 SA Report (Lepus) The Regulation 19 SA Report has been prepared to summarise the SA process to date and help inform the examination stage of the preparation of the GNLP. The Regulation 19 SA presents the findings of the sustainability appraisal of the GNLP, which is composed principally of twelve strategic policies and 138 site policies. This report also contains an assessment of additional 107 reasonable alternative sites.

2.3 Sustainability Appraisal Scoping Report (2017)

2.3.1 In order to identify the scope and level of detail of the information to be included in the SA process, an SA Scoping Report⁶ was produced by the GNDP. The Scoping Report is discussed further at **Chapter 3**.

⁶ Greater Norwich Development Partnership (2017) Sustainability Appraisal Scoping Report for the Greater Norwich Local Plan. Available at: <https://gnlp.oc2.uk/docfiles/46/final-sa-scoping-report.pdf> [Date Accessed: 31/07/20]

2.4 Regulation 18A (2018)

2.4.1 The first stage of the process of identifying sites which might have the potential for development to meet required needs is a 'Call for Sites' exercise, which was carried out during the spring and summer of 2016⁷.

2.4.2 Regulation 18A 'Site Proposals and Growth Options'⁸ consisted of approximately 600 site proposals as well as options for strategic policies to help guide future development.

2.4.3 The Regulation 18A consultation was split into four elements:

- The Site Proposals consultation document – enabled interested persons to comment on sites that were submitted to the Plan;
- The Growth Options consultation document – enabled interested persons to comment on questions covering the main content of the Plan, including the Vision, Objectives, Strategy and Topic Papers;
- The Interim Sustainability Appraisal⁹, which included assessment of reasonable alternative policy options; and
- The Local Plan Evidence Base¹⁰, which includes the Housing and Economic Land Availability Assessment (HELAA), Interim Habitats Regulations Assessment (HRA), Strategic Flood Risk Assessment (SFRA) and Strategic Housing Market Assessment (SHMA).

2.4.4 Comments received following this consultation, including from the Environment Agency, Natural England and Historic England, were taken into consideration during the preparation of the subsequent SA reports.

2.5 Regulation 18B (2018)

2.5.1 Consultation on Regulation 18 Stage B 'New, Revised and Small Sites'¹¹ occurred between October and December 2018. This included further submitted sites, revisions to some of the sites already consulted on and small sites, which totalled more than 200 sites.

2.5.2 The Regulation 18 Stage B consultation was split into three elements;

- Site Proposals Addendum;
- Housing and Economic Land Availability (HELAA) Addendum; and
- Site Proposals Maps.

⁷ Greater Norwich Local Plan – Greater Norwich Call for Sites. Available at: <https://gnlp.oc2.uk/document/11> [Date Accessed: 31/07/20]

⁸ Greater Norwich Local Plan – Site Proposals document. Available at: <https://gnlp.oc2.uk/document/13> [Date Accessed: 31/07/20]

⁹ Greater Norwich Development Partnership (2018) Interim Sustainability Appraisal of the Greater Norwich Local Plan. Available at: <https://gnlp.oc2.uk/docfiles/46/Reg.-18-Interim-Sustainability-Appraisal-of-the-GNLP.pdf> [Date Accessed: 31/07/20]

¹⁰ Greater Norwich Local Plan – Evidence Base. Available at: <https://gnlp.oc2.uk/document/14> [Date Accessed: 31/07/20]

¹¹ Greater Norwich Local Plan New, Revised and Small Sites. Available at: <https://gnlp.oc2.uk/document/41> [Date Accessed: 31/07/20]

2.5.3 The 'New, Revised and Small Sites' consultation was an evidence gathering exercise undertaken as part of the early stages of the site assessment process. As such, no shortlisting of sites or assessment of reasonable and unreasonable alternatives had yet been undertaken. Information provided in response to the consultation has informed the shortlisting, the identification of reasonable and unreasonable alternatives and the assessment of those reasonable alternatives in the draft plan consultation.

2.6 Regulation 18C (2020)

2.6.1 The Regulation 18C SA report¹² appraised 287 reasonable alternative sites and eleven draft strategic policies considered by the Councils alongside the Draft Local Plan.

2.6.2 Consultation on Regulation 18 Stage C 'Draft Strategy and Site Allocations' occurred between January and March 2020¹³. This consultation included:

- The Draft Strategy including vision, objectives and strategic policies;
- A Sites Document containing details of potential sites for future development (excluding South Norfolk villages that will be allocated through the South Norfolk Villages Clusters Housing Site Allocation Document);
- Booklets explaining why certain sites were preferred over others; and
- Various evidence documents (including the SA and HRA).

2.6.3 **Table 1.2** lists the comments received during this consultation, including those from Natural England, in relation to the Greater Norwich Local Plan Regulation 18C Consultation and Sustainability Appraisal.

¹² Lepus Consulting (2020) Sustainability Appraisal and Strategic Environmental Assessment of the Greater Norwich Local Plan – Regulation 18C January 2020. Available at: [https://gnlp.oc2.uk/docfiles/46/GNLP_SA_Reg18\(C\)_Final.pdf](https://gnlp.oc2.uk/docfiles/46/GNLP_SA_Reg18(C)_Final.pdf) [Date Accessed: 31/07/20]

¹³ Greater Norwich Local Plan – Stage C Regulation 18 Draft Strategy and Site Allocations. Available at: <https://www.gnlp.org.uk> [Date Accessed: 31/07/20]

Table 2.2: The comments received in response to the Greater Norwich Local Plan Regulation 18C Consultation and Sustainability Appraisal¹⁴

Consultee	Summary of consultation response in regard to the Regulation 18C SA	Incorporation into the Regulation 19 SA
Environment Agency	No specific comments in relation to the Regulation 18C Sustainability Appraisal.	
Historic England	No specific comments in relation to the Regulation 18C Sustainability Appraisal.	
Natural England	<p>Natural England advise that “further work and revision to the Local Plan’s policies, Sustainability Appraisal (SA) and Habitats Regulations Assessment (HRA) is required, including a review and revision of the wording for selective policies in the Draft Sites Document. We recognise that the results and recommendations of the WCS and the GIRAMS need to be assimilated into the Local Plan and supporting documents.”</p> <p>“We previously commented on the scoping of the SA in our response dated 12 August 2016 (our ref: 1887410) and on the interim SA in our response (dated 21 March 2018; our ref 235617) to the GNLP growth options and site proposals consultation. Whilst we recognise that some of our advice has been reflected in the latest version of the SA, we have the following comments to make:</p> <p><u>SA Objective 1 – Air Quality and Noise</u></p> <p>Please refer to our comments on air quality and roads made in response to the HRA. The SA objective may need to be revised if further assessment demonstrates an impact on any sensitive habitats of European sites that lie within 200m of the existing road network or a new road.</p> <p><u>SA Objective 2 – Climate Change Mitigation and Adaptation</u></p> <p>Greater clarity about which carbon emissions have been considered would be welcome. It appears that only residential development has been included and it is unclear how the omission of all non- residential development proposals would affect the SA.</p> <p><u>SA Objective 3 – Biodiversity, Geodiversity and Green Infrastructure</u></p> <p>The rationale for the selection of a 5 km buffer zone as opposed to a greater distance needs to be more fully explained given the findings of some visitor studies.</p>	<p>Further reasonable alternative site assessments have been carried using the same methodology as the Reg 18C sites to ensure consistency (see Appendix D).</p> <p>The SA Framework, which includes mechanisms to test green infrastructure, climate change and water resource matters, has been used to appraise the GNLP. Therefore, GI and water have been considered throughout the SA process. Further detail on these topics can be found in Chapters 8 and 15 respectively.</p> <p>Impact on development proposals within 200m of European sites will be addressed in the HRA.</p> <p>As carbon emissions have been calculated per person based on the average number of people per dwelling, development proposals for employment or non-residential end use have not been included in this assessment. See Box 4.2 for further information.</p> <p>Methodology has been clarified to address this comment.</p>

¹⁴ Greater Norwich Local Plan – Sustainability Appraisal and Strategic Environmental Assessment (January 2020). Available at: <https://gnlp.oc2.uk/document/reps/15259> [Date Accessed: 31/07/20]

Consultee	Summary of consultation response in regard to the Regulation 18C SA	Incorporation into the Regulation 19 SA
	<p>There is no further mention of geodiversity or green infrastructure beyond the heading.</p> <p>The results of the emerging GIRAMS should be used to inform future iterations of the SA.</p> <p><u>SA Objective 4 - Landscape</u></p> <p>The text under heading The Norfolk Coast and Suffolk Coast and Heaths AONB needs to be checked and corrected for various errors in the first sentence. It would be useful to include how the 8 km distance was calculated. How has it been determined that there would be no impacts on these AONBs as a result of development proposed in the Plan as, for example a growing population, served by improvements to the road may make result in more visits to honeypot sites within either AONB and resulting impacts on their special qualities.</p> <p>It is unclear why National and Country Parks have been included under the same heading as they are designated for different purposes and afforded different levels of legal protection and weight under the planning system. Please note that as the Broads was designated under a different piece of legislation to the National Parks, and it would be better to be referred to as a member of the National Park family.</p> <p><u>SA Objective 5 – Population and Communities</u></p> <p>It would be clearer if references to ‘local landscape designations’ were replaced with ‘multi- functional green infrastructure’ in keeping with the draft Local Plan and HRA.</p> <p><u>SA Objective 8 - Health</u></p> <p>Again, it would be more meaningful if the phrase ‘multi-functional green infrastructure’ was used rather than ‘green network’ or ‘greenspace’ or ‘accessible natural habitats’.</p> <p><u>SA Objective 12 – Transport and Access to Services</u></p> <p>We consider it would be helpful if development was assessed in terms of safe and easy access by all forms of non-motorised vehicle, be it walking or cycling, given the majority of development is concentrated in Norwich and the urban fringes, and in the main towns.</p> <p><u>SA Objective 14 – Natural Resources, Waste and Contaminated Land</u></p> <p>It would be helpful to state what is meant by natural resources in the context of the Plan and to use terminology consistently with regard to greenfield sites.</p> <p><u>SA Objective 15 – Water</u></p>	<p>A summary of the GI RAMS can be found at paragraph 8.1.13, detail on GI can found at paragraphs 8.1.29 and 8.1.30 and geology at paragraphs 8.1.26 to 8.1.28.</p> <p>Further detail on the two AONBs are set out in Chapter 12. The potential impacts of reasonable alternative and allocated sites on the AONBs are presented in Appendices D and F.</p> <p>National and Country Parks are discussed separately in this SA report in Chapter 12.</p> <p>‘Local landscape designations’ are locations within Greater Norwich identified by the GNLP team, however, the term ‘multi-functional green infrastructure’ has been embedded into the SA report and replaced phrases including ‘green network’ or ‘greenspace’.</p> <p>Safe access by walking and cycling will be assessed at the project level. A strategic assessment of access using non-motorised means has been made as part of SA Objective 12, Transport and Access to Services.</p> <p>Natural resources have been defined as “materials or substances occurring in nature which can be exploited for economic gain” in the Glossary.</p> <p>The heading ‘Water’ reflects the SA Framework and Annex 1f of the SEA Directive. Water quality, efficiency and stress and all considered under this heading. Supply and demand issues, as well as water quality matters, are assessed through SA</p>

Consultee	Summary of consultation response in regard to the Regulation 18C SA	Incorporation into the Regulation 19 SA
	<p>Given the wealth of wetland sites, both designated and non-designated, that have the potential to be affected by the GNLP, we consider it would be more helpful to use the headings of 'Water Quality' and 'Water Resources' and reflect this in the supporting texts under each heading, including discharges from developments and water stress. The assumptions made under this objective and through the SA will need to be re-examined and revised where necessary based on the findings of the WCS.</p> <p><u>3. Site Assessments and 4. Policy Assessments</u></p> <p>Due to a number of concerns and suggested amendments that we have raised in relation to the Local Plan and the HRA, our comments on the SA Objectives above, and the need to incorporate the findings of the emerging WCS and the GIRAMS, these sections should be re-assessed accordingly.</p> <p><u>Appendix A: SA Framework</u></p> <p>Please refer back to our previous consultation responses in 2016 and 2018 for our advice regarding what monitoring indicators to use. Natural England considers that all the monitoring indicators should be relevant to assessing the significant environmental effects of implementing the policies in the GNLP and of value in monitoring the performance of the Plan”</p>	<p>Objective 15. The WCS will be used to inform the SA.</p> <p>The assessment of the final policies can be found in Appendix C.</p> <p>The WCS and GI RAMS results are key evidence documents for the SA process. Both will be used once available to inform the SA.</p> <p>A wide range of monitoring recommendations are presented in Chapter 17.</p>
<p>Dr Andrew Boswell - Climate Friendly Policy and Planning on behalf of Norwich Green Party</p>	<p>Dr Boswell’s comments are in relation to the consideration of baseline carbon emissions, budgets and targets.</p> <p>“The methodology for assessing carbon emissions in the SA ... is naive and flawed for the following reasons. It ignores the crucial fact that the underlying carbon emission footprint must significantly decrease to meet national obligations ... the SA methodology is based on minor second-order effects rather than the predominant first-order effect, and provides no reliable guidance on assessing carbon emission reductions for the SA. Further, it suggests that the only way the local plan can affect carbon emissions is by population growth. And that all other effects of carbon emissions will result from external effects (eg: national CC policy instruments).”</p> <p>Dr Boswell states “the principle underlying Section 19(1A) of the Planning and Compulsory Purchase Act 2004 is that local plans themselves must include policies designed that contribute to the mitigation of, and adaptation to, climate change. The SA provides no method to assess these policies, and it should do to be consistent with the Act.”</p>	<p>The SA considers carbon emissions at a high level to provide an indication of the potential impact on the climate as a result on the GNLP. The approach is restricted and whilst it may be shown to be strategic, as per the requirements of the SEA Directive, more detailed appraisal of the Plan area’s carbon footprint would help.</p> <p>The SA has appraised strategic policies of the GNLP which aim to combat climate change. It should be noted that development management policies are presented within each District’s plan.</p> <p>Climate change requires an in-depth analysis that Lepus cannot prepare without further detail from additional research.</p>

Consultee	Summary of consultation response in regard to the Regulation 18C SA	Incorporation into the Regulation 19 SA
Norfolk Geodiversity Partnership	<p>Norfolk Geodiversity Partnership's comments are in relation to the consideration of geodiversity within the SA under SA Objective 3.</p> <p>"Geodiversity is mentioned in the title but is nowhere mentioned in the policy text. This means that the GNLP is unable to demonstrate that it is meeting sustainability measures for geological conservation, as per sections 109 and 1117 of the NPPF. This section needs rewriting to explain how geoconservation objectives are to be assessed."</p>	<p>Geodiversity is included in the SA Framework as part of SA Objective 3. Lepus has considered geodiversity as part of the appraisal process and has utilised information about County Geodiversity Sites located within the Greater Norwich Local Plan area. The appraisal results indicate that the proposed development of the 391 reasonable alternative sites considered in the SA process is largely not anticipated to impact the county geodiversity sites.</p> <p>Paragraphs 8.1.26 to 8.1.28 of this SA report discusses geodiversity within the Plan area.</p>
Client Earth	<p>Client Earth comment on the accessibility to sustainable transport and services in Greater Norwich, and state "The approach to assessing the emissions impact of individual development sites in the Interim Sustainability Appraisal also fails to give any meaningful guidance on the suitability of different sites, including in terms of their associated transport emissions. As explained on page 25 of the Interim Sustainability Appraisal, the report appears simply to assess sites by the number of inhabitants applying constant per capita emissions and then categorises the sites as having a major or minor negative impact depending on whether any assessed increase in the area's emissions falls above a 1% or 0.1% threshold respectively."</p> <p>"The approach to assessing the overall emissions impacts of plan policies in the Interim Sustainability Appraisal is also incomplete, without adequate justification or explanation, contrary to the Strategic Environmental Assessment (SEA) regulations."</p>	<p>The potential emissions of each reasonable alternative site have been considered at a high level under SA Objective 1: Air Quality and Noise. Access to sustainable transport modes has been considered under SA Objective 12: Transport and Access to Services. Please see comment above in relation to consideration of carbon emissions.</p>
Barton Willmore on behalf of Landstock Estates Ltd and Landowners Group Ltd.	<p>Barton Willmore comment in relation to sites promoted in Wymondham, and state that "There are some areas of the SA which would potentially benefit from additional consideration at the Regulation 19 Consultation stage which would increase further the robustness of the SA and assist in achieving the right outcome at Examination."</p> <p>"Outlining the conclusions of the HRA would give more meaning to the assessment of ecological effects, particularly when assessing the sites and the decisions made and would make the argument that the</p>	<p>Further consideration to the findings of the HRA process is considered in Chapter 8.</p> <p>The Cambridge Norwich Growth Corridor has been discussed in paragraph 13.1.18 of this SA report.</p>

Consultee	Summary of consultation response in regard to the Regulation 18C SA	Incorporation into the Regulation 19 SA
	<p>findings have been incorporated into the SA more robust. There is no evidence that cumulative effects have been assessed in relation to European sites, which would have been the case for in-combination effects in the HRA, for legal compliance. Given the need for assessments to be coordinated, it would be helpful to have more information within the Regulation 18C SA Report on the HRA undertaken for the Local Plan to date.”</p> <p>“The Regulation 18C SA Report does not adequately reference the Cambridge Norwich Growth Corridor, SHMA Core Area or the NPA.”</p> <p>“A definition for short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects is not provided and would be helpful for clarity ... In addition, there is no consideration of how each of the SA Objectives might interact with one another.”</p> <p>“Additional information on the site selection process would be helpful, for example more justification where sites have been excluded or options narrowed down.”</p> <p>“The suggested monitoring targets are very vague and there are still some gaps to be identified. Additional information could be included by using local/national targets, and further details on how the effects will be monitored, over what period, frequency etc would increase robustness in the next Consultation.”</p> <p>“There is no Non-Technical Summary (NTS) within the supporting documents. Whilst the GNLP is at the Regulation 18 Consultation stage, it is good practice to have an NTS for each revision of the SA, so that it is clear how the SA has evolved through the iterations. This should be rectified at the Regulation 19 Consultation.”</p> <p>“Including site assessments undertaken post mitigation would likely result in more positive sustainable scores than those awarded.”</p>	<p>Short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects are considered throughout the SA process. A separate cumulative effects exercise has been carried out in Chapter 16.</p> <p>Full detail on the selection process for the GNLP can be found in Appendix G.</p> <p>Detailed monitoring recommendations are made at Chapter 17 of this SA report.</p> <p>A Non-Technical Summary is only required for an Environmental Report (Regulation 19 SA Report). The NTS can be found in Volume 1.</p> <p>Post-mitigation impact scores for all reasonable alternative sites can be found in Appendix E.</p>
Gladman Developments	<p>“The Council should ensure that the results of the SA process conducted through the Review clearly justify any policy choices that are ultimately made, including the proposed site allocations (or any decision not to allocate sites) when considered against all reasonable alternatives. In meeting the development needs of the area, it should be clear from the results of the assessment why some policy options have been progressed and others have been rejected. Undertaking a comparative and equal</p>	<p>Policy reasonable alternatives have been considered within the Interim Sustainability Appraisal prepared by the GNLP team. The selection of reasonable alternative sites has been undertaken by the GNLP Team. Full details of the</p>

Consultee	Summary of consultation response in regard to the Regulation 18C SA	Incorporation into the Regulation 19 SA
	<p>assessment of each reasonable alternative, the Councils decision making, and scoring should be robust, justified and transparent.</p> <p>The SA must demonstrate that a comprehensive testing of options has been undertaken and that it provides evidence and reasoning as to why any reasonable alternatives identified have not been pursued. A failure to adequately give reasons in the SA could lead to a challenge of the Councils position through the examination process. The SA should inform plan making. Whilst exercising planning judgement on the results of the SA in the Local Plan is expected, the SA should still clearly assess any reasonable alternatives and articulate the results of any such assessment.”</p>	<p>selection and rejection process can be found in Appendix G.</p>
<p>David Lock Associates on behalf of Orbit Homes and Bowbridge Strategic Land</p>	<p>“We consider that the SA fails to evaluate the proposed policy options and their effects alongside alternative policy options, including in terms of consideration of reasonable alternatives; the SA methodology approach has not been made clear; with particular reference made to the assessment for the possible Silfield Garden Village, and for the three new garden village proposals (Silfield, west of Hethel and Honingham Thorpe).</p> <p>It is concluded that Part 1 of these representations have identified significant concerns regarding the SA Site Assessment proforma completion for the SGV proposal and provided requested changes in relation to this. Without the suggested changes we have reservations as to the soundness of the evidence base for the GNLP and its likely success in achieving a successful outcome through the examination process. Part 2 of these representations have highlighted inconsistencies with the approach to the SA site assessment matrices for the new settlement options. Having undertaken a detailed comparative review we consider that the SGV should have scored more favourably when compared with other new settlement options. We suggest that the approach, methodology and the scoring within the SA is reviewed and updated in the period between this current consultation and the next scheduled consultation period (Regulation 19) in January/February 2021. Without making the suggested changes and review the SA fails to provide a sound and justified evidence base for the GNLP.”</p>	<p>Policy reasonable alternatives have been considered within the Interim Sustainability Appraisal prepared by the GNLP team. An assessment of the potential Silfield Garden Village sites has been undertaken and is presented in Appendix D of this report.</p>
<p>Carter Jonas on behalf of Noble Foods Ltd</p>	<p>Carter Jonas comment in relation to Site GNLP2143 and suggest that GNLP3035 is more preferable for allocation.</p> <p>Comments in relation to Site GNLP3035.</p>	<p>No specific comments on individual sites at this stage.</p> <p>No specific comments on individual sites at this stage.</p>

Consultee	Summary of consultation response in regard to the Regulation 18C SA	Incorporation into the Regulation 19 SA
Crown Point Estate via Pegasus Group	Comments in relation to the appraisal of Site GNLP3051. “SA for Loddon P&R site is overly broad resulting in unjustified negative results”	No specific comments on individual sites at this stage.
	Comments in relation to Site GNLP0323.	No specific comments on individual sites at this stage. Site GNLP0323 has not been shortlisted by the GNLP team for consideration in the SA.
	Comments in relation to Site GNLP3052 (Whitlingham Country Park).	No specific comments on individual sites at this stage.
	Comments in relation to Sites GNLP1032 and GNLP0321 (Octagon Farm).	No specific comments on individual sites at this stage.

2.7 Regulation 19

- 2.7.1 This Regulation 19 SA report provides an assessment of further reasonable alternative sites identified by the GNDP. This includes additional sites that have come forward following consultation on the Regulation 18C version of the GNLP and revisions to sites which have been previously considered in the SA process.
- 2.7.2 It should be noted that the SA of the GNLP has not assessed smaller reasonable alternative sites located in South Norfolk because the 'South Norfolk Village Clusters' will be considered as part of the South Norfolk Village Clusters Housing Allocations Plan¹⁵.
- 2.7.3 This SA Report identified potential positive and negative residual effects, which included an increase in energy demand across the Plan area, decrease in air quality and a loss of soil resource amongst others (see **Chapter 17**).

¹⁵ South Norfolk Council (2020) South Norfolk Village Clusters Housing Allocations Plan. Available at: <https://www.south-norfolk.gov.uk/www.south-norfolk.gov.uk/residents/planning-and-building/planning-policy/emerging-local-plan-and-new-evidence/village-clusters> [Date Accessed: 07/09/20]

3 Scoping

3.1 Introduction

3.1.1 The first phase of preparation for the SA was the scoping stage. Scoping is the process of deciding the scope and level of detail of an SA, including the environmental effects and alternatives to be considered, the assessment methods to be used, and the structure and contents of the SA Report, in accordance with the PPG¹⁶.

3.1.2 The purpose of the SA Scoping Report is to set the criteria for assessment (including the SA Objectives), and establish the baseline data and other information, including a review of relevant policies, programmes and plans. The scoping process involves an overview of key issues, highlighting areas of potential conflict.

3.1.3 The Scoping Report covers the early stages of the SA Process and includes information about:

- Identifying other relevant policies, plans and programmes, and environmental objectives;
- Collecting baseline information;
- Identifying environmental issues and problems; and
- Developing the SA Framework.

3.2 Policy, plan and programme review

3.2.1 The preparation of a Local Plan may be influenced in various ways by other plans or programmes, or by external environmental protection objectives such as those laid down in policies and legislation. The SA process seeks to take advantage of potential synergies and addresses any inconsistencies and constraints.

3.2.2 The Scoping Report presented an analysis of the objectives of the key policies, plans and programmes (including legislation) that are relevant to the Local Plan and the SA assessment process. These were presented by their geographic relevance, from international to local level.

3.3 Baseline data and information

3.3.1 A key part of the scoping process is the collection of baseline data. The purpose of this exercise is to help identify key issues and opportunities facing the area which might be addressed by the Local Plan, and to provide an evidence base for the assessment.

¹⁶ MHCLG (2019) Guidance: Strategic environmental assessment and sustainability appraisal. Available at: <https://www.gov.uk/guidance/strategic-environmental-assessment-and-sustainability-appraisal> [Date Accessed: 19/10/20]

3.3.2 The SA Scoping Report provided an evaluation of existing environmental, social and economic conditions within the Plan area and their likely evolution in absence of the GNLP. The baseline environmental conditions of Greater Norwich have been updated in line with recent data and statistics and are presented in **Chapters 7 to 15**.

3.4 Key sustainability issues

3.4.1 Plans and programmes that could potentially affect the GNLP have been reviewed and considered alongside the current characteristics of the Plan area. Key issues identified within the Plan area have been listed in **Table 3.1** below.

Table 3.1: Key sustainability issues in Greater Norwich

Theme	Key Sustainability Issues
Accessibility and Transport	<ul style="list-style-type: none"> • Development should be located where transport options are, as far as possible, not limited to using the private car, so that sustainable transport options can be promoted, and where the need for additional infrastructure can be minimised. • There is a need to improve the strategic transport network, most particularly improvements to the rail network, to the A47 and to provide good quality public transport access to Norwich International Airport. • In rural areas, access to public transport is poor and subsidies are likely to decline, so it will be important to sustain local public transport services where possible and to support demand responsive transport. • There is a possibility that new development could add pressure onto current transport services. • Road safety should be improved.
Air Quality	<ul style="list-style-type: none"> • All new development is likely to increase the impacts of air pollution in the Plan area. • The rate of mortality attributable to particulate matter air pollution in the GNLP area is higher than England's average. • There are Air Quality Management Areas (AQMA) in Norwich City Centre and in Hoveton, adjacent to the Plan area, along with other isolated sites of reduced air quality.
Biodiversity and Geodiversity	<ul style="list-style-type: none"> • There is a need to protect and enhance nationally and internationally protected nature conservation interests and geodiversity sites in and adjacent to the area, with particular emphasis on reducing visitor pressure on and improving water quality in Natura 2000 sites and the wider habitats of the Broads. • Water quality in Natura 2000 protected sites is an issue, particularly in relation to water abstraction from the River Wensum and water disposal at Long Stratton and into the River Yare. Consequently, there is a need to improve water quality to achieve Water Framework Directive (WFD) targets and to protect habitats. • There are a number of locally important biodiversity sites that should be protected and enhanced. • Local changes in air quality resulting from increased emissions, such as from increased traffic movements, could affect designated sites. • Ensuring that the impact on GI from new development is minimised and benefits from new GI are maximised. • Long term investment in improvements to the defined green infrastructure network is required.
Climate Change	<ul style="list-style-type: none"> • Ensure consistency with interventions proposed within Governments forthcoming emissions reduction plan, supporting the wider policy imperative to reduce carbon emissions over time. • Climate change is expected to increase the frequency and intensity of extreme weather events such as heat waves, drought and intense rainfall.

Theme	Key Sustainability Issues
	<ul style="list-style-type: none"> • Fluvial/tidal flooding is a risk affecting limited parts of the area, while surface water and sewer flooding is a risk in a number of places. • Although per capita CO₂ emissions have been declining in line with national trends, they are above the national average in rural parts of the area. • There is potential to increase renewable energy production chiefly from solar, wind and biomass developments, as well as from micro-renewables.
Economic Factors	<ul style="list-style-type: none"> • The proportion of population in active employment is higher in Broadland and South Norfolk than Norwich, but all three districts have higher proportions than Great Britain. • Greater Norwich is a regionally important economic centre, with the potential for significant growth. • Employment land provision needs to support the existing main employment sectors including retail; health; and financial services and also sectors with high growth potential including advanced manufacturing and engineering; agritech; energy; ICT/digital culture; and life sciences. • Norwich city centre is a main regional focus for employment, retailing, tourism, culture, education and leisure. • Rural enterprises remain important to the local economy and home working is likely to increase in significance. • It will be important to improve access to high speed broadband and mobile phone connectivity, particularly in rural areas. • It will be important to improve access to high speed broadband and mobile phone connectivity, particularly in rural areas. • The recent increase in the birth rate will increase demand for education and other children's services in the area. • It is important to increase educational attainment and skill levels, particularly in the more deprived parts of the area and in other areas where there is low educational attainment. • The percentage of the population with NVQs is lower in the Plan area than Great Britain.
Health and Quality of Life	<ul style="list-style-type: none"> • It will be important to ensure that Greater Norwich's good levels of health are supported, with a particular focus on reducing the health gap between different areas and on providing the necessary health services and facilities for a growing and ageing population. • It is important to consider the ways in which exposure to poor air quality can be minimised or reduced. • It will be important to maintain and enhance links, including green infrastructure links, to the countryside and semi-natural open spaces to encourage physical activity and mental well-being. • It will be important to ensure new development is well related to green infrastructure. • It will be important to ensure new development supports active and healthy lifestyles. • There is a need to provide for continued growth in the population of approximately 15-16% from 2012 to 2036. • It is necessary to provide services and housing to meet the needs across the area, particularly those of younger adults in Norwich, of remote rural communities and of the growing older population throughout the area. • The needs of the small but growing ethnic groups in the area will need to be taken into account. • There are high noise levels around Norwich International Airport and main roads in the area and light pollution from urbanised areas. • There is a need to minimise socio-economic disadvantage and reduce deprivation, which particularly affects a number of areas of Norwich and some rural areas. • Although levels of crime are generally low, there are higher crime levels in inner urban wards, particularly in areas with a concentration of late night drinking establishments.
Historic Environment	<ul style="list-style-type: none"> • There is a great wealth of heritage assets in the area of both national and local significance. A limited number of these assets are on the heritage at risk register.

Theme	Key Sustainability Issues
	<ul style="list-style-type: none"> • Due to the long history of habitation in the area, there is significant potential for archaeological artefacts and finds throughout Greater Norwich. • Conserve and enhance designated and non-designated heritage assets and the contribution made by their settings. • Areas where there is likely to be further significant loss or erosion of townscape character or quality, or where development has had or is likely to have significant impact (direct and/or indirect) upon the historic environment and/or people's enjoyment of it. • Traffic congestion, air quality, noise pollution and other problems affecting the historic environment. • Archaeological remains, both seen, and unseen, could potentially be affected by new development areas.
Housing	<ul style="list-style-type: none"> • New housing and economic growth needs to be planned together to focus housing growth in locations where it can provide the greatest benefits and sustainable access to services and jobs. It is essential to ensure the locations chosen for growth will result in the delivery of the amount and range of housing required to meet needs. • The delivery of affordable housing is a priority across the whole Greater Norwich Area, with a particularly high need in Norwich. • There is a need to ensure sufficient pitches are provided to meet the needs of the Gypsies & Travellers along with those of Travelling Showpeople.
Landscape	<ul style="list-style-type: none"> • Development should maintain important aspects of Greater Norwich's varied landscapes, including historic parks and gardens and ancient woodlands. • Defined strategic gaps, including those between Wymondham and Hethersett and Hethersett and Cringleford, are important to maintain the settlement pattern in rural areas. • Regard must be had to the distinctive landscape of the Broads. • Broadland and South Norfolk are predominantly rural districts, new developments at smaller villages could potentially increase the risk of encroachment on the open countryside or risk altering distinctive townscapes.
Natural Resources	<ul style="list-style-type: none"> • It is important to ensure waste management accords with the waste hierarchy and reduces the overall quantity of waste. • Waste facilities will need to be provided to cater for a growing population, prevent fly tipping and increase recycling rates. • Appropriate storage and segregation facilities for waste will need to be provided on new development. • Mineral resources including sand and gravel and minerals and waste infrastructure should be safeguarded. • The use of secondary and recycled aggregates in all developments to reduce the need for primary aggregate extraction and increase inert construction and demolition waste recycling should be promoted. • Encourage the effective use and re-use of accessible, available and environmentally acceptable brownfield land. • There are high quality soils (Grades 1, 2 and 3a ALC) in many parts of the area and limited areas of contaminated land mainly on brownfield sites. • The need to make the most efficient use of land, maximising the re-use of brownfield sites in order to minimise the loss of undeveloped land and protect soils. • Since the area suffers from water stress, effectively managing the supply and demand balance is critical, taking into account the peaks in demands from homes, jobs and agriculture and the impact of abstraction on habitats and biodiversity. Ensuring water efficiency will have a key role locally. • There is a need to consider the measures within the Anglian River Basin Management Plan and the issues in the Broadland Rivers Catchment Plan.

3.5 Evolution of the environment without the Plan

3.5.1 The SEA Directive requires “*information on the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme*”.

3.5.2 **Table 3.2** below considers the likely evolution of the baseline within the Plan area in the absence of the GNLP. This takes into account information gathered at the Scoping stage and more up-to-date data and statistics.

3.5.3 In the absence of the GNLP, no new Plan-led development would occur within the Plan area over and above that which is currently proposed in the adopted Joint Core Strategy for Broadland, Norwich and South Norfolk¹⁷. In this scenario, an appeal-led system would predominate. The nature and scale of development that may come forward under an appeal-led system would be uncertain. In a ‘no Plan’ scenario, other plans and policies would continue to be a material consideration in planning decisions and legislative protection would continue to be in place. The following table describes the likely evolution of the baseline without the Local Plan.

Table 3.2: Likely evolution without the Plan

Theme	Likely evolution without the Plan
Accessibility and Transport	<ul style="list-style-type: none"> • Congestion issues around Norwich could potentially be exacerbated due to a rising population. • There is likely to be an increase in the composition of the road transport fleet which are electric or hybrid vehicles. • There is the potential both for the required infrastructure to support further growth not being delivered and for more dispersed patterns of development which could occur without a plan increasing the proportion of the population with poor access to services.
Air Quality	<ul style="list-style-type: none"> • Traffic and congestion is likely to increase with population growth, in some locations of the GNLP area with implications, in particular, for air quality, residents and wildlife. • The Government is committed to ensuring that nearly all cars and vans in the UK will be zero emission vehicles by 2050, meaning all car and van sales need to be zero emission vehicles by 2040. Consequently, there is expected to be an increasing uptake of ultra-low emission vehicles during the lifetime of the GNLP. • The Air Quality Action Plan for Norwich will continue to review and assess the status of the Central Norwich AQMA.
Biodiversity and Geodiversity	<ul style="list-style-type: none"> • Sites designated for their national and international biodiversity and/or geodiversity value will continue to benefit from legislative protection. • Long term prospects for protecting and enhancing the wealth of habitats and species in the area, and for further developing the existing green infrastructure network, would be reduced without a strong policy framework being established in the GNLP. • It is uncertain if development will be placed near locally designated sites without the introduction of the Plan. Without the GNLP, it may be difficult to help ensure that development is not of a type, scale and location that could potentially have a major adverse impact on either a biodiversity or geodiversity designation (of international, national or local significance) or on the functioning ecological network of the Plan area and the various essential ecosystem services this provides.
Climate Change	<ul style="list-style-type: none"> • The risk of flooding will be likely to increase over time due to the changing climate increasing the occurrence of extreme weather events as well as the increasing urbanisation of the Plan area.

¹⁷ Greater Norwich Development Partnership (2014) Joint Core Strategy for Broadland, Norwich and South Norfolk. Available at: <https://www.greaternorwichgrowth.org.uk/planning/joint-core-strategy/> [Date Accessed: 10/11/20]

Theme	Likely evolution without the Plan
	<ul style="list-style-type: none"> Total carbon emissions are expected to continue to decrease over time without the Plan as renewable energy becomes an increasingly competitive force in the UK energy market. CO₂ emissions in the transport sector may be likely to rise in line with local trends. An increasing uptake of electric vehicles, a trend seen across the UK, may help to alleviate these issues.
Economic Factors	<ul style="list-style-type: none"> It is expected the number of businesses within Broadland, Norwich City and South Norfolk will continue to increase without the Plan. Access to schools in rural communities is unlikely to change without the Plan. Planned growth in the tertiary sector, particularly at the University of East Anglia, should increase Norwich's role as a "learning city". Education is likely to remain a key element of the local economy.
Health and Quality of Life	<ul style="list-style-type: none"> The population across the three districts is expected to continue to increase. This is likely to place greater pressure on the capacity of key services and amenities, including health and leisure facilities and housing. The life expectancy of men and women is anticipated to rise over time, leading to an increasingly aging population. Some residents will continue to need to travel relatively far, likely by driving, to reach important health facilities and services. Dependent on behavioural patterns in society and the future policy approach to concentration of late night activities, the spatial patterns of higher crime in eastern parts of the city centre seem likely to continue. There could potentially be a rise in homelessness due to an unmet housing need. Noise pollution from Norwich International Airport and existing and new main roads is likely to remain a long term issue.
Historic Environment	<ul style="list-style-type: none"> Nationally designated heritage assets will continue to benefit from legislative protection. It is uncertain how the historic assets on the Heritage at Risk Register will be affected without the Plan and if more may be added to the list. Further heritage assets are likely to be identified in the future.
Housing	<ul style="list-style-type: none"> House prices are expected to increase. Without the GNLP, it is uncertain if future housing provision would satisfy local needs in terms of type cost and location. There could potentially be less control over location of future housing which may result in increased quantity of development being placed in areas of open countryside, reduced opportunity to enhance community benefits associated with plan-led housing proposals, and a reduced ability to refine the housing stock to meet the changing demands of existing residents such as the provision of elderly specific housing accommodation.
Landscape	<ul style="list-style-type: none"> The Broads National Park will continue to benefit from legislative protection. The districts of Broadland and South Norfolk will continue to remain predominantly rural and agricultural landscapes. Pressure is likely to increase for development on the open countryside without the Plan. The quality and distinctiveness of some rural views and landscape features may potentially be compromised in the absence of Plan-led development. It is uncertain the extent to which development would seek to conserve and enhance the character of local landscape and townscapes. In the absence of Plan-led development, there could potentially be a rise in the quantity of new development which discords with the local character by altering the style, scale or rural/urban divide.
Natural Resources	<ul style="list-style-type: none"> Rates of soil erosion and loss of soil fertility will be likely to continue to rise due to the impacts of agriculture and climate change. The population in the Plan area will be likely to rise and water demand will subsequently be likely to rise also. In the absence of plan-led development, the efficiency and sustainability of water consumption may be unlikely to improve. There could potentially be new developments that result in over-capacity issues at wastewater treatment works (either cumulatively or individually). Water abstraction, consumption and treatment in the local area will continue to be managed by the Environment Agency and water companies through the RBMP, WRMP and CAMS in line with the EU Water Framework Directive.

3.6 The SA Framework

- 3.6.1 The purpose of the SA Framework is to help ensure the Plan is prepared to align with the principles of sustainability. It also enables the potential impacts of the GNLP to be described, analysed and compared.
- 3.6.2 The SA Framework consists of a range of environmental, social and economic objectives. The extent to which these objectives are achieved can, in most cases, be measured using a range of indicators. There is no statutory basis for setting objectives, but they are a recognised way of considering the effects of a plan and comparing alternatives. The SA Objectives provide the basis from which impacts of the Local Plan were assessed.
- 3.6.3 The SA Objectives were developed through the plans, programmes and policy (PPP) review, the baseline data collection and the key issues identified for the Plan area. The SA topics identified in Annex I (f) of the SEA Directive¹⁸ were one of the key determinants when considering the SA Objectives to be used for appraisal purposes. The SA Objectives seek to reflect each of these influences to ensure the assessment process is robust and thorough. No changes to the SA Framework have been made throughout the SA process. The full SA framework is presented in **Appendix A**.

¹⁸ Biodiversity flora and fauna; population; human health; soil; water; air; climatic factors; material assets; cultural heritage (including architectural and archaeological heritage); and landscape.

4 Methodology

4.1 Introduction

- 4.1.1 The process of sustainability appraisal uses geographic information, the SA Framework and established standards (where available) to inform the assessment decisions and provide transparency.
- 4.1.2 Development proposals and policies set out in the GNLP have been assessed against the SA Framework (see **Appendix A**). The SA Framework is comprised of SA Objectives and decision-making criteria. Acting as yardsticks of sustainability performance, the SA Objectives are designed to represent the topics identified in Annex 1(f)¹⁹ of the SEA Directive. Including the SEA topics in the SA Objectives helps ensure that all of the environmental criteria of the SEA Directive are incorporated. Consequently, the 15 SA Objectives reflect all subject areas to ensure the assessment process is transparent, robust and thorough. The SA Objectives and the SEA Topics to which they relate are set out in **Table 4.1**.
- 4.1.3 Each SA Objective is considered when appraising each aspect of the GNLP. It is important to note that the order of SA Objectives in the SA Framework does not infer prioritisation. The SA Objectives are at a strategic level and can potentially be open-ended. In order to focus each objective, decision making criteria are presented in the SA Framework to be used during the appraisal of policies and sites.

¹⁹ Annex 1(f) identifies: 'the likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors'.

Table 4.1: Summary of the SA Objectives

SA Objectives		Relevance to SEA Directive - Annex 1(f)
1	Air Quality and Noise: Minimise air, noise and light pollution to improve wellbeing.	Air and human health
2	Climate Change Mitigation and Adaptation: Continue to reduce carbon emissions, adapting to and mitigating against the effects of climate change.	Climate change, soil and water
3	Biodiversity, Geodiversity and Green Infrastructure: Protect and enhance the area's biodiversity and geodiversity assets and expand the provision of green infrastructure.	Biodiversity, flora, fauna and geodiversity.
4	Landscape: Promote efficient use of land, while respecting the variety of landscape types in the area.	Landscape and historic environment.
5	Housing: Ensure that everyone has good quality housing of the right size and tenure to meet their needs.	Housing, population and quality of life
6	Population and Communities: Maintain and improve the quality of life of residents.	Population and quality of life
7	Deprivation: To reduce deprivation.	Population and quality of life
8	Health: To promote access to health facilities and promote healthy lifestyles.	Population, quality of life and health
9	Crime: To reduce crime and the fear of crime.	Population and quality of life
10	Education: To improve skills and education.	Population and economic factors
11	Economy: Encourage economic development covering a range of sectors and skill levels to improve employment opportunities for residents and maintain and enhance town centres.	Economic factors and material assets
12	Transport and Access to Services: Reduce the need to travel and promote the use of sustainable transport modes.	Accessibility, climate change and material assets
13	Historic Environment: Conserve and enhance the historic environment, heritage assets and their setting, other local examples of cultural heritage, preserving the character and diversity of the area's historic built environment.	Historic environment and landscape
14	Natural Resources, Waste and Contaminated Land: Minimise waste generation, promote recycling and avoid the sterilisation of mineral resources. Remediate contaminated land and minimise the use of the best and most versatile agricultural land.	Soil and material assets
15	Water: Maintain and enhance water quality and ensure the most efficient use of water.	Water

4.2 Integrated approach to SA and SEA

4.2.1 The requirements to carry out SA and SEA are distinct, although it is possible to satisfy both obligations using an integrated appraisal process.

4.2.2 The European Union Directive 2001/42/EC²⁰ (SEA Directive) applies to a wide range of public plans and programmes on land use, energy, waste, agriculture, transport and more (see Article 3(2) of the Directive for other plan or programme types). The objective of the SEA procedure can be summarised as follows: *“the objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development”*.

4.2.3 The Directive has been transposed into English law by the SEA Regulations (SI no. 1633). Under the requirements of the SEA Directive and SEA Regulations, specific types of plans that set the framework for the future development consent of projects must be subject to an environmental assessment. Therefore, it is a legal requirement for the GNLP to be subject to SEA throughout its preparation.

4.2.4 SA is a UK-specific procedure used to appraise the impacts and effects of development plans in the UK. It is a legal requirement as specified by S19(5) of the Planning and Compulsory Purchase Act 2004²¹ and should be an appraisal of the economic, social and environmental sustainability of development plans. The present statutory requirement for SA lies in The Town and Country Planning (Local Planning) (England) Regulations 2012²². SA is a systematic process for evaluating the environmental consequences of proposed plans or programmes to ensure environmental issues are fully integrated and addressed at the earliest appropriate stage of decision-making.

4.3 Best Practice Guidance

4.3.1 Government policy recommends that both SA and SEA are undertaken under a single sustainability appraisal process, which incorporates the requirements of the SEA Directive. This can be achieved through integrating the requirements of SEA into the SA process. The approach for carrying out an integrated SA and SEA is based on best practice guidance:

- European Commission (2004) Implementation of Directive 2001/42 on the assessment of the effects of certain plan and programmes on the environment²³.

²⁰ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 (SEA Directive). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0042&from=EN> [Date Accessed: 31/07/20]

²¹ Planning and Compulsory Purchase Act 2004. Available at: <https://www.legislation.gov.uk/ukpga/2004/5/contents> [Date Accessed: 31/07/20]

²² The Town and Country Planning (Local Planning) (England) Regulations 2012. Available at: <http://www.legislation.gov.uk/uksi/2012/767/contents/made> [Date Accessed: 31/07/20]

²³ European Commission (2004) Implementation of Directive 2001/42 on the assessment of the effects of certain plan and programmes on the environment. Available at: http://ec.europa.eu/environment/archives/eia/pdf/030923_sea_guidance.pdf [Date Accessed: 31/07/20]

- Office of Deputy Prime Minister (2005) A Practical Guide to the SEA Directive²⁴.
- Ministry of Housing, Communities and Local Government (2018) National Planning Policy Framework (NPPF)²⁵.
- Ministry of Housing, Communities and Local Government (2018) Planning Practice Guidance (PPG)²⁶.
- Royal Town Planning Institute (2018) Strategic Environmental Assessment, Improving the effectiveness and efficiency of SEA/SA for land use plans²⁷.

4.4 Appraisal process

4.4.1 The purpose of this document is to provide an appraisal of further reasonable alternative sites within Greater Norwich in line with Article 5 Paragraph 1 of the SEA Directive²⁸:

4.4.2 *“Where an environmental assessment is required under Article 3(1), an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated. The information to be given for this purpose is referred to in Annex I”.*

4.4.3 This document also provides information in relation to the likely characteristics of effects, as per the SEA Directive (see **Table 4.2**).

Table 4.2: Annex II of the SEA Directive²⁹

Criteria for determining the likely significance of effects (Article 3(5) of SEA Directive)

The characteristics of plans and programmes, having regard, in particular, to:

- the degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources;
- the degree to which the plan or programme influences other plans and programmes including those in a hierarchy;
- the relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development;
- environmental problems relevant to the plan or programme; and
- the relevance of the plan or programme for the implementation of Community legislation on the environment (e.g. plans and programmes linked to waste management or water protection).

²⁴ Office of Deputy Prime Minister (2005) A Practical Guide to the SEA Directive. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf [Date Accessed: 31/07/20]

²⁵ Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Date Accessed: 31/07/20]

²⁶ Ministry of Housing, Communities and Local Government (2019) Planning practice guidance. Available at: <https://www.gov.uk/government/collections/planning-practice-guidance> [Date Accessed: 31/07/20]

²⁷ Royal Town Planning Institute (2018) Strategic Environmental Assessment, Improving the effectiveness and efficiency of SEA/SA for land use plans. Available at: <http://www.rtpi.org.uk/media/2668152/sea-sapracticeadvicefull2018c.pdf> [Date Accessed: 31/07/20]

²⁸ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 (SEA Directive). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0042&from=EN> [Date Accessed: 31/07/20]

²⁹ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 (SEA Directive). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0042&from=EN> [Date Accessed: 31/07/20]

Criteria for determining the likely significance of effects (Article 3(5) of SEA Directive)

Characteristics of the effects and of the area likely to be affected, having regard, in particular, to:

- the probability, duration, frequency and reversibility of the effects;
- the cumulative nature of the effects;
- the transboundary nature of the effects;
- the risks to human health or the environment (e.g. due to accidents);
- the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected);
- the value and vulnerability of the area likely to be affected due to:
 - special natural characteristics or cultural heritage;
 - exceeded environmental quality standards or limit values;
 - intensive land-use; and
- the effects on areas or landscapes which have a recognised national, community or international protection status.

4.5 Impact assessment and determination of significance

4.5.1 Significance of effect is a combination of impact sensitivity and magnitude. Impact sensitivity can be expressed in relative terms, based on the principle that the more sensitive the resource, the greater the magnitude of the change, and as compared with the do-nothing comparison, the greater will be the significance of effect.

4.6 Sensitivity

4.6.1 Sensitivity has been measured through consideration as to how the receiving environment will be impacted by a plan proposal. This includes assessment of the value and vulnerability of the receiving environment, whether or not environmental quality standards will be exceeded, and for example, if impacts will affect designated areas or landscapes.

4.6.2 A guide to the range of scales used in determining sensitivity is presented in **Table 4.3**. For most receptors, sensitivity increases with geographic scale.

Table 4.3: Sensitivity

Scale	Typical criteria
International/ national	Designations that have an international aspect or consideration of transboundary effects beyond national boundaries. This applies to effects and designations/receptors that have a national or international dimension.
Regional	This includes the regional and sub-regional scale, including county-wide level and regional areas.
Local	This is the district and neighbourhood scale.

4.7 Magnitude

4.7.1 Magnitude relates to the degree of change the receptor will experience, including the probability, duration, frequency and reversibility of the impact. Magnitude has been determined on the basis of the susceptibility of a receptor to the type of change that will arise, as well as the value of the affected receptor (see **Table 4.4**).

Table 4.4: Magnitude

Magnitude	Typical criteria
High	<ul style="list-style-type: none"> Likely total loss of or major alteration to the receptor in question; Provision of a new receptor/feature; or The impact is permanent and frequent.
Medium	Partial loss/alteration/improvement to one or more key features; or The impact is one of the following: <ul style="list-style-type: none"> Frequent and short-term; Frequent and reversible; Long-term (and frequent) and reversible; Long-term and occasional; or Permanent and occasional.
Low	Minor loss/alteration/improvement to one or more key features of the receptor; or The impact is one of the following: <ul style="list-style-type: none"> Reversible and short-term; Reversible and occasional; or Short-term and occasional.

4.8 Significant effects

4.8.1 A single value from **Table 4.5** has been allocated to each SA Objective for each reasonable alternative. Justification for the classification of the impact for each SA Objective is presented in an accompanying narrative assessment text for all reasonable alternatives that have been assessed through the SA process.

4.8.2 The assessment of impacts and subsequent evaluation of significant effects is in accordance with the footnote of Annex 1(f) of the SEA Directive, where feasible, which states: *“These effects should include secondary, cumulative, synergistic, short, medium and long-term, permanent and temporary, positive and negative effects”*.

Table 4.5: Guide to scoring significant effects

Significance	Definition (not necessarily exhaustive)
<p>Major Negative</p> <p>--</p>	<p>The size, nature and location of a site would be likely to:</p> <ul style="list-style-type: none"> • Permanently degrade, diminish or destroy the integrity of a quality receptor, such as a feature of international, national or regional importance; • Cause a very high-quality receptor to be permanently diminished; • Be unable to be entirely mitigated; • Be discordant with the existing setting; and/or • Contribute to a cumulative significant effect.
<p>Minor Negative</p> <p>-</p>	<p>The size, nature and location of site would be likely to:</p> <ul style="list-style-type: none"> • Not quite fit into the existing location or with existing receptor qualities; and/or • Affect undesignated yet recognised local receptors.
<p>Negligible</p> <p>0</p>	<p>Either no impacts are anticipated, or any impacts are anticipated to be negligible.</p>
<p>Uncertain</p> <p>+/-</p>	<p>It is entirely uncertain whether impacts would be positive or adverse.</p>
<p>Minor Positive</p> <p>+</p>	<p>The size, nature and location of a site would be likely to:</p> <ul style="list-style-type: none"> • Improve undesignated yet recognised receptor qualities at the local scale; • Fit into, or with, the existing location and existing receptor qualities; and/or • Enable the restoration of valued characteristic features.
<p>Major Positive</p> <p>++</p>	<p>The size, nature and location of a site would be likely to:</p> <ul style="list-style-type: none"> • Enhance and redefine the location in a positive manner, making a contribution at a national or international scale; • Restore valued receptors which were degraded through previous uses; and/or • Improve one or more key elements/features/characteristics of a receptor with recognised quality such as a specific international, national or regional designation.

- 4.8.3 When selecting a single value to best represent the sustainability performance, and to understand the significance of effects of a site or policy in terms of the relevant SA Objective, the precautionary principle³⁰ has been used. This is a worst-case scenario approach. If a positive effect is identified in relation to one criterion within the SA Framework (see the second column of the SA Framework in **Appendix A**) and a negative effect is identified in relation to another criterion within the same SA Objective, the overall impact has been assigned as negative for that objective. It is therefore essential to appreciate that the impacts are indicative summarily and that the accompanying assessment text provides a fuller explanation of the sustainability performance of the site or policy.
- 4.8.4 The assessment considers, on a strategic basis, the degree to which a location can accommodate change without adverse effects on valued or important receptors (identified in the baseline).
- 4.8.5 Significance of effect has been categorised as minor or major. **Table 4.5** sets out the significance matrix and explains the terms used. The nature of the significant effect can be either positive or negative depending on the type of development and the design and mitigation measures proposed.
- 4.8.6 Each reasonable alternative site that has been identified in this report has been assessed for its likely significant impact against each SA Objective in the SA Framework, as per **Table 4.5**. Likely impacts are not intended to be summed.
- 4.8.7 It is important to note that the assessment scores presented in **Table 4.5** are high level indicators. The assessment narrative text should always read alongside the significance scores. Topic specific methods and assumptions in **Boxes 4.1 to 4.15** offer further insight into how each significant effect score was arrived at.
- 4.9 Limitations of predicting effects**
- 4.9.1 SA/SEA is a tool for predicting potential significant effects. Predicting effects relies on an evidence-based approach and incorporates expert judgement. It is often not possible to state with absolute certainty whether effects will occur, as many impacts are influenced by a range of factors such as the design and the success of mitigation measures.
- 4.9.2 The assessments in this report are based on the best available information, including that provided to us by the GNLP and information that is publicly available. Every attempt has been made to predict effects as accurately as possible.

³⁰ The European Commission describes the precautionary principle as follows: “If a preliminary scientific evaluation shows that there are reasonable grounds for concern that a particular activity might lead to damaging effects on the environment, or on human, animal or plant health, which would be inconsistent with protection normally afforded to these within the European Community, the Precautionary Principle is triggered.”

4.9.3 SA operates at a strategic level which uses available secondary data for the relevant SA Objective. All reasonable alternatives and preferred options are assessed in the same way using the same method. Sometimes, in the absence of more detailed information, forecasting the potential impacts of development can require making reasonable assumptions based on the best available data and trends. However, all options must be assessed in the same way and any introduction of site-based detail should be made clear in the SA report as the new data could potentially introduce bias and skew the findings of the assessment process.

4.9.4 The assessment of sites is limited in terms of available data resources. For example, up to date ecological surveys and/or landscape and visual impact assessments have not been available. The appraisal of the GNLP is limited in its assessment of carbon emissions, and greater detail of carbon data would help to better quantify effects.

4.9.5 All data used is secondary data obtained from the Councils or freely available on the Internet.

4.10 Plan area statistics

4.10.1 To calculate some of the likely adverse impacts of the proposed development, an average people per dwelling needed to be calculated for each of the three districts. **Table 4.6** below shows the estimated population size and dwelling stock of each district, was used to calculate the average people per dwelling. All data used was accurate and up to date at the time of assessment.

Table 4.6: Average people per dwelling in Broadland, Norwich and South Norfolk

District	Population Size (2011 Census) ³¹	Dwelling Stock (2018) ³²	People per Dwelling
Broadland	124,646	58,220	2.14
Norwich	132,512	65,530	2.02
South Norfolk	124,012	60,710	2.04

4.11 SEA Topic methodologies and assumptions

4.11.1 A number of topic-specific methodologies and assumptions have been applied to the site appraisal process for specific SA Objectives (see **Boxes 4.1 to 4.15**). These should be borne in mind when considering the assessment findings.

³¹ Office of National Statistics (2013) Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/2011censuskeystatisticsandquickstatisticsforlocalauthoritiesintheunitedkingdompart1> [Date Accessed: 03/09/20]

³² Ministry of Housing, Communities and Local Government (2019) Number of dwellings by tenure and district, England. Available at: <https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants> [Date Accessed: 03/09/20]

4.12 SA Objective 1 – Air Quality and Noise

Box 4.1: SA Objective 1. Air Quality – Assessment Methodologies and Assumptions

Air Quality and Noise: Minimise air, noise and light pollution to improve wellbeing.

Exposure of new residents to air pollution has been considered in the context of development proposal location in relation to established Air Quality Management Areas (AQMAs) and main roads. It is widely accepted that the effects of air pollution from road transport decreases with distance from the source of pollution i.e. the road carriageway. The Department for Transport (DfT) in their Transport Analysis Guidance (TAG) consider that, “beyond 200m from the link centre, the contribution of vehicle emissions to local pollution levels is not significant”³³. This statement is supported by Highways England and Natural England based on evidence presented in a number of research papers^{34 35}. A buffer distance of 200m has therefore been applied in this assessment.

It is assumed that development would result in an increase in traffic and thus traffic generated air pollution. Both existing and future site end users would be exposed to this change in air quality. Residential development proposals of between ten and 99 dwellings would therefore be expected to have a minor negative impact on local air pollution³⁶. Residential development proposals of 100 dwellings or more would be expected to have a major negative impact. Development proposals for employment use which propose the development of between 1ha and 9ha of employment space would be expected to have a minor negative impact and proposals of 10ha or more would be expected to have a major negative impact.

Where a development proposal of less than nine dwellings or less than 0.99ha of employment floorspace, a negligible impact on local air quality would be anticipated.

The proximity of a development proposal in relation to a main road (defined as a motorway or A-road) determines the exposure level of site end users to road related air and noise emissions³⁷. In line with the DMRB guidance, it is assumed that site end users would be most vulnerable to these impacts within 200m of a main road. This distance has therefore been applied throughout this assessment to both existing road and rail sources.

Development proposals located within 200m of a main road would be expected to have a minor negative impact on local residents’ exposure to air and/ or noise pollution. Development proposals located over 200m from a main road would be expected to have a negligible impact on local residents’ exposure to noise and vibration pollution.

Development proposals located within 200m of a railway line would be expected to have a minor negative impact on local residents’ exposure to noise pollution and vibrations. Development proposals located over 200m from a railway line would be expected to have a negligible impact on local residents’ exposure to noise pollution and vibrations.

³³ Department for Transport (2019) TAG unit A3 Environmental Impact Appraisal. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825064/tag-unit-a3-environmental-impact-appraisal.pdf [Date Accessed: 31/07/20]

³⁴ Bignal, K., Ashmore, M & Power, S. (2004) The ecological effects of diffuse air pollution from road transport. English Nature Research Report No. 580, Peterborough.

³⁵ Ricardo-AEA (2016) The ecological effects of air pollution from road transport: an updated review. Natural England Commissioned Report No. 199.

³⁶ Institute of Air Quality Management (2017) Land-Use Planning & Development Control: Planning for Air Quality. Paragraph 5.8.

³⁷ Design Manual for Roads and Bridges (2019) Sustainability & Environment Appraisal: LA 105 Air quality. Available at: <https://www.standardsforhighways.co.uk/dmr/b/search/10191621-07df-44a3-892e-c1d5c7a28d90> [Date Accessed: 31/07/20]

4.13 SA Objective 2 – Climate Change Mitigation and Adaptation

Box 4.2: SA Objective 2. Climate Change Mitigation and Adaptation – Assessment Methodologies and Assumptions

Climate Change Mitigation and Adaptation: Continue to reduce carbon emissions, adapting to and mitigating against the effects of climate change.

Carbon Emissions

Development proposals which would be likely to increase greenhouse gas (GHG) emissions in the local area would make it more difficult for the GNDP to reduce the Plan area's contribution towards the causes of climate change.

The increase in GHG emissions caused by new residents is associated with impacts of the construction phase, the occupation and operation of homes and businesses, oil, gas and coal consumption and increases in local road transport with associated emissions. This impact is considered to be permanent and non-reversible.

The total CO₂ emissions estimate for each district in 2018 was³⁸:

- Broadland – 748,430 tonnes
- Norwich – 496,812 tonnes
- South Norfolk – 836,500 tonnes

The carbon footprint per person per year for each district was³⁹:

- Broadland – 5.78 tonnes
- Norwich – 3.52 tonnes
- South Norfolk – 6.06 tonnes

Development proposals which could potentially increase the Plan area's carbon emissions by 1% or more in comparison to the 2018 estimate would be expected to have a major negative impact for this objective.

Development proposals which may be likely to increase the Plan area's carbon emissions by between 0.1% and 1% in comparison to the 2018 estimate would be expected to have a minor negative impact for this objective. For the purpose of this report, this threshold has been deduced from available guidance⁴⁰.

As carbon emissions have been calculated per person based on the average number of people per dwelling, development proposals for employment or non-residential end use have not been included in this assessment.

Development proposals which would result in a less than 0.1% increase in carbon emissions in comparison to the 2018 estimate, or are proposed for other end uses, would be expected to have a negligible impact on carbon emissions across the Plan area.

Development proposals which would increase renewable energy generation would be expected to have a positive impact on carbon emissions across the Plan area.

Fluvial Flooding

The level of fluvial flood risk present across the Plan area is based on the Environment Agency's flood risk data⁴¹, such that:

- Flood Zone 3: 1%+ chance of flooding each year;
- Flood Zone 2: 0.1% - 1% chance of flooding each year; and
- Flood Zone 1: Less than 0.1% chance of flooding each year.

³⁸ Department for Business, Energy & Industrial Strategy (2019) UK local authority and regional carbon dioxide emissions national statistics: 2005-2018. Available at: <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018> [Date Accessed: 04/12/20]

³⁹ Ibid

⁴⁰ DTA Publications (2017) The Habitats Regulations Assessment Journal: Air Pollution.

⁴¹ Environment Agency (2013) Flood Map for Planning Risk. Available at: <http://apps.environment-agency.gov.uk/wiyby/cv/151263.aspx> [Date Accessed: 31/07/20]

Box 4.2: SA Objective 2. Climate Change Mitigation and Adaptation – Assessment Methodologies and Assumptions

Climate Change Mitigation and Adaptation: Continue to reduce carbon emissions, adapting to and mitigating against the effects of climate change.

It is assumed that development proposals will be in perpetuity and it is therefore likely that development will be subject to the impacts of flooding at some point in the future, should it be situated on land at risk of fluvial flooding.

Where development proposals coincide with Flood Zone 2, a minor negative impact would be expected. Where development proposals coincide with Flood Zone 3 (either Flood Zone 3a or 3b), a major negative impact would be expected. Where development proposals are located within Flood Zone 1, a minor positive impact would be expected for climate change adaptation.

Pluvial Flooding

Areas determined to be at high risk of pluvial flooding have more than a 3.3% chance of flooding each year, medium risk between 1% and 3.3%, and low risk between 0.1% and 1% chance.

Development proposals located in areas at low and medium risk of surface water flooding would be expected to have a minor negative impact on pluvial flooding. Development proposals located within areas at high risk of surface water flooding would be expected to have a major negative impact on pluvial flooding.

Where development proposals are not located in areas determined to be at risk of pluvial flooding, a negligible impact would be expected for climate change adaptation.

It is assumed that development proposals will be in perpetuity and it is therefore likely that development would be subject to the impacts of flooding at some point in the future, should it be situated on land at risk of surface water flooding.

4.14 SA Objective 3 – Biodiversity, Geodiversity and Green Infrastructure

Box 4.3: SA Objective 3. Biodiversity, Geodiversity and Green Infrastructure – Assessment Methodologies and Assumptions

Biodiversity, Geodiversity and Green Infrastructure: Protect and enhance the area's biodiversity and geodiversity assets and expand the provision of green infrastructure.

The biodiversity objective considers adverse impacts of the proposed development at a landscape-scale. It focuses on an assessment of proposed development on a network of designated and undesignated sites, wildlife corridors and individual habitats within the Plan area. These ecological receptors include the following:

Designated Sites:

- Natura 2000 sites; (Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites;
- Sites of Special Scientific Interest (SSSI);
- National Nature Reserves (NNR);
- Local Nature Reserves (LNR);
- County Wildlife Sites (CWS); and
- County Geological Sites (CGS).

Habitats and Species:

- Ancient woodland; and
- Priority habitats.

Where a development proposal is coincident with, adjacent to or located in proximity to an ecological or geological receptor, it is assumed that negative effects associated with development will arise to some extent. These negative effects include those that occur during the construction phase and are associated with the construction process and construction vehicles (e.g. habitat loss, habitat fragmentation, habitat degradation,

Box 4.3: SA Objective 3. Biodiversity, Geodiversity and Green Infrastructure – Assessment Methodologies and Assumptions

Biodiversity, Geodiversity and Green Infrastructure: Protect and enhance the area's biodiversity and geodiversity assets and expand the provision of green infrastructure.

noise, air, water and light pollution) and those that are associated with the operation/occupation phases of development (e.g. public access associated disturbances, increases in local congestion resulting in a reduction in air quality, changes in noise levels, visual disturbance, light pollution, impacts on water levels and quality etc.).

Negative impacts would be expected where the ecological or geological designations listed above may be harmed or lost as a result of proposals. The assessment is largely based on a consideration of the proximity of a site and the attributes and qualities of the receptor in question.

For the purposes of this assessment, impacts on priority habitats protected under the 2006 NERC Act⁴² have been considered in the context of Natural England's publicly available Priority Habitat Inventory database⁴³. It is acknowledged this may not reflect current local site conditions in all instances.

It is assumed that construction and occupation of previously undeveloped greenfield land would result in a net reduction in vegetation cover and Green Infrastructure in the Plan area. Development proposals which would be likely to result in the loss of greenfield land are therefore expected to contribute towards a cumulative loss in vegetation cover. This would also be expected to lead to greater levels of fragmentation and isolation across the wider ecological network, such as the loss of habitat stepping-stones and corridors. This can restrict the ability of ecological receptors to adapt to the effects of climate change. The loss of greenfield land is considered under the Natural Resources objective (SA Objective 14) in this assessment.

It should be noted that no detailed ecological surveys have been completed by Lepus to inform the assessments made in this report.

Protected species survey information is not generally available for the sites within the Plan area. It is acknowledged that data is available from the local biological records centre. However, it is noted that this data may be under-recorded in certain areas. This under-recording does not imply species absence. As a consequence, consideration of this data on a site-by-site basis within this assessment would have the potential to skew results – favouring well recorded areas of the Plan area. As such, it has not been possible to assess impacts on protected species in a fair and consistent basis at the site level using primary survey data.

It is anticipated that the GNDP will require detailed ecological surveys and assessments to accompany future planning applications. Such surveys will determine on a site-by-site basis the presence of Priority Species and Priority Habitats protected under the NERC Act.

It is assumed that the loss of biodiversity assets, such as ancient woodland or an area of priority habitat, are permanent effects.

It is assumed that mature trees and hedgerows will be retained where possible.

Natural England has developed Impact Risk Zones (IRZs) for each SSSI unit in the country. IRZs are a Geographical Information System (GIS) tool which allow a rapid initial assessment of the potential risks posed by development proposals to: SSSIs, SACs, SPAs and Ramsar sites. They define zones around each site which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts⁴⁴. Where a development proposal falls within more than one SSSI IRZ the worst-case risk zone is reported upon in the assessment. The IRZ attribute data draws a distinction between rural and non-rural development. For the purposes of this assessment non-rural

⁴² Natural Environment and Rural Communities Act 2006. Available at: <http://www.legislation.gov.uk/ukpga/2006/16/contents> [Date Accessed: 31/07/20]

⁴³ Natural England (2020) Priority Habitat Inventory (England). Available at: <https://data.gov.uk/dataset/4b6ddab7-6c0f-4407-946e-d6499f19fcde/priority-habitat-inventory-england> [Date Accessed: 31/07/20]

⁴⁴ Natural England (2020) Natural England's Impact Risk Zones for Sites of Special Scientific Interest, 29 May 2020. Available at: <https://data.gov.uk/dataset/5ae2af0c-1363-4d40-9d1a-e5a1381449f8/ssi-impact-risk-zones> [Date Accessed: 31/07/20]

Box 4.3: SA Objective 3. Biodiversity, Geodiversity and Green Infrastructure – Assessment Methodologies and Assumptions

Biodiversity, Geodiversity and Green Infrastructure: Protect and enhance the area's biodiversity and geodiversity assets and expand the provision of green infrastructure.

developments are considered to be those that are located within an existing built-up area. Development proposals at greenfield locations at the edge of a settlement or those that are more rural in nature have been considered to be rural. In this instance a worst-case approach has been taken in respect to the allocation of an IRZ classification. It should be noted that IRZ classifications are regularly updated by Natural England, and although were correct at the time of writing, may have since been amended.

Where development proposals coincide with a Natura 2000 site, a SSSI, NNR, LNR, CWS, CGS or ancient woodland, or are adjacent to a Natura 2000 site, SSSI or NNR, it is assumed that development would have a permanent impact on these nationally important biodiversity and geodiversity assets, and a major negative impact would be expected.

Where development proposals coincide with priority habitats, are adjacent to an ancient woodland, LNR, CWS or CGS, are located within a SSSI IRZ which states to "*consult Natural England*" or are located in close proximity to a Natura 2000 site, SSSI, NNR, LNR or stand of ancient woodland, it is assumed that development would have an impact on these biodiversity and geodiversity assets, and a minor negative impact would be expected.

In lieu of the Habitats Regulations Assessment (HRA), a precautionary 5km search zone has been applied to the assessment of reasonable alternative site locations in relation to Natura 2000 sites. Any site that is within 5km of a European site triggers a precautionary approach in the SA and an adverse effect is recorded. This search zone is quite separate from the HRA process and has been used solely as a guidance tool. The impact of the Plan on European sites has been tested through the HRA process. The final results of the HRA process will be used to inform the SA. It is acknowledged that effects can arise at different distances for example hydrological links can extend far beyond 5km.

Where a development proposal would not be anticipated to impact a biodiversity or geodiversity asset, a negligible impact would be expected for this objective.

Where development proposals would be anticipated to enhance biodiversity through the designation of a biodiversity site, a positive impact would be expected.

4.15 SA Objective 4 – Landscape

Box 4.4: SA Objective 4. Landscape – Assessment Methodologies and Assumptions

Landscape: Promote efficient use of land, while respecting the variety of landscape types in the area.

Impacts on landscape will be largely determined by the specific layout and design of development proposals, as well as the site-specific landscape circumstances. Detailed proposals for each development are uncertain at this stage of the assessment. Furthermore, this assessment comprises a desk-based exercise which has not been verified in the field. Therefore, the nature of the potential impacts on the landscape are, to an extent, uncertain. However, there is a risk of negative effects occurring, some of which may be unavoidable. As such, this risk has been reflected in the assessment as a negative impact where a development proposal is located in close proximity to sensitive landscape receptors. The level of impact has been assessed based on the nature and value of, and proximity to, the landscape receptor in question.

Where a development proposal would not be anticipated to impact a local or designated landscape, a negligible impact would be expected for this objective. Where green infrastructure or landscape features are proposed as part of sites allocated for open space or country parks, which could potentially enhance the local landscape character, a minor positive impact would be expected for this objective.

The Norfolk Coast and Suffolk Coast and Heaths AONBs:

The Suffolk Coast and Heaths AONB is located, at its closest point, approximately 3km south east of the Greater Norwich boundary. Parts of the Norfolk Coast AONB are located approximately 8km to the north and east of

Box 4.4: SA Objective 4. Landscape – Assessment Methodologies and Assumptions

Landscape: Promote efficient use of land, while respecting the variety of landscape types in the area.

Greater Norwich. It is not anticipated that the proposed development at any of the development proposals would impact either of these AONBs, and as such, they have not been considered further in this report.

Discordant with LCA:

Baseline data on Landscape Character Areas (LCAs) within the Plan area are derived from the Broadland Character Assessment Supplementary Planning Document (SPD)⁴⁵ and South Norfolk Landscape Character Assessment⁴⁶. Key characteristics of each LCA have informed the appraisal of each development proposal against the landscape objective. Given that the detailed nature of the landscape in relation to each development proposal is unknown, the assessment of impact is based on the overall landscape character guidelines and key characteristics. Development proposals which are considered to be potentially discordant with the guidelines and characteristics provided in the published landscape character assessment would be expected to have a minor negative impact on the landscape objective. Development proposals located within areas classed as 'urban' within the Landscape Character Assessment, and therefore comprise built-up areas, have been excluded from this assessment.

The Broads National Park:

The Broads is an area covering approximately 303km² of low-lying wetland with National Park status. It is located to the east of Greater Norwich and follows the River Yare into Norwich City. Development proposals which coincide with The Broads National Park have the potential to result in irreversible adverse impacts, and therefore, would be expected to have a major negative impact on the landscape objective.

Development proposals which are located adjacent or in close proximity to The Broads National Park, and therefore could potentially adversely affect views from the National Park, would be expected to have a minor negative impact on the landscape objective.

Country Parks:

There are two Country Parks within Greater Norwich: Catton Park and Whitlingham Country Park. Development proposals which are located adjacent or in close proximity to a Country Park, and therefore could potentially adversely affect views from Country Parks, would be expected to have a minor negative impact on the landscape objective.

Views:

Development proposals which may alter views of a predominantly rural or countryside landscape experienced by users of the Public Rights of Way (PROW) network and/ or local residents would be expected to have minor negative impacts on the landscape objective.

In order to consider potential visual effects of development it has been assumed that the proposals would, broadly, reflect the character of nearby development of the same type.

Potential views from residential properties are identified through reference to aerial mapping and the use of Google Maps⁴⁷.

It is anticipated that the GNDDP will require developers to undertake Landscape and Visual Impact Assessments (LVIAs) to accompany any future proposals, where relevant. The LVIAs should seek to provide greater detail in relation to the landscape character of the development proposals and its surroundings, the views available

⁴⁵ Broadland District Council (2013) Landscape Character Assessment Supplementary Planning Document (SPD). Available at: https://www.broadland.gov.uk/downloads/download/167/landscape_character_assessment_supplementary_planning_document_spd [Date Accessed: 31/07/20]

⁴⁶ Land Use Consultants (2001) South Norfolk Landscape Assessment. Available at: <https://www.south-norfolk.gov.uk/residents/planning/planning-policy/landscape-character-assessments> [Date Accessed: 31/07/20]

⁴⁷ Google Maps (2020). Available at: <https://www.google.co.uk/maps> [Date Accessed: 31/07/20]

Box 4.4: SA Objective 4. Landscape – Assessment Methodologies and Assumptions

Landscape: Promote efficient use of land, while respecting the variety of landscape types in the area.

towards the development, the character of those views and the sensitivity and value of the relevant landscape and visual receptors.

Urbanisation of the Countryside/ Coalescence:

Development proposals which are considered to increase the risk of future development spreading further into the wider landscape would be expected to have a minor negative impact on the landscape objective.

Development proposals which are considered to reduce the separation between existing settlements and increase the risk of the coalescence of settlements would be expected to have a potential minor negative impact on the landscape objective.

4.16 SA Objective 5 – Housing

Box 4.5: SA Objective 5. Housing – Assessment Methodologies and Assumptions

Housing: Ensure that everyone has good quality housing of the right size and tenure to meet their needs.

The GNDDP have prepared evidence documents in relation to the housing needs in Greater Norwich over the Plan period. Options are assessed for the extent to which they will help to meet the diverse needs of current and future residents of the Plan area.

Where development proposals have unspecified housing numbers, these have been assumed to be in compliance with professional estimates of typical gross densities for each local planning authority, provided in the GNDDP Housing and Economic Land Availability Assessment (HELAA)⁴⁸. These are as follows: 25 dwellings per hectare (dph) for Broadland, 40dph for Norwich City, and 25dph for South Norfolk.

Development proposals which would result in an increase of 99 dwellings or less would be likely to have a minor positive impact on the local housing provision. Development proposals which would result in an increase of 100 dwellings or more would be likely to have a major positive impact on the local housing provision.

Unless otherwise stated, it is assumed development options will provide a good mix of housing type and tenure opportunities.

Development proposals which would be expected to result in a net loss of housing across the Plan area would be expected to have an adverse impact on GNDDP's ability to meet the required housing demand.

Development proposals which would result in the loss of nine dwellings or less would be likely to have a minor negative impact on local housing provision. Development proposals which would result in the loss of ten dwellings or more would be likely to have a major negative impact on the local housing provision.

Development proposals which would result in no net change in dwellings would be expected to have a negligible impact on the local housing provision.

⁴⁸ Greater Norwich Development Partnership (2017) Greater Norwich Local Plan: Housing and Economic Land Availability Assessment (HELAA). Available at: https://gnlp.oc2.uk/docfiles/46/helaa_-_reg_18_-_dec_2017.pdf [Date Accessed: 31/07/20]

4.17 SA Objective 6 – Population and Communities

Box 4.6: SA Objective 6. – Population and Communities Assessment Methodologies and Assumptions

Population and Communities: Maintain and improve the quality of life of residents.

Local Services:

In accordance with Barton et al.'s sustainable distances⁴⁹, proposed development which is located within 600m of a local service, such as a post office or a convenience store, would be expected to provide site end users with access to essential services. Development proposals located within this target distance would be expected to have a minor positive impact on this objective. Development proposals located outside this target distance would be expected to have a minor negative impact on this objective.

Local Landscape Designations:

The local landscape designations dataset has been provided by the GNPD. This includes areas of multi-functional green infrastructure and community buildings such as playing fields, allotments and other communal spaces which would be expected to help improve the quality of life for local residents.

Development proposals which would situate site end users within 600m of a local landscape designation would be likely to have a minor positive impact on this objective.

4.18 SA Objective 7 – Deprivation

Box 4.7: SA Objective 7. – Deprivation Assessment Methodologies and Assumptions

Deprivation: To reduce deprivation.

The purpose of this objective is to help redress deprivation issues across the Plan area. None of the site proposals assessed in this report will be expected to redress these issues. At this stage, it is assumed that development proposals at all of the reasonable alternative sites would have a negligible impact for this objective.

4.19 SA Objective 8 – Health

Box 4.8: SA Objective 8. Health – Assessment Methodologies and Assumptions

Health: To promote access to health facilities and promote healthy lifestyles.

Green Network:

Development proposals have been assessed in terms of their access to the local PRoW networks and public greenspace. In line with Barton et al.⁵⁰, a sustainable distance of 600m has been used for the assessments. Development proposals that are located within 600m of a PRoW/cycle path or a public greenspace would be expected to have a minor positive impact on residents' access to a diverse range of natural habitats. Development proposals located over 600m from a PRoW/cycle path or a public greenspace could potentially have a minor negative impact on residents' access to natural habitats, and therefore have an adverse impact on the physical and mental health of local residents.

Air Quality:

It is assumed that development proposals located in close proximity to main roads would expose site end users to transport associated noise and air pollution. In line with the DMRB guidance, it is assumed that receptors

⁴⁹ Barton, H., Grant. M. & Guise. R. (2010) Shaping Neighbourhoods: For local health and global sustainability.

⁵⁰ Barton, H., Grant. M. & Guise. R. (2010) Shaping Neighbourhoods: For local health and global sustainability, January 2010

Box 4.8: SA Objective 8. Health – Assessment Methodologies and Assumptions

Health: To promote access to health facilities and promote healthy lifestyles.

would be most vulnerable to these impacts located within 200m of a main road⁵¹. Negative impacts on the long-term health of residents would be anticipated where residents would be exposed to air pollution.

Development proposals located within 200m of a main road would be expected to have a minor negative impact on local residents' exposure to air pollution. Development proposals located over 200m from a main road would be expected to have a minor positive impact on local residents' exposure to air pollution.

Air Quality Management Areas (AQMAs) are considered to be an area where the national air quality objective will not be met.

Development proposals which would locate site end users within 200m of an AQMA would be expected to have a moderate negative impact on human health. Development proposals which would locate site end users over 200m from an AQMA would be expected to have a minor positive impact on human health.

Health Facilities:

In order to facilitate healthy and active lifestyles for existing and new residents, it is expected that the GNPD should seek to ensure that residents have access to NHS hospitals, GP surgeries, leisure centres and a diverse range of accessible natural habitats and the surrounding PRoW network. Sustainable distances to each of these necessary services are derived from Barton et al.⁵².

Adverse impacts are anticipated where the proposed development would not be expected to facilitate active and healthy lifestyles for current or future residents.

For the purposes of this assessment, accessibility to a hospital has been taken as proximity to an NHS hospital with an A&E service. Distances of development proposals to other NHS facilities (e.g. community hospitals and treatment centres) or private hospitals has not been taken into consideration in this assessment. The two NHS hospitals with an A&E department in close proximity Greater Norwich are Norfolk and Norwich University Hospital and James Paget University Hospital.

Development proposals located within 5km of one of these hospitals would be expected to have a minor positive impact on site end users' access to emergency health services. Development proposals located over 5km from one of these hospitals would be likely to have a minor negative impact on site end users' access to emergency health care.

There are numerous GP surgeries located across the Plan area. Development proposals located within 800m of a GP surgery would be expected to have a minor positive impact on site end users' access to this essential health service. Development proposal located over 800m from a GP surgery would be likely to have a minor negative impact on site end users' access to essential health care.

Access to leisure centres can provide local residents with opportunities to facilitate healthy lifestyles through exercise. Development proposals located within 1.5km of a leisure centre would be expected to have a minor positive impact on site end users' access to these facilities. Development proposal located over 1.5km from a leisure centre would be likely to have a minor negative impact on site end users' access to these facilities.

Overall

Development proposals which would locate site end users in close proximity to one of the listed NHS hospitals, a GP surgery and a leisure centre would be expected to have a major positive impact for this objective.

Development proposals which would locate site end users away from the listed NHS hospitals, a GP surgery and a leisure centre would be expected to have a major negative impact for this objective.

⁵¹ Design Manual for Roads and Bridges (2019) Sustainability & Environment Appraisal: LA 105 Air quality. Available at: <https://www.standardsforhighways.co.uk/dmrb/search/10191621-07df-44a3-892e-c1d5c7a28d90> [Date Accessed: 31/07/20]

⁵² Barton, H., Grant, M. & Guise, R. (2010) Shaping Neighbourhoods: For local health and global sustainability, January 2010

4.20 SA Objective 9 – Crime

Box 4.9: SA Objective 9. Crime – Assessment Methodologies and Assumptions

Crime: To reduce crime and the fear of crime.

The purpose of this objective is to help reduce crime rates in the local area. It is not possible to assess the impacts of residential site proposals on local crime prevention or crime rates. At this stage, it is assumed that development proposals at all of the reasonable alternative sites would have a negligible impact for this objective.

4.21 SA Objective 10 – Education

Box 4.10: SA Objective 10. Education – Assessment Methodologies and Assumptions

Education: To improve skills and education.

It is assumed that new residents in the Plan area require access to primary and secondary education services to help facilitate good levels of education, skills and qualifications of residents.

In line with Barton et al.'s sustainable distances⁵³, for the purpose of this assessment, 800m is assumed to be the target distance for travelling to a primary school and 1.5km to secondary schools. All schools identified are publicly accessible state schools.

It is recognised that not all schools within Greater Norwich are accessible to all pupils. For instance, independent and academically selective schools may not be accessible to all. Local primary schools may only be Infant or Junior schools and therefore not provide education for all children of primary school age. Some secondary schools may only be for girls or boys and therefore would not provide education for all. This has been considered within the assessment.

At this stage, there is not sufficient information available to be able to accurately predict the effect of new development on the capacity of local schools, or to incorporate local education attainment rates into the assessment.

Development proposals which would locate site end users within the target distances of a primary school or secondary school would be expected to have a minor positive impact for this objective.

Development proposals which would locate site end users outside of the target distances of a primary or secondary school would be expected to have a minor negative impact for this objective.

Development proposals which would locate new residents within the target distance to both a primary and secondary school would be expected to have a major positive impact on the education objective.

Development proposals which would locate new residents outside of the target distance to both a primary and secondary school would be likely to have a major negative impact on the education objective.

Development proposals for employment or non-residential use have not been assessed for their proximity to educational establishments. Sites proposed for non-residential uses would have a negligible impact for this objective.

⁵³ Barton, H., Grant. M. & Guise. R. (2010) Shaping Neighbourhoods: For local health and global sustainability, January 2010.

4.22 SA Objective 11 – Economy

Box 4.11: SA Objective 11. Economy – Assessment Methodologies and Assumptions

Economy: Encourage economic development covering a range of sectors and skill levels to improve employment opportunities for residents and maintain and enhance town centres.

Employment Opportunities:

It is assumed that, in line with Barton et al.'s sustainable distances⁵⁴, new residents should be situated within 5km of key employment areas to ensure they have access to a range of employment opportunities capable of meeting their needs. Key employment areas are defined as locations which would provide a range of employment opportunities from a variety of employment sectors, including retail parks, industrial estates and major local employers. No further study has been undertaken to identify all employment areas.

Development proposals which would locate site end users within the target distances of a key employment area would be expected to have a minor positive impact for this objective. Development proposals which would locate site end users outside the target distances to a key employment area would be expected to have a minor negative impact for this objective.

Employment Floorspace:

An assessment of current land use at all sites has been made through reference to aerial mapping and the use of Google Maps⁵⁵.

Development proposals which would result in a net increase in employment floorspace would be expected to have a major positive impact on the local economy. Development proposals which would result in a net decrease in employment floorspace would be expected to have a major negative impact on the local economy.

4.23 SA Objective 12 – Transport and Access to Services

Box 4.12: SA Objective 12. Transport and Access to Services – Assessment Methodologies and Assumptions

Transport and Access to Services: Reduce the need to travel and promote the use of sustainable transport modes.

Public Transport:

In line with Barton et al.'s sustainable distances, site end users should be situated within 2km of a railway station and 400m of a bus stop offering a frequent service. Bus service frequency and destination information was obtained from Google Maps^{56 57}.

In order for a positive impact to be anticipated with regard to access to public transport, consideration has been given to the proportion of a development proposal within the target distance of these key transport services. To be sustainable, the bus stop should provide users with hourly services. Where a physical barrier prevents access to one of these services, this has been noted within the assessment text.

Development proposals located within the target distance to a railway station or bus stop would be expected to have a minor positive impact on local transport and accessibility. Development proposals located outside of the target distance to a railway station or a bus stop would be expected to have a minor negative impact on transport and accessibility.

⁵⁴ Barton, H., Grant. M. & Guise. R. (2010) Shaping Neighbourhoods: For local health and global sustainability, January 2010

⁵⁵ Google Maps (2020). Available at: <https://www.google.co.uk/maps> [Date Accessed: 31/07/20]

⁵⁶ Google Maps (2020). Available at: <https://www.google.co.uk/maps> [Date Accessed: 31/07/20]

⁵⁷ Live departure boards available from Google Maps have been used to assess the frequency of services at bus stops within the Plan area. These are obtained from local bus timetables.

Box 4.12: SA Objective 12. Transport and Access to Services – Assessment Methodologies and Assumptions

Transport and Access to Services: Reduce the need to travel and promote the use of sustainable transport modes.

Pedestrian Access:

Development proposals have been assessed in terms of their access to the surrounding footpath network. In order for a positive impact to be anticipated with regard to pedestrian access, consideration has been given to safe access to and from the development e.g. footpath. Safe access is determined to be that which is suitable for wheelchair users and pushchairs.

Development proposals which would be expected to provide site end users with adequate access to the surrounding footpath network would be expected to have a minor positive impact on pedestrian access. Development proposals which would not be anticipated to provide adequate access would be expected to result in a minor negative impact on pedestrian access.

Road Access:

Development proposals have been assessed in terms of their access to the surrounding road network. Development proposals which would be likely to provide site end users with adequate access to the surrounding road network would be expected to have a minor positive impact on road access. Development proposals which would not be anticipated to provide adequate access would be expected to have a minor negative impact on road access.

Overall:

Development proposals which would locate site end users in close proximity to all the above receptors would be expected to have a major positive impact for this objective.

Development proposals which would locate site end users away from all the above receptors would be expected to have a major negative impact for this objective.

4.24 SA Objective 13 – Historic Environment

Box 4.13: SA Objective 13. Historic Environment – Assessment Methodologies and Assumptions

Historic Environment: Conserve and enhance the historic environment, heritage assets and their setting, other local examples of cultural heritage, preserving the character and diversity of the area's historic built environment.

Impacts on heritage assets will be largely determined by the specific layout and design of development proposals, as well as the nature and significance of the heritage asset. There is a risk of adverse effects occurring, some of which may be unavoidable. As such, this risk has been reflected in the assessment as a negative impact where a site is in close proximity to heritage assets.

Adverse impacts are recorded for options which have the potential to have an adverse impact on sensitive heritage designations, including Listed Buildings, Scheduled Monuments (SM), Registered Parks and Gardens (RPG), and Conservation Areas.

It is assumed that where a designated heritage asset coincides with a site proposal, the heritage asset will not be lost as a result of development (unless otherwise specified by the GNLP). Adverse impacts on heritage assets are predominantly associated with impacts on the existing setting of the asset and the character of the local area, as well as adverse impacts on views of, or from, the asset.

Setting:

Development which could potentially be discordant with the local character or setting, for example, due to design, layout, scale or type, would be expected to adversely impact the setting of nearby heritage assets that are important components of the local area. Views of, or from, the heritage asset are considered as part of the assessment of potential impacts on the setting of the asset.

Box 4.13: SA Objective 13. Historic Environment – Assessment Methodologies and Assumptions

Historic Environment: Conserve and enhance the historic environment, heritage assets and their setting, other local examples of cultural heritage, preserving the character and diversity of the area's historic built environment.

Designated Features:

Where a Grade I, Grade II* or Grade II Listed Building, a SM or a RPG coincides with a site proposal, it is assumed that the setting of these features will be permanently altered, and a major negative impact would be expected. Where a site lies adjacent to a Grade I Listed Building it is assumed that the proposal would also permanently alter the setting to the asset and a major negative impact on the Historic Environment would be expected.

Where the development proposal lies adjacent to, or in close proximity to, a Grade II* or Grade II Listed Building, a SM, or a RPG, or where the development lies in close proximity to a Grade I Listed Building, an adverse impact on the setting of the asset would be likely, to some extent, and a minor negative impact would therefore be expected. Potential impacts on Conservation Areas and their setting are recorded as minor negative impacts.

Where development proposals are not located in close proximity to any heritage asset, or the nature of development is determined not to affect the setting or character of the nearby heritage asset, a negligible impact would be expected for this objective.

Heritage assets identified on Historic England's Heritage at Risk Register may be identified as being at risk for a number of reasons, for example, due to dilapidation of the building fabric or other sources of risk such as coastal erosion, cultivation or scrub encroachment⁵⁸. Where Heritage at Risk assets could potentially be impacted by the proposed development, this has been stated.

It is anticipated that the GNPP will require a Heritage Statement to be prepared to accompany future planning applications, where appropriate. The Heritage Statement should describe the significance of any heritage assets affected by the proposals, including any contribution made by their settings.

It is assumed that desk-based assessments will be required on a site-by-site basis for planning proposals which could potentially impact archaeological features. At this stage of the Plan preparation process there is no data available to indicate areas of archaeological potential within Greater Norwich, and as such no assessment has been carried out with regard to archaeology at present.

4.25 SA Objective 14 – Natural Resources, Waste and Contaminated Land

Box 4.14: SA Objective 14. Natural Resources, Waste and Contaminated Land – Assessment Methodologies and Assumptions

Natural Resources, Waste and Contaminated Land: Minimise waste generation, promote recycling and avoid the sterilisation of mineral resources. Remediate contaminated land and minimise the use of the best and most versatile agricultural land.

Previously Developed Land:

In accordance with the core planning principles of the NPPF⁵⁹, development on previously developed land will be recognised as an efficient use of land. Development of previously undeveloped land and greenfield sites is not considered to be an efficient use of land.

Development of an existing brownfield site would be expected to contribute positively to safeguarding greenfield land in Greater Norwich and have a minor positive impact on this objective.

⁵⁸ Historic England (2019) Heritage at Risk Register. Available at: <https://historicengland.org.uk/advice/heritage-at-risk/search-register> [Date Accessed: 31/07/20]

⁵⁹ Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Date Accessed: 31/07/20]

Box 4.14: SA Objective 14. Natural Resources, Waste and Contaminated Land – Assessment Methodologies and Assumptions

Natural Resources, Waste and Contaminated Land: Minimise waste generation, promote recycling and avoid the sterilisation of mineral resources. Remediate contaminated land and minimise the use of the best and most versatile agricultural land.

Development proposals situated on previously undeveloped land would be expected to pose a threat to soil within the site perimeter due to excavation, soil compaction, erosion and an increased risk of soil pollution and contamination during construction.

In addition, development proposals which would result in the loss of greenfield land would be expected to contribute towards a cumulative loss of ecological habitat. This would be expected to lead to greater levels of habitat fragmentation and isolation for the local ecological network restricting the ability of ecological receptors to adapt to the effects of climate change. The loss of greenfield land has therefore been considered to have an adverse effect under this objective.

For the purpose of this report, a 20ha threshold has been used based on available guidance⁶⁰.

Development proposals which would result in the loss of less than 20ha of greenfield land would be expected to have a minor negative impact on this objective. Development proposals which would result in the loss of 20ha or more of greenfield land would be expected to have a major negative impact on this objective.

Agricultural Land Classification:

The Agricultural Land Classification (ALC) system classifies land into five categories according to versatility and suitability for growing crops. The top three grades, Grades 1, 2 and 3a, are referred to as the Best and Most Versatile (BMV) land⁶¹.

Adverse impacts are expected for options which would result in a net loss of agriculturally valuable soils. Development proposals which are situated on Grade 1, 2 or 3 ALC land, and would therefore risk the loss of some of the Plan areas BMV land, would be expected to have a minor negative impact for this objective.

Development proposals which are situated on Grade 4 and 5 ALC land, or land classified as 'urban' or 'non-agricultural' and would therefore help prevent the loss of the Plan areas BMV land, would be expected to have a minor positive impact for this objective.

Household Waste:

For the purpose of this assessment, it is assumed that new residents in Greater Norwich will have an annual waste production of 409.3kg per person, in line with the England average⁶².

Between 2018 and 2019, the total household waste collected by each local authority was⁶³:

- Broadland – 49,233 tonnes
- Norwich – 43,529 tonnes

⁶⁰ Natural England (2009) Agricultural Land Classification: protecting the best and most versatile agricultural land. Available at: <http://publications.naturalengland.org.uk/publication/35012> [Date Accessed: 31/07/20]

⁶¹ Natural England (1988) Agricultural Land Classification of England and Wales: Revised criteria for grading the quality of agricultural land (ALC011). Available at: <http://publications.naturalengland.org.uk/publication/6257050620264448?category=5954148537204736> [Date Accessed: 31/07/20]

⁶² Department for Environment, Food and Rural Affairs (2019) Statistics on waste managed by local authorities in England in 2018/19. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918853/201819_Stats_Notice_FINAL_accessible.pdf [Date Accessed: 04/12/20]

⁶³ Department for Environment and Rural Affairs (2020) Local authority collected waste generation from April 2000 to March 2019 (England and regions) and local authority data April 2018 to March 2019. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/849136/LA_and_Regional_Spreadsheet_1819.xlsx [Date Accessed: 04/12/20]

Box 4.14: SA Objective 14. Natural Resources, Waste and Contaminated Land – Assessment Methodologies and Assumptions

Natural Resources, Waste and Contaminated Land: Minimise waste generation, promote recycling and avoid the sterilisation of mineral resources. Remediate contaminated land and minimise the use of the best and most versatile agricultural land.

- South Norfolk – 50,762 tonnes

A minor negative impact would be expected for development proposals which would be likely to increase waste generation by between 0.1% and 0.99% in comparison to 2019 levels. A major negative impact would be expected for development proposals which would be likely to increase waste generation by 1% or more in comparison to 2019 levels.

As waste generation has been calculated per person per household, development proposals for employment or non-residential end use have not been included in this assessment.

4.26 SA Objective 15 – Water

Box 4.15: SA Objective 15. Water – Assessment Methodologies and Assumptions

Water: Maintain and enhance water quality and ensure the most efficient use of water.

Groundwater:

The vulnerability of groundwater to pollution is determined by the physical, chemical and biological properties of the soil and rocks, which control the ease with which an unprotected hazard can affect groundwater.

Groundwater Source Protection Zones (SPZs) indicate the risk to groundwater supplies from potentially polluting activities and accidental releases of pollutants. As such, any development proposal that is located within a groundwater SPZ could potentially have an adverse impact on groundwater quality.

Development proposals located within the total catchment (Zone III), outer zone (Zone II) or inner zone (Zone I) of an SPZ would be likely to have a minor negative impact on groundwater quality.

Watercourses:

Construction activities in or near watercourses have the potential to cause pollution, impact upon the bed and banks of watercourses and impact on the quality of the water⁶⁴.

An approximate 10m buffer zone from a watercourse should be used in which no works, clearance, storage or run-off should be permitted⁶⁵. In this assessment, a 200m buffer zone was deemed appropriate.

Development proposals located within 200m of a watercourse would be expected to have a minor negative impact on local water quality.

Water Consumption:

It is assumed that development proposals will be in accordance with the national mandatory water efficiency standard of 125 litres per person per day, as set out in the Building Regulations 2010⁶⁶.

It is assumed that all housing proposals in the GNLP will be subject to appropriate approvals and licensing for sustainable water supply from the Environment Agency.

⁶⁴ World Health Organisation (1996) Water Quality Monitoring - A Practical Guide to the Design and Implementation of Freshwater Quality Studies and Monitoring Programmes: Chapter 2 – Water Quality. Available at:

https://www.who.int/water_sanitation_health/resourcesquality/wgmchap2.pdf [Date Accessed: 31/07/20]

⁶⁵ Department of Agriculture, Environment and Rural Affairs (no date) Advice and Information for planning approval on land which is of nature conservation value. Available at: <https://www.daera-ni.gov.uk/articles/advice-and-information-planning-approval-land-which-nature-conservation-value> [Date Accessed: 31/07/20]

⁶⁶ The Building Regulations 2010. Available at: <http://www.legislation.gov.uk/uksi/2010/2214/contents/made> [Date Accessed: 10/11/20]

5 Reasonable Alternatives

5.1 Reasonable Alternatives

5.1.1 Article 5(1) of the SEA Directive states that:

5.1.2 *“Where an environmental assessment is required under Article 3(1), an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated. The information to be given for this purpose is referred to in Annex I”.*

5.1.3 Planning Practice Guidance⁶⁷ states that:

5.1.4 *“Reasonable alternatives are the different realistic options considered by the plan-maker in developing the policies in its plan. They must be sufficiently distinct to highlight the different sustainability implications of each so that meaningful comparisons can be made”.*

5.1.5 It is therefore necessary for the SA to show that the Councils have considered reasonable alternatives for proposals in the GNLP. The following sections of this report demonstrate when and where the Councils considered reasonable alternatives in the plan making process and how the SA influenced the plan making.

5.2 Reasonable alternatives: housing requirement

Appraisal of the housing requirement at Regulation 18A (2018)

5.2.1 The Regulation 18A Interim SA Report (2018) presents information that has been used to formulate four reasonable alternative housing requirement options:

1. GNLP Housing Requirement is equal to Objectively Assessed Need (OAN). Delivery Buffer is Approx. 20%. Forecast Windfall Housing does not form part of the Delivery Buffer.
2. GNLP Housing Requirement is equal to OAN. Delivery Buffer is Approx. 20%. Forecast Windfall Housing forms part of the 20% Delivery Buffer.
3. GNLP Housing Requirement is Equal to OAN plus Housing Response to City Deal. Delivery Buffer is Approx. 20%. Forecast Windfall Housing does not form part of the Delivery Buffer.
4. GNLP Housing Requirement is Equal to OAN plus net Housing Response to City Deal. Delivery Buffer is Approx. 20% OAN. Forecast Windfall Housing forms part of the 20% Delivery Buffer.

5.2.2 The SA results are presented in **Figure 5.1**.

⁶⁷ MHCLG (2020) Planning Practice Guidance: Strategic environmental assessment and sustainability appraisal. Available at: <https://www.gov.uk/guidance/strategic-environmental-assessment-and-sustainability-appraisal> [Date Accessed: 10/11/20]

Reasonable Alternative															
<p>1. GNLP Housing Requirement is equal to OAN. Delivery Buffer is Approx. 20%. Forecast Windfall Housing does not form part of the Delivery Buffer.</p> <p>2. GNLP Housing Requirement is equal to OAN. Delivery Buffer is Approx. 20%. Forecast Windfall Housing forms part of the 20% Delivery Buffer.</p> <p>3. GNLP Housing Requirement is Equal to OAN plus Housing Response to City Deal. Delivery Buffer is Approx. 20%. Forecast Windfall Housing does not form part of the Delivery Buffer.</p> <p>4. GNLP Housing Requirement is Equal to OAN plus net Housing Response to City Deal. Delivery Buffer is Approx. 20% OAN. Forecast Windfall Housing forms part of the 20% Delivery Buffer.</p>															
	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
1	-	-	-	-	++	0	0	0	0	0	++	0	-	0	0
2	-	-	-	-	+	0	0	0	0	0	+	0	-	0	0
3	--	--	--	--	++	0	0	0	0	0	++	0	--	0	0
4	-	-	-	-	++	0	0	0	0	0	++	0	-	0	0
<p>1. Minimise air, noise and light pollution to improve wellbeing</p> <p>2. Continue to reduce carbon emissions, adapting to and mitigating against the effects of climate change</p> <p>3. Protect and enhance the area's biodiversity and geodiversity assets, and expand the provision of green infrastructure</p> <p>4. Promote efficient use of land, whilst respecting the variety of landscape types in the area</p> <p>5. Ensure that everyone has good quality housing of the right size and tenure to meet their needs</p> <p>6. Maintain and improve the quality of life of residents</p> <p>7. To reduce deprivation</p> <p>8. To promote access to health facilities and promote healthy lifestyles</p> <p>9. To reduce crime and the fear of crime</p>								<p>10. To promote access to education and skills training and support increased educational attainment.</p> <p>11. Encourage economic development covering a range of sectors and skill levels to improve employment opportunities for residents, and maintain and enhance town centres</p> <p>12. Reduce the need to travel and promote the use of sustainable transport modes</p> <p>13. Conserve and enhance the historic environment, heritage assets and their setting, other local examples of cultural heritage, preserving the character and diversity of the area's historic built environment.</p> <p>14. Minimise waste generation, promote recycling and avoid sterilisation of mineral resources. Remediate contaminated land and minimise the use of the best and most versatile agricultural land.</p> <p>15. Maintain and enhance water quality and ensure the most efficient use of water.</p>							

Figure 5.1: The SA results of the housing requirement alternatives. Reproduced from p.30 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

5.2.3 The SA identified that Option 2 was the best performing option. See Box 5.1.

Box 5.1: Summary of the effects of the housing requirement alternatives. Reproduced from p.36 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Summary of Significant Effects

7.4.1. Alternatives 3 and 4 would establish a Plan Requirement that is notably above OAN, and one that is only likely to be deliverable if the significant increase in jobs, as envisaged by the aspirational City Deal actually occurs. This would create a situation where the authorities are more likely to suffer from a housing land supply deficit. This could result in further development in less sustainable locations and would create uncertainties in relation to objective 12, as well as increasing the impact on the baseline under objectives 1 and 3. There is therefore good reason to consider that these alternatives should not be preferred.

7.4.2. Alternatives 1 and 2 avoid the situation set out above by making the Plan Requirement equivalent to OAN, and thus relating any calculation of housing land supply to the standard methodology. There are therefore good reasons to prefer alternatives 1 and 2.

7.4.3. Alternative 2 performs better in terms of air quality and climate change related to emissions, however it would also include a significantly lower delivery buffer, which is heavily reliant on assumed windfall housing projections being delivered. Given the delivery challenges experienced locally this presents a notably increased risk to housing delivery and thus has more uncertainties in terms of meeting housing needs in accordance with Objective 5. Alternative 2 also would provide for slightly less than a 20% buffer to the delivery of the housing required to meet City Deals jobs growth. This could restrict the economic growth potential of the area, and thus would perform relatively worse in terms of contributing toward Objective 11, although given that the buffer to city deals related jobs growth is only fractionally under 20% this impact is slight. Alternative 1 includes a high delivery buffer, giving more certainty of delivery (better in terms of providing the homes needed in accordance with Objective 5). It would also provide more than a 20% buffer to the delivery of the homes needed to support the City Deal.

7.4.4. Given the increased potential impact of alternative 1 in terms of air quality, climate change emissions and other objectives directly affected by the scale of growth, compared to its very slight benefits in terms of objective 11 (related to jobs and the economy), it is considered that there are good reasons to prefer alternative 2.

Appraisal of the housing requirement at Regulation 18C (2020)

5.2.4 The Regulation 18C SA Report assessed the impact of the development of 44,340 homes within Policy 1: The Sustainable Growth Strategy. The assessment identified potential major negative impacts in relation to air quality, climate change, and natural resources as a direct impact of the scale of growth proposed under this policy (see **Table 5.1**).

Table 5.1: Impact matrix for Policy 1 – The Sustainable Growth Strategy at Regulation 18C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
-	-	-	0	++	+	+	+	+	++	++	++	+	-	0

Appraisal of the housing requirement at Regulation 19 (2021)

5.2.5 The Publication Draft Plan (2021) includes a further 5,000 dwellings in addition to the Regulation 18C Draft Strategy to take account of the 2018 household projections, making the total housing potential for the Plan of 49,492 dwellings. The Publication Draft Plan states that the housing figure “sets [the GNLP] on the path to the higher housing numbers which recent projections ‘Planning for the Future’⁶⁸ indicate will be required locally to address affordability issues. This provides continuity between the current and future direction of travel in Government policy to provide more housing to address needs”.

Table 5.2: Impact matrix for Policy 1 – The Sustainable Growth Strategy at Regulation 19

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
-	-	-	0	++	+	+	+	+	++	++	++	+	-	0

5.2.6 The overall housing requirements changed between Regulation 18C and Regulation 19, however, the sustainability performance of the two quanta remained very similar since the appraisal process is strategic and can only assess options of this nature by order of magnitude (see **Table 5.2**).

⁶⁸ MHCLG (2020) Planning for the future, White Paper. Available at: <https://www.gov.uk/government/consultations/planning-for-the-future>
 [Date Accessed: 11/11/20]

5.3 Reasonable alternatives: employment floorspace

Appraisal of employment floorspace requirements at Regulation 18A (2018)

5.3.1 The Growth Options Document (2018) states that “the precise target for the GNLP will need to be calculated for the submission version so that the latest forecasts can be taken into account but currently the evidence suggests a target of around 45,000 jobs 2015-2036”.

5.3.2 The Interim SA Report assessed two options for employment floorspace numbers:

- JT1: GNLP jobs target to be equal forecast jobs growth, plus aspirational growth between 2015 and 2036.
- JT2: GNLP jobs target to be equal forecast jobs growth between 2015 and 2036.

5.3.3 The SA results are presented in **Figure 5.2**.

Reasonable Alternatives															
JT1: GNLP jobs target to be equal forecast jobs growth, plus aspirational growth between 2015 and 2036.															
JT2: GNLP jobs target to be equal forecast jobs growth between 2015 and 2036.															
	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
JT1	-	-	0	-	0	0	++	0	0	0	++	0	0	0	0
JT2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 5.2: The SA results of the job target alternatives. Reproduced from p.26 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

5.3.4 Option JT1 was identified as the preferred option for the reasons cited in **Box 5.2**.

Box 5.2: Summary of effects of the job targets alternatives. Reproduced from p.26 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Summary of Significant Effects

7.2.1. Alternative JT2 proposes a jobs target equivalent to the EEFM forecast. This is effectively evolution of the baseline, and therefore would have a neutral effect on all SA objectives. Alternative JT1 proposes planning for a significant number of additional jobs above the forecast. Although the distribution of these additional jobs would heavily influence the sustainability outcome, it can be assumed that such a difference in the jobs target would likely have a significant negative impact on environmental objectives SA1 and SA2 as carbon emissions air and light pollution would likely increase with more employment sites. SA4 would also be negatively impacted since more greenfield land would inevitably be needed. Conversely, planning for a significant number of additional jobs would help to achieve SA7 as the availability of jobs should reduce deprivation, and SA11, encouraging economic development over a range of sectors.

Appraisal of employment floorspace requirements at Regulation 18C (2020)

5.3.5 The Regulation 18C Draft Strategy Consultation states that “the overall target for jobs growth is for an increase of 33,000 jobs from 2018 to 2038” and the draft plan “allocates employment sites totalling around 360 hectares”.

5.3.6 The Regulation 18C SA Report assessed the impact of the development of 33,000 additional jobs over 360ha of employment floorspace within Policy 1 – The Sustainable Growth Strategy. The assessment identified potential major negative impacts in relation to air quality, climate change, and natural resources as a direct impact of the scale of growth proposed under this policy (see **Table 5.3**).

Table 5.3: Impact matrix for Policy 1 – The Sustainable Growth Strategy at Regulation 18C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
--	--	-	0	++	+	+	+	+	++	++	++	+	--	0

Appraisal of employment floorspace requirements at Regulation 19 (2021)

5.3.7 Policy 1 of the GNLP seeks to deliver 33,000 additional jobs on 360ha of employment land. As there has been no change in employment floorspace numbers since the Regulation 18C SA, the SA findings remain the same (see **paragraph 5.3.6** and **Table 5.3**).

5.4 Reasonable alternatives: spatial strategy

Appraisal of spatial strategy options at Regulation 18A (2018)

5.4.1 The Growth Options Document set out the six reasonable alternative spatial strategy options:

1. Urban Concentration (close to Norwich).
2. Transport Corridors.
3. Cambridge Norwich Tech Corridor.
4. Dispersal.
5. Dispersal Plus New Settlement.
6. Dispersal and Urban Growth.

5.4.2 All six options were based on the delivery of 7,200 new dwellings (see **Figure 5.3**). Access to services and jobs, as well as maximising growth on brownfield land, were key considerations in identifying these options. Consideration has also been given to the deliverability of larger sites in comparison to smaller sites. Larger sites can provide new services and facilities and help to meet the local affordable housing need, whereas sites of ten or fewer dwellings are more likely to support the vitality of existing settlements but less likely to deliver affordable housing or a mix of housing types.

Figure 3 Strategic Growth Options

Location	Parish / Area	Homes Committed	Growth Options					
			Option 1 Concentration Close to Norwich	Option 2 Transport Corridors	Option 3 Supporting the Cambridge to Norwich Tech Corridor	Option 4 Dispersal	Option 5 Dispersal plus New Settlement	Option 6 Dispersal plus Urban Growth
Norwich		6,999	1,500 (8,499)	1,500 (8,499)	1,500 (8,499)	1,500 (8,499)	1,500 (8,499)	1,500 (8,499)
North East	Growth Triangle	12,516						
	Thorpe St. Andrew	365	1,200 (14,176)	1,200 (14,176)	200 (13,176)	200 (13,176)	200 (13,176)	1,200 (14,176)
	Elsewhere	95						
North / North West	Hellesdon	1,377						
	Horsford	284	600 (2,619)	200 (2,219)	0 (2,019)	100 (2,119)	100 (2,119)	200 (2,219)
	Drayton	285						
	Elsewhere	73						
West	Bawburgh	14						
	Costessey	706	500 (2,125)	500 (2,125)	500 (2,125)	100 (1,725)	100 (1,725)	500 (2,125)
	Easton	905						
South West	Cringleford	1,458						
	Hethersett	1,295	1,200 (4,028)	500 (3,328)	1,500 (4,328)	150 (2,978)	150 (2,978)	200 (3,028)
	Little Melton	68						
	Elsewhere	7						
Other Fringe Sectors		1,933	0 (1,933)	0 (1,933)	0 (1,933)	0 (1,933)	0 (1,933)	0 (1,933)
Main Towns		5,468	550 (6,018)	1,650 (7,118)	1,250 (6,718)	1,200 (6,668)	1,200 (6,668)	700 (6,168)
Key Service Centres		674	450 (1,124)	450 (1,124)	550 (1,224)	850 (1,524)	850 (1,524)	600 (1,274)
New Village(s)		0	0 (0)	0 (0)	500 (500)	0 (0)	500 (500)	0 (0)
Service and Other Villages or Village Groups (including Countryside under option SH2)		1,060	1,200 (2,260)	1,200 (2,260)	1,200 (2,260)	3,100 (4,160)	2,600 (3,660)	2,300 (3,360)
Countryside		83	0 (83)	0 (83)	0 (83)	0 (83)	0 (83)	0 (83)
Total New Allocations			7,200	7,200	7,200	7,200	7,200	7,200
Total Housing Provision (2017 to 2036)			(42,865)	(42,865)	(42,865)	(42,865)	(42,865)	(42,865)

Figure 5.3: Details of the Strategic Growth Options. Reproduced from p.28 of the Regulation 18A Growth Options Document, prepared by the Greater Norwich Development Partnership 2018

Reasonable Alternatives															
1) Urban Concentration (close to Norwich)								4) Dispersal							
2) Transport Corridors								5) Dispersal Plus New Settlement							
3) Cambridge – Norwich Tech Corridor								6) Dispersal and Urban Growth							
	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
1	-	+	-	-	+	0	+	0	0	0	++	++	-	0	0
2	-	+	-	-	+	0	+	0	0	0	++	++	-	0	0
3	-	+	-	-	+	0	+	0	0	0	++	++	-	0	0
4	--	0	--	-	++	0	+	0	0	0	+	--	-	0	0
5	--	0	--	-	++	0	+	0	0	0	+	--	-	0	0
6	--	0	--	-	++	0	+	0	0	0	+	+	-	0	0
1. Minimise air, noise and light pollution to improve wellbeing 2. Continue to reduce carbon emissions, adapting to and mitigating against the effects of climate change 3. Protect and enhance the area's biodiversity and geodiversity assets, and expand the provision of green infrastructure 4. Promote efficient use of land, whilst respecting the variety of landscape types in the area 5. Ensure that everyone has good quality housing of the right size and tenure to meet their needs 6. Maintain and improve the quality of life of residents 7. To reduce deprivation 8. To promote access to health facilities and promote healthy lifestyles 9. To reduce crime and the fear of crime								10. To promote access to education and skills training and support increased educational attainment. 11. Encourage economic development covering a range of sectors and skill levels to improve employment opportunities for residents, and maintain and enhance town centres 12. Reduce the need to travel and promote the use of sustainable transport modes 13. Conserve and enhance the historic environment, heritage assets and their setting, other local examples of cultural heritage, preserving the character and diversity of the area's historic built environment. 14. Minimise waste generation, promote recycling and avoid sterilisation of mineral resources. Remediate contaminated land and minimise the use of the best and most versatile agricultural land. 15. Maintain and enhance water quality and ensure the most efficient use of water.							

Figure 5.4: The SA results of the spatial strategy alternatives. Reproduced from p.42 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

5.4.3 No single spatial option emerged as a best performing option since each option performed differently in terms of effects on SA Objectives (see Figure 5.4). At this stage in the plan making process the Councils concluded that no one option was preferred to the others (see Box 5.3).

Box 5.3: Summary of the effects of the spatial strategy alternatives. Reproduced from p.52 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Summary of Significant Effects

7.6.1. Options 1, 2 and 3 may be harder to deliver. This is because they focus growth in locations that have already seen significant growth, have significant outstanding commitment and have experienced delivery issues over the JCS period. Alternatives 4 and 5 provide for a much wider dispersal of development, and in doing so increase diversity, choice and competition in the market for land, which should be beneficial for delivery. If so, then alternatives 4 and 5 would perform better than alternatives 1, 2 and 3 for delivery. Option 6 lays somewhere in between.

7.6.2. However, Options 1, 2 and 3 perform better than alternatives 4 and 5 in relation to objectives that seek to improve air quality, reduce the impact of traffic, address climate change issues, increase active travel and support economic development. This a result of the better geographical relationship of development under these options to services, facilities, employment opportunities and sustainable transport options. Again Option 6 sits somewhere in between.

7.6.3. On the basis of the above, in sustainability terms the choice between alternatives, at this stage of the assessment process, appears finely balanced, with no alternative clearly better than another in SA terms.

Appraisal of spatial strategy options for Norwich City Centre at Regulation 18A (2018)

5.4.4 The Growth Options Document set out two options for development within Norwich City Centre. A strategic policy was determined to be necessary to fulfil the communities and economic objectives of the GNLP. The document identified two alternatives:

- CC1: Retain the current city centre boundaries.
- CC2: Enlarging the city centre boundary.

5.4.5 The Growth Options Document identified Option CC1 as the preferred approach. The assessment of these two options is presented in **Figure 5.5** and summarised in **Box 5.4**.

Reasonable Alternatives															
CC1: Retain the current city centre boundaries.															
CC2: Enlarging the city centre boundary															
	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
CC1	-	+	0	0	0	0	0	0	0	0	+	+	0	0	0
CC2	?	?	0	-	-	0	0	0	0	0	+	?	0	0	0

Figure 5.5: The SA results of the Norwich City Centre alternatives. Reproduced from p.54 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Box 5.4: The summary of effects of the Norwich City Centre alternatives. Reproduced from p.54 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Summary of Evaluation

7.9.1. Alternative CC1 proposes to retain the city centre boundary as currently defined for planning purposes. Effectively, this intensifies the role of the city centre and is therefore likely to reduce the number of trips (SA2 and SA12), but may have a detrimental impact on the AQMA in Norwich city centre (SA1). Both alternatives aim to support business and enhance the city centre, supporting SA11. The proposal to extend the defined city centre in alternative CC2 raises a potential dichotomy. It is possible that expanding the functional city centre area would prevent more out of town retail development, which would subsequently prevent an increase in potential car journeys. However, expanding the city centre area could also encourage less intensive, car-based development which would be more difficult to serve effectively by public transport. Therefore, the impact on SA1 (minimise air, noise, light pollution), SA2 (reduce carbon emissions) and SA12 (reduce the need to travel) is uncertain. It is possible that expansion of the functional city centre would result in the loss of sites which could be suitable for housing, with a subsequent negative impact on SA5 and an indirect negative impact on SA4 due to the loss of greenfield land as housing or other uses are displaced from the expanded centre.

Appraisal of spatial strategy options for the Urban Area and Fringe Parishes at Regulation 18A (2018)

5.4.6 The Growth Options Document only identifies one option for growth within the remainder of the urban area and fringe parishes. The assessment of this option is presented in **Figure 5.6** and summarised in **Box 5.5**.

Reasonable Alternative(s)															
Include a policy that: regeneration priorities; location specific design considerations; Green Infrastructure priorities; Economic priorities; Education priorities; Protection and Enhancement of Local Services; and, Transport Improvements															
	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
UA1	0	0	+	+	+	+	++	0	0	?	+	++	0	0	0

Figure 5.6: The SA results of the Urban Area and Fringe Parishes alternatives. Reproduced from p.56 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Box 5.5: *The summary of effects of the Urban Area and Fringe Parishes alternatives. Reproduced from p.56 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018*

7.11.1. The proposal to continue to support suburbs and the Norwich fringe parishes is a broad policy approach, with far-reaching aims, some of which are neutral in their impact or lack the detail to enable assessment. The policy does specify suburban regeneration and aims to enhance the vitality of the wider Norwich built up area, and therefore the policy is likely to have a strong positive impact on SA7 (regeneration) and SA12 (reducing the need to travel and promoting sustainable transport modes). The policy proposes further development of green infrastructure, so there is also likely to be a positive impact on SA3. Increasing densities of the various land uses in fringe parishes would theoretically support SA4 (efficient use of land) and SA5 (housing) while integrating new and existing communities, which would support achievement of SA6. SA objective 11 (economic development) is also addressed within the policy, as is SA10 (education) although the promotion of Norwich as a 'learning city' may not increase access to education or skills training or support increased educational attainment.

Appraisal of spatial strategy options for the Settlement Hierarchy at Regulation 18A (2018)

5.4.7 The Growth Options Document identified two alternatives for the settlement hierarchy; a six-tiered strategy (as set out below) or a four-tiered strategy (combining the last three tiers set out below):

1. Norwich Urban Area
2. Main towns
3. Key service centres
4. Service villages
5. Other villages
6. Smaller rural communities and the countryside.

5.4.8 The Interim SA report assessed these two options:

- SH1: Option 1 is a six-tiered strategy.
- SH2: Option 2 is a four-tiered strategy.

5.4.9 The Growth Options Document identified Option SH2 as the preferred approach. The assessment of these two options is presented in **Figure 5.7** and summarised in **Box 5.6**.

Reasonable Alternative(s)															
SH1: Have a six tiered hierarchy															
SH2: Have a four tiered hierarchy, including "Village Clusters" as tier 4.															
	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
SH1	+	+	0	0	+	+	+	+	0	?	0	+	0	0	0
SH2	?	?	0	0	+	?	?	?	0	?	0	?	0	0	0

Figure 5.7: The SA results of the Settlement Hierarchy alternatives. Reproduced from p.59 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Box 5.6: The summary of effects of the Settlement Hierarchy alternatives. Reproduced from p.59 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Summary of Significant Effects

7.13.1. Maintaining the current hierarchy would be an effective mechanism to ensure development is well related to an appropriate range of services and facilities, thereby reducing the number and length of vehicle trips and increasing opportunities for people to make trips by walking or cycling. This results in a significant positive effect in terms of SA1, SA2, SA6, SA7, SA8, and SA12. The impact of SH2 is uncertain; if villages are clustered in such a way that higher growth is only allocated where the levels of accessibility to services is good then the impact of this approach could also be positive in respect of SA1, SA2, SA6, SA7, SA8, and SA12. If however it results in higher growth being allocated to villages where easy access to services by sustainable mean in different villages does not readily exist then the effect of the policy would be negative against those same criteria, and in this scenario would clearly perform worse than SH1 in sustainability terms.

7.13.2. Both alternatives are considered to have a positive impact in terms of SA5 as they will support the identification of allocations in a range of settlements and in doing so provide for diversity, choice and completion in the housing market. Whilst currently uncertain, it is possible that SH2 would create more diversity, choice and competition if it results in a wider range of allocations in expanded range of settlements.

Appraisal of spatial strategy options for the Norwich Urban Area & Distribution of Growth at Regulation 18A (2018)

5.4.10 Lastly, the Growth Options Document and Interim SA Report consider two alternatives for a policy on the ‘Influence of the Norwich Urban Area & Distribution of Growth’. The two alternatives are:

- NCPA1: Do not have a Norwich centred policy area.
- NCPA2: Retain a Norwich centred area for some policy purpose, including recognition of the concentration of growth, to provide information to support promotion for economic purposes and to attract inward investment.

5.4.11 The Growth Options Document did not identify a single alternative as the preferred option. The assessment of these two options is presented in **Figure 5.8** and summarised in **Box 5.7**.

Reasonable Alternative(s)															
NCPA1: Do not have a Norwich centred policy area.															
NCPA2: Retain a Norwich centred area for some policy purpose, including recognition of the concentration of growth, to provide information to support promotion for economic purposes and to attract inward investment.															
	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
NCPA1	0	0	0	0	0	0	0	0	0	0	?	0	0	0	0
NCPA2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 5.8: The SA results of the Norwich Urban Area & Distribution of Growth alternatives. Reproduced from p.60 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Box 5.7: The summary of effects of the Norwich Urban Area & Distribution of Growth alternatives. Reproduced from p.61 of the Regulation 18A Interim SA Report, prepared by the Greater Norwich Development Partnership 2018

Summary of Significant Effects

- 7.15.1. The majority of the most sustainable locations (judged against all three limbs of sustainability) within Greater Norwich lie adjacent or near to Norwich and the built-up parts of the fringe parishes. This is because this is where the majority of jobs, educational opportunities, services and facilities are focused. Focusing development in the most sustainable locations has clear benefits in terms of reducing the need to travel and minimizing impacts on air quality and carbon emissions from transport.
- 7.15.2. However, as the plan will contain site allocations, the absence of a Norwich centred policy will not, of itself, necessarily result in a wider dispersal of development to less well connected locations than might otherwise be the case. Moreover, the vast majority of current housing commitments, which will deliver the vast bulk of the GNLP's housing requirements, are already located close to Norwich. Therefore, within the confines of this plan, NCPA2 is unlikely to result in a significantly different distribution when compared to the no-plan alternatives.
- 7.15.3. As a consequence of the above, the impact of both alternatives on the baseline is predominantly neutral other than in regard to SA11 for NCPA1.
- 7.15.4. In regards to SA11, it is possible that retaining a Norwich centred policy for some policy purposes could have benefits in term of promotion of Greater Norwich as a location for inward investment, and support policy integration across sectors, tiers of government and geographical areas e.g. by ensuring that there is commonality between the GNLP and the NATS strategy. There is however no tangible evidence that a Norwich centred policy would necessarily result in a significant positive impact on the baseline in this regard. It is also plausible that similar benefits could be derived by ensuring other strategic and thematic policies address relevant issues in this regard. The potential benefit of NCPA1 is therefore identified as an uncertainty.

Appraisal of spatial strategy at Regulation 18C (2020)

- 5.4.12 Further to the work undertaken during Regulation 18C, the Councils considered a seventh spatial strategy, which is an amalgamation of the six previously considered options. This new option was considered in the Regulation 18C Draft Strategy.
- 5.4.13 The growth strategy set out in the Regulation 18C Draft Strategy is as follows:
1. Maximises brownfield development and regeneration opportunities, which are mainly in Norwich. The brownfield/greenfield split for new homes in the Plan is 27%/73%;
 2. Broadly follows the settlement hierarchy set out in Policy 1 (the Norwich urban area; main towns; key service centres and village clusters) in terms of scales of growth as this reflects access to services and jobs;

3. Focuses most of the growth in locations with the best access to jobs, services and existing and planned infrastructure in and around the Norwich urban area and the Cambridge-Norwich Tech corridor;
4. Focuses reasonable levels of growth in the main towns, key service centres and village clusters to support a vibrant rural economy. The approach to village clusters is innovative. It reflects the way people access services in rural areas and enhances social sustainability by promoting appropriate growth in smaller villages. It will support local services, whilst at the same time protecting the character of the villages;
5. Allocates strategic scale housing sites (1,000 dwellings +) in accessible locations;
6. Allocates a significant number of medium scale and smaller scale sites in the urban area, towns and villages, providing a balanced range of site types to allow for choice, assist delivery and allow smaller scale developers and builders into the market. Overall, 12% of the homes allocated through the Plan are on sites of no larger than 1 hectare, meeting national requirements;
7. Sets a minimum allocation size of 12-15 dwellings to ensure that a readily deliverable amount of affordable housing is provided on all allocated sites.

5.4.14 Housing growth is proposed to be delivered in line with the following settlement hierarchy, in line with the preferred option identified at Regulation 18A:

1. Norwich urban area (Norwich and Norwich Fringe)
2. Main towns
3. Key service centres
4. Village clusters

5.4.15 The Regulation 18C SA report assessed this spatial strategy as part of Policy 1 – The Sustainable Growth Strategy. This policy also sets out the provision of homes and employment floorspace. The policy was identified as having the potential to result in major negative impacts in relation to air quality, climate change and natural resources and a minor negative impact in relation to biodiversity. The spatial strategy would be expected to result in neutral or positive impacts in relation to all other SA Objectives (see **Table 5.4**).

Table 5.4: Impact matrix for Policy 1 – The Sustainable Growth Strategy at Regulation 18C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
-	-	-	0	++	+	+	+	+	++	++	++	+	-	0

Appraisal of spatial strategy at Regulation 19 (2021)

5.4.16 The growth strategy set out in the Publication Draft Plan (2021) is the same as that presented in the Regulation 18C Draft Strategy. Policy 1 of the GNLP sets out the same strategy but has been updated to reflect the most up-to-date figures in relation to housing provision. As there has been no change in spatial strategy since the Regulation 18C SA, the SA findings remain the same (see **paragraph 5.4.14** and **Table 5.4**).

5.5 Reasonable alternatives: policy assessments

5.5.1 Broadland District Development Plan DPD⁶⁹, Norwich Development Management Policies Local Plan⁷⁰ and South Norfolk Local Plan Development Management Policies Document⁷¹, are lower tier plans which have been adopted and contain development management (DM) policies which allocations within the GNLP will need to adhere to.

Appraisal of policy options at Regulation 18A (2018)

5.5.2 The Growth Options Document sets out 51 policy alternatives that cover broad policy areas. The Interim SA Report assessed the reasonable alternative policies listed in **Table 5.5**.

Table 5.5: Reasonable alternative policies considered in the Interim SA report

Policy	Policy Options
Overarching Economic Policy	EC0: Continue with a wide-ranging policy approach to promoting the economy
Supply of Employment Land	EC1: Broadly maintain the current supply of employment land
	EC2: Significantly reduce the overall level of supply while still maintaining choice and flexibility
	EC3: Develop a criteria-based policy allowing windfall development.
Retail and Town Centre	EC4: Maintain the current retail and town centre hierarchy
	EC5: Increased comparison goods expenditure primarily within existing town centres, perhaps some out of centre allocations
Overarching Transport Policy	TR0: A policy broadly supporting and promoting strategic transport improvements
Healthy Lifestyles, Sustainable Transport and Broadband	TR1: Continue current approach re public transport, walking & cycling improvements & better broadband
Design	DE1: Broadly continue with the existing design and density policy approaches, with some relatively minor changes and updating, covering general high-quality design, recognizing local character, encouraging walking and cycling etc.

⁶⁹ Broadland District Council (2015) Development Management DPD. Available at: https://www.broadland.gov.uk/downloads/file/1118/development_management_dpd_adopted [Date Accessed: 28/10/20]

⁷⁰ Norwich City Council (2014) Norwich Development Management Policies Local Plan. Available at: https://www.norwich.gov.uk/downloads/file/2693/adopted_norwich_development_management_policies_local_plan_document [Date Accessed: 28/10/20]

⁷¹ South Norfolk Council (2015) South Norfolk Local Plan, Development Management Policies Document. Available at: <https://www.south-norfolk.gov.uk/residents/planning/planning-policy/adopted-south-norfolk-local-plan/development-management-policies> [Date Accessed: 28/10/20]

Policy	Policy Options
	DE2: Create a stronger policy approach to design and density, including giving a clear policy approach to high- density development in appropriate locations or scenarios.
Affordable Housing Provision Threshold	AH1 - A proportion of affordable housing would be sought on all sites of 5 or more dwellings (as per current JCS Policy 4) AH2 - A proportion of affordable housing would be sought on all sites of 11 or more dwellings (or 0.5 hectares or more).
Affordable Housing Percentage Requirement	AH3 - Seek 27% affordable housing on all sites above the qualifying threshold AH4 – Seek more than 27% affordable housing on all sites above the qualifying threshold AH5 – Specify the affordable housing amount and, perhaps, phasing, on larger sites (perhaps 100+) on a bespoke basis, with a more general policy for smaller sites
Affordable Housing Tenure	AH6: Require all qualifying sites to provide the SHMA-evidenced ratio of rented and low-cost home ownership housing on all sites
Exception Site Housing	AH7: Allow “small sites windfalls” to be permitted adjacent to development boundaries (i.e. sites of 10 or fewer), subject to them meeting certain criteria in all settlements with a development boundary. AH8: Don’t allow any small-scale windfall sites for market housing adjacent to development boundaries, only for genuine “exception” sites (including an element of cross-subsidy, if necessary).
House Size Mix	AH9: Require a specific housing mix on all sites above a defined threshold AH10: Do not require the identified housing mix need to be explicitly required on all sites individually
Older Peoples and Care Accommodation	AH11: Enable residential care accommodation (use class C2) uses to be appropriate on any allocated housing sites, subject to a criteria-based policy AH12: Make specific allocations for residential care (C2) and retirement care (use class C3) uses AH13: Criteria-based policy enabling retirement/ care accommodation outside settlement boundaries and/or on other types of land within settlement boundaries AH14: Require an amount of C2 residential care and/or C3 extra-care or retirement uses to be accommodated on “qualifying” housing allocations.
Houseboats	HB1: Develop a criteria-based policy to allow for moorings of houseboats, subject to evidence of need HB2: Continue current approach relying on NPPF and DM policies
Gypsies and Travellers	GT1: Allocate land to deliver the quantified need for new G&T pitches, and criteria-based policy GT2: Require larger housing allocations to include a specific number of G&T pitches
Travelling Showpeople	TS1: Allocate land to deliver some or all of the quantified need for new TS plots
Residential Caravans and Park Homes	RC1: Allocate land to deliver some of the need/demand for residential caravans
Climate Change	CC1 – Continue with current policy approach
Air Quality	AQ1 – Require planning applications which may have potential to impact on air quality and/or are located in an area of poor air quality to be accompanied by air pollution impact assessments. AQ2 – Do not have a specific policy in the GNLP on air quality.
Flooding	FR1 – Include a Specific Flooding Policy in the GNLP requiring all relevant applications to undertake site-specific Flood Risk Assessments and to provide a Surface Water Drainage Strategy showing how any SuDS infrastructure will be maintained in perpetuity.

Policy	Policy Options
Nature Conservation	NC1 – Require housing developments to provide additional green space on-site (or through off-site contributions) to address the impact of housing growth on designated nature conservation sites.
	NC2 – Require housing developers to make payments so that impacts on the designated nature conservation site are addressed.
Green Infrastructure	NC3 – Broadly reproduce the current JCS Policy 1 elements as they relate to green infrastructure, updating the baseline information (such as the GI Map), with each allocated site setting out the details of any specific mitigation measures/improvements within its allocation policy
Landscape	LA1 – Retain the general current approach in the South Norfolk and extend these principles to those parts of Broadland closest to Norwich
	LA2 – Retain the general current approach to landscape protection and as outlined in the current three separate Local Plans, rolling these forward to the GNLP
Energy	EN1: Keep a “Merton” policy approach but remove sustainable construction content to avoid conflict with recent Government policy changes. Also identify suitable locations for wind and/or solar power.
Water	W1: Retain current approach requiring sufficient water infrastructure for growth, promoting water efficiency, protecting water quality and areas of environmental importance
Location of Affordable Housing within Sites	COM1: Affordable housing should be spread evenly across and within housing sites and be of tenure-blind appearance
Health Impact Assessments	COM2: Require developers to submit a health impact assessment for large sites
	COM3: Do not require developers to submit a health impact assessment for any scale of development
Neighbourhood Planning	NP1: Identify which GNLP policies will be classed as ‘strategic’ for purpose of neighbourhood planning
Culture	CUL1: Broadly retain the current approach: includes elements of design, leisure and green infrastructure
	CUL2: Develop a simplified culture policy to protect/ enhance/provide facilities
	CUL3: Do not have a specific policy on culture
The Broads	BR1: Have a specific policy covering development proposals close to Broads, requiring the special characteristics and nature of Broads area to be taken into account.
Housing Land Supply	HLS1: Allow the most appropriate HELAA sites to come forward if there were no 5-year housing land supply
	HLS2: Do a review of the GNLP to allocate more deliverable sites if there were no 5-year housing land supply

5.5.3 The Growth Options Document identified the preferred approach for each policy area taking into account the findings of the SA.

Appraisal of policy options at Regulation 18C (2020)

5.5.4 The Regulation 18C Draft Strategy states that all policies in the GNLP are strategic and provide context for existing Local Plan policies, future revisions to Local Plan documents and policies and proposals in Neighbourhood Plans.

5.5.5 The Draft Strategy sets out the draft strategic policies but also sets out alternative approaches where applicable. **Table 5.6** lists the draft strategic policies, sets out the description of the policy, and alternatives considered in the preparation of the draft policies.

Table 5.6: List of draft strategic policies presented in the R18C Draft Strategy

Policy Number and Name	Description
Policy 1 – The Sustainable Growth Strategy	The policy sets out the total housing figure, total employment floorspace provision and the settlement hierarchy.
Policy 2 – Sustainable Communities	The policy is wide-ranging and seeks to deliver high-quality design, resilient and inclusive communities, promoting low-carbon technologies.
Policy 3 – Environmental Protection and Enhancement	The policy seeks to conserve and enhance the built and historic environment, as well as the natural environment, and deliver biodiversity net gain where possible.
Policy 4 – Strategic Infrastructure	The policy sets out the delivery of strategic infrastructure for transport, water, energy, health, education and green infrastructure needed to deliver the planned growth.
Policy 5 - Homes	The policy sets out requirements for the provision of affordable housing, space standards, accessible and specialist housing, gypsy and traveller accommodation, student accommodation and self/custom build homes.
Policy 6 – The Economy	The policy identifies strategic employment areas for new employment provision and sets out the sequential approach for development in town centres.
Policy 7.1 – The Norwich urban area including fringe parishes	The policy sets out the allocations for housing and employment floorspace within Norwich and fringe parishes. The policy also sets out requirements for development within Norwich city centre, East Norwich and the fringe parishes.
Policy 7.2 – Main Towns	The policy sets out allocations and development requirements in the main towns of Aylsham, Diss (with part of Roydon), Harleston, Long Stratton and Wymondham.
Policy 7.3 – The Key Service Centres	The policy sets out allocations and development requirements in the key service centres of Acle, Blofield, Brundall, Hethersett, Hingham, Loddon / Chedgrave, Poringland / Framingham Earl, Reepham and Wroxham.
Policy 7.4 – Village clusters	The policy sets out allocations and development requirements in the village clusters, including the number of homes to be delivered in the South Norfolk Village Clusters Plan.
Policy 7.5 – Small Scale Windfall Housing Development	The policy supports, in principle, the development of three dwellings in each parish during the lifetime of the GNLP, if infill development or adjacent to the built-up area boundary.

5.5.6 The R18C Draft Strategy identified ‘Alternative Approaches’ to each strategic policy and invited consultees to comment on them. This information chiefly presents an account of reasonable alternatives assessed during earlier stages of the plan making process. It also explains why the Councils considered that there are no reasonable alternatives to some strategic policies.

Appraisal of policy options at Regulation 19 (2021)

5.5.7 The final strategic policies have been amended to reflect updates in evidence base documents and respond to consultation comments and SA recommendations.

5.5.8 The final strategic policies are assessed in **Appendix C** and are discussed further at **section 6.1**.

5.6 Reasonable alternatives: site options

Appraisal of site options at Regulation 18A (2018)

5.6.1 The Site Proposals Document was consulted on alongside the Growth Options Document at Regulation 18A. The document sets out sites and development boundaries. No decision on if these potential sites should be included in the GNLP was made at this stage, but they have been assessed as part of the Housing and Economic Land Availability Assessment (HELAA)⁷². The consultation provided an opportunity for comments on potential sites and for further sites to come forward.

5.6.2 Sites proposed for fewer than five dwellings or less than 0.25ha in size will not be allocated or considered within the GNLP.

5.6.3 The document presents more than 600 potential sites. The sites are separated into each parish in which the sites are located. The document presents site details, such as the proposed a brief summary of the settlement, site use, site size, and a description of the proposal (i.e. number of dwellings on a residential proposal).

Appraisal of site options at Regulation 18B (2018)

5.6.4 The Regulation 18B consultation focused on 'New, Revised and Small Sites'. This included further submitted sites, revisions to some of the sites already consulted on and small sites, which total approximately 200 sites. Details of these sites are presented in the same format as the Regulation 18A consultation document.

Appraisal of site options at Regulation 18C (2020)

5.6.5 The Regulation 18C Draft Strategy identified a further 38 sites that were submitted during the Regulation 18B consultation. The same information on each site is provided as previous consultations.

5.6.6 The Regulation 18C consultation also set out the site assessment booklets⁷³. The Site Assessment Process Methodology⁷⁴ "*outlines the methodology undertaken to assess the sites submitted for consideration in the GNLP*" and provides details on the site booklets contents. Descriptions of the contents of the site assessment booklets is set out in **Table 5.7**.

⁷² Greater Norwich Development Partnership (2017) Housing and Economic Land Availability Assessment. Available at: https://gnlp.oc2.uk/docfiles/46/helaa_-_reg_18_-_dec_2017.pdf [Date Accessed: 17/11/20]

⁷³ Greater Norwich development partnership (2020) Site Assessment Booklets. Available at: <https://gnlp.oc2.uk/document/45> [Date Accessed: 17/11/20]

⁷⁴ Greater Norwich Development Partnership (2020) Site Assessment Process Methodology. Available at: <https://gnlp.oc2.uk/docfiles/45/Intro%20&%20Methodology%20Site%20Assessment%20Process.pdf> [Date Accessed: 17/11/20]

Table 5.7: Contents of the site assessment booklets

Stage of Booklet	Description
Introduction	Sets out background information about the settlements, its place in the settlement hierarchy, level of growth proposed, key services and facilities and details of the Neighbourhood Plan if applicable.
List of sites promoted	Full list of the sites submitted in each settlement and details of each of the sites (this is the information set out in Regulation 18A and Regulation 18B or additional sites in Regulation 18C).
HELAA tables	Summary of HELAA assessment and 'red', 'amber', or 'green' indicator against each criterion.
Summary of consultation comments	Summary of responses received from the Regulation 18A (January – March 2018) and Regulation 18B (October – December 2018) consultations.
Discussion of submitted sites	A desktop assessment of each site was carried up by the Councils. The results, along with the HELAA assessment and consultation comments were taken into consideration to identify if the site was a 'reasonable alternative'.
Shortlist of reasonable alternative sites for further assessment	Lists the reasonable alternatives sites. The sites were appraised through the Sustainability Appraisal process in the Regulation 18C SA Report. The sites were also passed onto officers in Development Management, Conservation, Highways, Flood and Education for further assessment.
Detailed site assessments of reasonable alternative sites	Site assessment proformas of each shortlisted site which includes the current site use; main HELAA constraints; further comments; planning history and list of plans/documents provided with submission.
Settlement based appraisal of reasonable alternative sites and identification of preferred sites	Identifies preferred options and provides reasons for allocating or not allocating each reasonable alternative site.

5.6.7 The Regulation 18C SA report appraised 285 reasonable alternative sites that have been considered by the Councils and set out in site booklets at this stage in the plan-making process. Details of these assessments pre-mitigation can be found in the Regulation 18C SA Report⁷⁵.

Appraisal of site options at Regulation 19 (2021)

5.6.8 The additional 107 reasonable alternative sites which were considered post Regulation 18C are presented in the updated site booklets. As part of the Regulation 19 consultation, the SA appraises these additional reasonable alternative sites. These pre-mitigation assessment findings can be found at **Appendix D**.

5.6.9 Post-mitigation assessment of the 392 reasonable alternative sites considered throughout the SA process can be found at **Appendix E**. The findings of these assessments were considered by the Councils in the selection of site allocations.

⁷⁵ Lepus Consulting (2020) Sustainability Appraisal and Strategic Environmental Assessment of the Greater Norwich Local Plan: Regulation 18(C). Available at: [https://gnlp.oc2.uk/docfiles/46/GNLP_SA_Reg18\(C\)_Final.pdf](https://gnlp.oc2.uk/docfiles/46/GNLP_SA_Reg18(C)_Final.pdf) [Date Accessed: 17/11/20]

5.6.10 Document 2 of the GNLP: The Sites⁷⁶ is set out as per the settlement hierarchy: Norwich and the fringe parishes; main towns; key service centres; and village clusters in Broadland. Under each section of the hierarchy, site allocations are presented per settlement. Under each settlement a summary of the settlement is provided, followed by details of each site allocation including the site policy which sets out requirements for the development proposals. The full list of the site allocation policies is set out in **Table 6.3**. The assessment of these 138 site policies can be found in **Appendix F**.

5.6.11 The strategy used when considering the previously allocated sites is explained in **Box 5.8**.

Box 5.8: *Explanation of how previously allocated sites were considered in the SA process supplied by the GNLP team*

A review of the authorities' existing Site Allocation local plans, that were to be superseded by the GNLP, identified a number of current allocations that had not yet been developed or substantially started, but for which there was no known reason to assume that they would not be. As these had already been found acceptable for development through the local plan process, they were proposed to be allocations to "carry forward" into the GNLP. Existing allocations that had been developed or substantially started were not included as carried forward allocations.

A large number of the existing residential allocations that were to be carried forward already had planning permission for their proposed use, and therefore, were acceptable for residential use. Given their location and the relatively high value of residential land compared to other uses, together with the fact that they have progressed to a planning permission, it was viewed as being very unlikely that other uses would come forward on the sites instead of the residential use being delivered. Also, because they had planning permission, these sites were included as part of the existing "commitment" in calculating the number of homes that needed to be provided for through the Plan. It was therefore concluded that there was no other reasonable alternative use for these sites, or to the sites, for Sustainability Appraisal purposes. Arguably, these existing allocations with planning permission did not need to be "carried forward" as allocations into the GNLP; and it does not indicate any lack of confidence in the likelihood of their being developed as permitted. Their inclusion as carried forward allocations is simply to be clear that development is imminent on these sites, that they are an important part of the planning for the area, and also a "belt and braces" approach to giving guidance for possible future applications, recognising that there is always the possibility that a new application will be submitted. Although they were not treated as "reasonable alternatives" for the Sustainability Appraisal process, their inclusion as carried forward allocations in the GNLP has had the advantage of the allocation policies themselves being included in the process, as part of the overall Plan, and so giving that check on the wording of the policies and their being in accordance with the objectives of the Plan.

The carried forward allocations that did not have planning permission were treated as reasonable alternatives for consideration under the Sustainability Appraisal process, in the same way as new potential allocations that had been identified as reasonable alternatives.

5.7 Selection and rejection of reasonable alternatives

5.7.1 **Appendix G** sets out the reasons for selection and rejection of all of the reasonable alternative sites considered through the SA process.

⁷⁶ Greater Norwich Development Partnership (2020) Part 2 – Sites Plan. Available at: <https://www.greaternorwichgrowth.org.uk/planning/greater-norwich-local-plan/andp-board/> [Date Accessed: 15/12/20]

6 The Preferred Approach

6.1 Strategic Policies

6.1.1 Following comments received during the Regulation 18 consultations and recommendations set out in the SA reports, the Councils have revisited the policies of the GNLP. The final strategic policies within the GNLP are listed in **Table 6.1** below.

Table 6.1: Policies within the GNLP

Policy ref.	Policy Name
1	The Sustainable Growth Strategy
2	Sustainable Communities
3	Environmental protection and Enhancement
4	Strategic Infrastructure
5	Homes
6	The Economy
7.1	The Norwich Urban Area including the fringe parishes
7.2	The Main Towns
7.3	The Key Service Centres
7.4	Village Clusters
7.5	Small Scale Windfall Housing Development
7.6	Preparing for New Settlements

6.1.2 These policies have been assessed in **Appendix C**. **Table 6.2** summarises the sustainability performance of the twelve policies. This table should be read in conjunction with the text narrative provided in **Appendix C**. This table is intended as an overview of the assessments in order to provide a useful indicator of sustainability performance associated with each policy.

Table 6.2: Sustainability impact matrix of the twelve strategic policies of the GNLP

Policy No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
1	--	--	-	0	++	+	+	+	+	++	++	++	+	--	0
2	+	++	+	+	+	++	+	+	+	+	+	++	+	+	+
3	+	+	++	+	0	+	0	+	0	0	0	0	++	+	+
4	-	-	0	+/-	0	+	0	+	0	++	+	++	+/-	0	+
5	0	0	0	0	++	+	+	+	0	+	0	0	0	0	0
6	-	-	0	+	0	0	0	0	0	+	++	0	0	+	0
7.1	--	--	-	0	++	++	+	+	0	++	++	+	0	--	-
7.2	--	--	-	-	++	++	+	+	0	++	++	+	0	--	-
7.3	--	--	-	-	++	+	+	-	0	+	++	-	0	--	-
7.4	-	--	-	-	++	+	+	--	0	+	-	-	0	--	-
7.5	0	0	0	+	+	0	0	0	0	0	0	0	0	+	0
7.6	-	-	-	-	++	+	+	+	+	++	++	-	-	-	-

6.2 Site Policies

6.2.1 Following the assessment of reasonable alternative development sites (see **Appendix F**), the Councils have allocated 138 sites. **Table 6.3** below lists the 138 site allocations within the GNLP.

Table 6.3: Site policies within the GNLP

Site Reference	Site Name
Norwich Residential and Non-Residential	
Norwich	
GNLP0068	Land Adjacent River Wensum, east of Duke Street
GNLP0133-BR	UEA, University Drive West (Earlham Hall)
GNLP0133-C	UEA, Cow Drive North (Blackdale Building)
GNLP0133-DR	UEA, Land south of Suffolk Walk
GNLP0133-E	UEA, Land at Strawberry Field
GNLP0282	Constitution Motors Ltd, 141-143 Constitution Hill
GNLP0360/ GNLP3053/ R10	East Norwich Strategic Regeneration Area
GNLP0401	Land Adjacent River Wensum (former EEB site) Duke Street
GNLP0409AR	Land at Whitefriars
GNLP0409BR	Land South of Barrack Street
GNLP0451	Sentinel House. 37-45 Surrey Street
GNLP0506	Anglia Square
GNLP1061R	Land known as 'Site 4', Norwich Airport
GNLP2114	Muspole Street
GNLP2163	Colegate Car Park
GNLP2164	West of Eastgate House
GNLP3054	St Mary's Works and St Mary's House
CC2	147-153 Ber Street
CC3	10-14 Ber Street
CC4a	Land at Rose Lane/Mountergate (Mountergate West)
CC4b	Land at Mountergate/Prince of Wales Road (Mountergate East)
CC7	Hobrough Lane, King Street
CC8	King Street Stores
CC10	Land at Garden Street and Rouen Road
CC11	Land at Argyle Street
CC13	Land at Lower Clarence Road
CC15	Norwich Mail Centre, 13-17 Thorpe Road
CC16	Land adjoining Norwich City Football Club north and east of Geoffrey Watling Way
CC18 (CC19)	Land at 140-154 Oak Street and 70-72 Sussex Street
CC24	Land to rear of City Hall
CC30	Westwick Street Car Park
R1	Land at the Neatmarket, Hall Road
R2	Ipswich Road Community Hub, 120 Ipswich Road
R7	John Youngs Limited, 24 City Road
R13	Site of former Gas Holder at Gas Hill
R14/15	Land at Ketts Hill and east of Bishop Bridge Road
R17	Site of former Van Dal Shoes, Dibden Road
R18	Site of former Start Rite Factory, 28 Mousehold Lane
R19	Land North of Windmill Road
R20	Land east of Starling Road
R29	Two sites at Hurricane Way, Airport Industrial Estate
R30	Land at Holt Road
R31	Heigham Water Treatment Works, Waterworks Road
R33	Site of former Earl of Leicester Public House, 238 Dereham Road
R36	Mile Cross Depot
R37	The Norwich Community Hospital Site, Bowthorpe Road
R38	Three Score, Bowthorpe

Site Reference	Site Name
R42	Land West of Bluebell Road, and north of Daisy Hill Court/Coralle Court, Westfield View
Urban Fringe Residential	
Colney	
GNLP0253	Colney Hall, Watton Road
Costessey	
GNLP0581	Land off Bawburgh Lane and New Road
GNLP2043	North of New Road, east of A47
Cringelford (including Keswick & Intwood for employment purposes)	
HOU1/ GNLP0307/ GNLP0327	Land north and south of the A11
Drayton	
DRA1	Land east of Cator Road and north of Hall Lane, Drayton
Easton and Honingham	
EAS1	Land south and east of Easton
Hellesdon	
HEL1	Hospital Grounds, Hellesdon
HEL2	Land at the Royal Norwich Golf Club, either side of Drayton High Road,
Rackheath	
GNLP0172	Land to the west of Green Lane West, Rackheath
Sprowston	
GNLP0351	Heathwood Gospel Hall, Rackheath
GNLP0132	White Land, White House Farm, off Blue Boar Lane/Salhouse Road
Taverham (including Ringland)	
GNLP0159R	Off Beech Avenue
GNLP0337R	Land between Fir Covert Road and Reepham Road
Trowse	
TROW1	Land on White Horse Lane and to the rear of Charolais Close & Devon Way
Main Towns Residential	
Aylsham (Blicking, Burgh & Tuttington and Oulton)	
GNLP0311, 0595 and 2060 (combined)	Land to the South of Burgh Road
GNLP0596R	Land at Norwich Road
GNLP0102	Frontier Agriculture Ltd, Sandy Lane
Diss (including part of Roydon)	
GNLP2108	South of Spirketts Lane
GNLP2136	Briar Farm, Mendham Lane
HAR 4	Land off Pemberton Road, Willow Walk and Lime Close, Harleston
Wymondham	
GNLP0354R	Land at Johnson's Farm
GNLP3013	North of Tuttlles Lane
Key Service Centres Residential	
Acle	
GNLP0378R and GNLP2139R	North of Norwich Road South Walsham Road
ACL1	Land north of Norwich Road
ACL2	Land to the south of Acle station (between Reedham Road and New Reedham Road)
Blofield	
GNLP2161	Norwich Camping & Leisure
BLO1	South of A47 and north of Yarmouth Road
Hethersett	
HET1 (part of GNLP0177A)	Land north and north east of Hethersett
HET2	North of Grove Road

Site Reference	Site Name
Hingham	
GNLP0503 (18C) (part)	Land north of Springfield Way and West of Dereham Road, Hingham
GNLP0520 (18C) (part)	Land to the south of Norwich Road, Hingham
Loddon and Chedgrave	
GNLP0312	Land off Beccles Road
GNLP0463R	Langley Road, Chedgrave
Reepham (Booton, Guestwick, Heydon, Salle and Wood Dalling)	
REP1	Land north and south of Broomhill Lane, Reepham
REP2	Former station yard, Station Road
Broadland Villages Residential	
Blofield Heath and Hemblington	
GNLP1048R	Land to the east of Woodbastwick Road, Blofield Heath
BLO5	Land to the north of Blofield Corner, opposite 'Heathway'
Buxton with Lamas and Brampton	
GNLP0297	Land to east of Aylsham Road
BUX 1	East of Lion Road, Buxton
Cawston, Brandiston and Swannington	
GNLP0293 (18C) (part of a larger site)	East of Gayford Road, fronting onto Aylsham Road, Cawston
CAW2	Land east of Gayford Road
Coltishall, Horstead with Stanninghall and Belaugh	
GNLP2019	South of rail line, Coltishall
COL1 ⁷⁷	Land at Rectory Road
COL2	Land east of Station Road, Coltishall
Foulsham and Themelthorpe	
GNLP0605	Land west of Foundry Close
Freethorpe, Halvergate and Wickhampton	
GNLP2034	South of Bowlers Close
FRE1	North of Palmer's Lane, Freethorpe
Great Witchingham, Lenwade, Weston Longville, Alderford, Attlebridge, Little Witchingham and Morton on the Hill	
GNLP0608R	Bridge Farm Field, St Faiths Close, Great Witchingham
Horsford, Felthorpe and Haveringland	
GNLP0264	Land at Dog Lane
Horsham and Newton St Faith	
GNLP0125R	Land to the west of West Lane
HNF1	Land east of Manor Road, Horsham and Newton St Faith
Lingwood and Burlingham, Strumpshaw and Beighton	
GNLP0380	West of Blofield Road, Lingwood
GNLP4016 (part)	East of Station Road, Lingwood
Marsham	
GNLP2143	South of Le Neve Road
Reedham	
GNLP1001	Land to East of Station Road
GNLP3003 (18C) (part of a larger site)	Mill Road, Reedham
Salhouse, Woodbastwick and Ranworth	
GNLP0188	Site adjoining Norwich Road
South Walsham and Upton with Fishley	
GNLP0382	Land north of Chamery Lane

⁷⁷ There are two sites with the reference 'COL1'. This site will be referred to as 'COL1 [Res]'

Site Reference	Site Name
SWA1	Land east of Main Road, Swardeston
Urban Fringe non-Residential	
Colney (Strategic Employment Area)	
GNLP0331RB	South of NRP extension
GNLP0331RC	South of NRP extension
COL 1 ⁷⁸	Adjacent to Norwich Research Park (NRP)
COL 2/ GNLP0140-C	Land rear/east of Institute of Food Research (IFR)
COL 3	Colney Development Boundary
BAW 2	Bawburgh and Colney Lakes
Costessey	
COS 3/ GNLP2008	Longwater Employment Area, Costessey
COS 4	Costessey Longwater Development Boundary
COS 5 / GNLP2074	Royal Norfolk Showground
Cringelford (including employment land at Keswick)	
KES 2 (including GNLP0497)	Land west of Ipswich Road, Keswick
Hellesdon	
HEL3/ GNLP1020	North east of St Marys Church, Hellesdon
HEL4/ GNLP1019	Land northeast of Reepham Road, Hellesdon
Main Towns Non-Residential	
Aylsham (including Blickling, Burgh & Tuttington and Oulton)	
AYL3	Land at Dunkirk Industrial Estate (west), south of Banningham Road
AYL4	South of Banningham Road, Aylsham
Redenhall with Harleston (including well related parts of Needham)	
HAR 5	Land east of Station Hill, Harleston
HAR 6	Land north of Spirketts Lane, Harleston
HAR 7	South of Spirketts Lane, Harleston
Hethel (Strategic Employment Area)	
GNLP2109	South of Hethel Industrial Estate
HETHEL 1	Hethel Strategic Employment Area
HETHEL 2	South and west of Lotus, Hethel
Key Service Centres Non-Residential	
Acle	
ACL3	Former Station Yard, Acle
Brundall	
BRU2	Land north of Berryfields, Brundall
BRU3	Land east of the Memorial Hall, Brundall
Hethersett	
HET 3	Land west of Poppyfields
Hingham	
HIN2	Land north of Norwich Road, Hingham
Loddon and Chedgrave	
LOD 3	Loddon Industrial Estate
Poringland, Framingham Earl and Framingham Pigot (including well related parts of Bixley, Caistor St Edmund and Stoke Holy Cross)	
POR3	Ex-MOD site, Pine Loke, Poringland
Broadland Villages Non-Residential	
Cawston, Brandiston and Swannington	
CAW1	Land to the west of the existing cemetery, Cawston
Foulsham and Themelthorpe	
FOU2	Land at Old Railway Yard, Station Road, Foulsham

⁷⁸ There are two sites with the reference 'COL1'. This site will be referred to as 'COL1 [Emp]'

Site Reference	Site Name
Horsham and Newton St Faith	
HNF2/ GNLP0466R	Land east of the A140 and north of Norwich International Airport, Horsham St Faith
GNLPSL2007R/ GNLP4061/ HNF3	Land at Abbey Farm Commercial, Horsham St Faith
South Norfolk Villages Non-Residential	
BKE3	Brooke Industrial Estate

6.2.2 **Table 6.4** below provides a summary of the sustainability performance of the 138 allocated sites. This table should be read in conjunction with the text narrative provided in **Appendix F**. This table is intended as an overview of the assessments in order to provide a useful indicator of sustainability performance associated with each site.

Table 6.4: Sustainability impact matrix of the 138 site policies of the GNLP

Policy Number	SA Objective														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
NORWICH CITY															
Norwich															
GNLP0068	-	0	0	+	+	+	+	-	+	++	+	++	0	+	0
GNLP0133BR	-	+	0	0	0	+	+	++	+	++	++	++	0	0	0
GNLP0133C	0	+	0	0	+	+	+	++	+	0	+	+	0	+	0
GNLP0133DR	-	+	0	0	0	+	+	++	+	+	++	+	0	0	0
GNLP0133E	0	0	0	0	+	+	+	++	+	0	+	+	0	0	0
GNLP0282	0	+	0	0	+	+	+	+	+	++	+	+	0	+	0
GNLP0360/ GNLP3053/ R10	-	-	0	0	++	+	+	-	+	++	++	++	0	+	0
GNLP0401	-	-	0	0	++	+	+	-	+	++	++	++	0	+	0
GNLP0409AR	-	-	0	0	++	+	+	-	+	++	++	++	+	+	0
GNLP0409BR	-	-	0	0	++	+	+	-	+	++	++	++	0	+	0
GNLP0451	-	+	0	+	+	+	+	-	+	++	+	++	0	+	0
GNLP0506	-	-	0	+	++	++	+	-	+	++	++	++	0	+	0
GNLP1061	-	0	0	0	0	+	0	-	0	+	++	+	0	-	0
GNLP2114	-	-	0	0	++	+	+	-	+	++	++	++	0	+	0
GNLP2163	-	0	0	+	+	+	+	-	+	++	+	++	0	+	0
GNLP2164	-	+	0	+	+	+	+	-	+	++	+	++	0	+	0
GNLP3054	-	-	0	0	++	+	+	-	+	++	++	++	0	+	0
CC2	-	+	0	+	+	+	+	-	+	++	+	++	0	+	0
CC3	-	+	0	+	+	+	+	-	+	++	++	++	0	+	0
CC4a	-	0	0	+	+	++	+	-	+	++	++	++	0	+	0
CC4b	-	-	0	0	++	++	+	-	+	++	++	++	0	+	0
CC7	-	0	0	0	+	++	+	-	+	++	++	++	+	+	0
CC8	-	+	0	+	+	+	+	-	+	++	+	++	0	+	0
CC10	-	-	0	0	++	+	+	-	+	++	++	++	0	+	0
CC11	-	0	0	0	+	+	+	-	+	++	+	++	0	+	0
CC13	-	+	0	0	+	+	+	-	+	++	+	++	0	+	0

Policy Number	SA Objective														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
CC15	-	-	0	0	++	+	+	-	+	++	++	++	0	+	0
CC16	-	-	0	+	++	++	+	-	+	++	++	++	0	+	0
CC18 (CC19)	-	+	0	+	+	+	+	-	+	++	+	++	0	+	0
CC24	-	0	0	0	+	+	+	-	+	++	++	++	0	+	0
CC30	-	0	0	+	+	+	+	-	+	++	+	++	0	+	0
R1	-	+	0	0	0	+	+	+	+	0	++	+	0	+	0
R2	-	+	0	0	+	++	+	-	+	++	+	+	0	+	0
R7	-	+	0	0	+	+	+	-	+	++	+	++	0	+	0
R13	-	+	0	0	+	+	+	-	+	++	+	++	0	+	0
R14/R15	-	-	0	0	+	+	+	-	+	++	+	++	0	+	0
R17	-	+	0	0	+	+	+	+	+	++	+	++	0	+	0
R18	-	+	0	0	+	+	+	-	+	++	+	+	0	+	0
R19	-	0	0	0	+	+	+	-	+	++	+	+	0	0	0
R20	-	+	0	0	+	+	+	-	+	++	+	++	0	+	0
R29	-	0	0	0	+	+	+	+	+	+	++	+	0	0	0
R30	-	0	0	0	0	+	+	-	+	0	++	+	0	0	0
R31	-	0	0	0	+	+	+	-	+	++	+	+	0	+	0
R33	-	0	0	0	+	+	+	-	+	++	+	+	0	0	0
R36	-	-	0	+	++	++	+	-	+	++	+	+	0	+	0
R37	-	-	0	0	+	+	+	+	+	++	++	+	0	+	0
R38	-	-	0	0	++	+	+	++	+	+	+	+	0	-	0
R42	-	-	0	0	++	+	+	++	+	0	++	+	0	0	0

URBAN FRINGE															
Colney Strategic Employment Area															
BAW2	0	0	0	+	0	0	0	+	0	0	0	+	0	0	-
COL1	-	+	0	-	0	+	+	++	+	0	++	+	0	-	0
GNLP0140C/ COL2	-	+	0	+	0	+	+	++	+	0	++	+	0	0	-
COL3	0	0	0	0	0	+	0	+	0	0	+	+	0	+	0
GNLP0253	-	-	0	-	++	+	+	++	+	0	++	+	0	0	-
GNLP0331BR	-	+	0	-	0	+	+	++	+	0	++	+	0	0	0
GNLP0331CR	-	+	0	-	0	+	+	+	+	0	++	+	0	0	0
Costessey															
COS3/ GNLPSL2008	-	0	0	0	0	+	+	+	+	0	++	+	0	0	0
COS4	0	0	0	0	0	+	0	+	0	0	+	+	0	0	0
COS5/ GNLP2074	0	0	0	0	0	++	0	+	0	0	++	+	0	-	0
GNLP0581/ GNLP2043	-	-	0	-	++	++	+	+	+	++	++	+	0	-	0
Cringelford															
HOU1/ GNLP0307/ GNLP0327	-	-	0	-	++	+	+	+	+	++	+	+	0	-	-
KES2/ GNLP0497	-	0	0	-	0	+	+	-	+	0	++	+	0	0	0
Drayton															

Policy Number	SA Objective														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
DRA1	-	-	0	-	++	++	+	+	+	+	+	-	0	0	0
Easton and Honingham															
EAS1	-	-	0	-	++	++	+	+	+	+	+	+	0	-	0
Hellesdon															
HEL1	-	-	0	+	++	+	+	-	+	++	++	+	0	0	0
HEL2	-	-	0	0	++	+	+	-	+	++	+	+	0	-	0
HEL3/ GNLP1020	0	+	0	0	0	0	0	0	0	0	0	0	0	0	0
HEL4/ GNLP1019	0	+	0	+	0	0	0	+	0	0	0	0	0	0	0
Rackheath															
GNLP0172	-	-	0	-	++	+	+	-	+	+	+	+	0	0	0
GNLP0351	-	+	0	0	+	+	+	-	+	+	+	+	0	+	0
Sprowston															
GNLP0132	-	-	0	-	++	+	+	-	+	++	+	+	0	-	0
Taverham															
GNLP0159R	-	+	0	0	+	+	+	+	+	+	+	-	0	0	0
GNLP0337R	-	-	0	-	++	++	+	+	+	++	++	-	0	-	0
Trowse															
TROW1	-	-	0	0	++	+	+	+	+	++	+	++	0	0	-
MAIN TOWNS															
Aylsham															
AYL3	0	+	0	0	0	+	+	-	+	0	++	-	0	0	0
AYL4	-	+	0	0	0	+	+	-	+	0	++	-	0	0	0
GNLP0311/ GNLP0595/ GNLP2060	-	-	0	-	++	+	+	-	+	++	+	-	0	0	0
GNLP0596R	-	-	0	-	++	+	+	-	+	++	+	+	0	0	0
Diss															
GNLP0102	-	-	0	+	++	+	+	-	+	++	+	++	0	+	0
Hethel Strategic Employment Area															
GNLP2109	0	+	0	0	0	+	+	+	+	0	++	+	0	0	0
HETHEL1	0	0	0	0	0	+	0	+	0	0	+	+	0	0	0
HETHEL2	-	+	0	-	0	+	+	+	+	0	++	+	0	0	0
Redenhall with Harleston															
GNLP2108	-	-	0	-	++	+	+	-	+	+	+	-	0	0	0
GNLP2136	-	-	0	-	++	++	+	-	+	++	++	-	0	-	0
HAR4	-	-	0	0	+	+	+	-	+	+	+	-	0	0	0
HAR5	-	+	0	0	0	+	+	-	+	0	++	-	0	0	-
HAR6	-	+	0	0	0	+	+	-	+	0	++	-	0	+	0
HAR7	-	+	0	-	0	+	+	-	+	0	++	-	0	0	0
Wymondham															
GNLP0354R	-	-	0	-	++	+	+	+	+	+	+	++	0	0	0
GNLP3013	-	+	0	0	+	+	+	+	+	++	+	+	0	0	0
KEY SERVICE CENTRES															
Acle															

Policy Number	SA Objective														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
ACL1	-	-	0	-	++	+	+	-	+	+	+	++	0	0	0
ACL2	-	+	0	0	+	+	+	-	+	+	++	++	0	0	0
ACL3	-	+	0	0	0	+	+	-	+	0	++	++	0	+	0
GNLP0378R/ GNLP2139R	-	-	0	-	++	++	+	-	+	+	+	++	0	-	0
Blofield															
BLO1	-	-	0	0	++	++	+	-	+	+	++	+	0	0	0
GNLP2161	-	+	0	0	+	+	+	-	+	+	+	++	0	0	0
Brundall															
BRU2	0	+	0	+	0	0	0	+	0	0	0	+	0	0	0
BRU3	0	+	0	+	0	0	0	+	0	0	0	+	0	0	0
Hethersett															
GNLP0177A/ HET1	-	-	0	-	++	++	+	++	+	++	+	+	0	-	0
HET2	-	0	0	0	+	+	+	++	+	0	++	+	0	0	0
HET3	0	+	0	+	0	0	0	+	0	0	0	0	0	0	0
Hingham															
GNLP0503	-	0	0	-	+	+	+	-	+	+	+	-	0	0	0
GNLP0520	-	-	0	-	+	+	+	-	+	+	+	-	0	0	0
HIN2	-	0	0	0	0	+	+	-	+	0	++	-	0	0	0
Loddon and Chedgrave															
GNLP0312	-	-	0	-	++	+	+	-	+	++	+	-	0	0	0
GNLP0463R	-	0	0	-	+	+	+	-	+	+	+	-	0	0	0
LOD3	-	+	0	0	0	+	+	-	+	0	++	-	0	0	-
Porringland															
POR3	-	+	0	-	0	+	+	-	+	0	++	+	0	0	0
Reepham															
REP1	-	-	0	-	++	++	+	-	+	++	+	-	0	0	0
REP2	-	0	0	0	+	+	+	-	+	+	++	-	0	0	0
BROADLAND VILLAGES															
Blofield Heath															
BLO5	-	+	0	0	+	+	+	-	+	+	+	+	0	0	0
GNLP1048R	-	+	0	0	+	+	+	-	+	+	+	+	0	0	0
Buxton-with-Lamas															
BUX1	-	+	0	-	+	+	+	-	+	+	+	-	0	0	0
GNLP0297	-	+	0	-	+	+	+	-	+	+	+	-	0	0	0
Cawston															
CAW1	0	+	0	0	0	0	0	0	0	0	0	0	0	0	0
CAW2	-	+	0	-	+	+	+	-	+	+	+	-	0	0	0
GNLP0293	-	+	0	-	+	+	+	-	+	+	+	-	0	0	0
Coltishall															
COL1	-	0	0	-	+	+	+	-	+	+	+	+	0	0	0
COL2	-	0	0	0	+	+	+	-	+	+	+	+	0	0	0
GNLP2019	-	+	0	-	+	+	+	-	+	+	+	+	0	0	0
Foulsham															
FOU2	-	0	0	0	0	+	+	-	+	0	++	-	0	0	0
GNLP0605	-	+	0	-	+	+	+	-	+	+	+	-	0	0	0

Policy Number	SA Objective														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity, Geodiversity & GI	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport & Access to Services	Historic Environment	Natural Resources, Waste & Contaminated Land	Water
Freethorpe															
FRE1	-	+	0	-	+	+	+	-	+	+	+	+	0	0	0
GNLP2034	-	+	0	-	+	+	+	-	+	+	+	+	0	0	0
Great Witchingham															
GNLP0608R	-	+	0	-	+	+	+	-	+	+	+	-	0	0	-
Horsford															
GNLP0264	-	0	0	0	+	+	+	-	+	+	+	-	0	+	0
Horsham St Faith															
GNLP0125R	-	+	0	-	+	+	+	-	+	+	+	-	0	0	0
HNF1	-	-	0	0	+	+	+	-	+	+	+	-	0	0	0
GNLP0466R/ HNF2	-	+	0	-	0	+	+	-	+	0	++	+	0	-	0
GNLPSL2007R/ GNLP4061/ HNF3	-	+	0	-	0	+	+	-	+	0	++	-	0	0	0
Lingwood															
GNLP0380	-	0	0	-	+	+	+	-	+	+	+	++	0	0	0
GNLP4016	-	+	0	-	+	+	+	-	+	+	+	++	0	0	0
Marsham															
GNLP2143	-	+	0	-	+	+	+	-	+	+	+	-	0	0	0
Reedham															
GNLP1001	-	+	0	0	+	+	+	-	+	+	+	+	0	0	0
GNLP3003	-	+	0	0	+	+	+	-	+	+	+	+	0	0	-
Salhouse															
GNLP0188	-	+	0	0	+	+	+	-	+	+	+	++	0	0	0
South Walsham															
GNLP0382	-	+	0	-	+	0	+	-	+	+	+	-	0	0	0
SWA1	-	+	0	-	+	0	+	-	+	+	+	-	0	0	0
SOUTH NORFOLK VILLAGES															
Non-Residential Sites															
BKE3	-	0	0	0	0	+	+	-	+	0	++	-	0	+	-

6.3 Whole plan appraisal

6.3.1 The following chapters present an assessment of the likely significant effects associated with the GNLP in relation to the following topics:

- Air (**Chapter 7**);
- Biodiversity, flora and fauna (**Chapter 8**);
- Climatic factors (**Chapter 9**);
- Cultural heritage (**Chapter 10**);
- Human health (**Chapter 11**);
- Landscape (**Chapter 12**);
- Population and material assets (**Chapter 13**);
- Soil (**Chapter 14**); and
- Water (**Chapter 15**).

6.3.2 Each of the topic sections are presented in terms of baseline, impacts, mitigation and residual effects, where appropriate. The topics have been appraised in terms of plan-wide impacts and draw on all aspects of the SA process, including the findings presented for the assessment of strategic policies and site policies (see **Appendices C and F**). The assessments include consideration of the impacts arising as a consequence of the inter-relationship between the different topics and identify secondary, cumulative and synergistic effects where they arise.

7 Air

7.1 Baseline

7.1.1 A number of substances when released to the air can have harmful impacts on sensitive receptors such as vulnerable individuals and sensitive habitats. The impact of air pollution depends on how many airborne particulates are emitted, how harmful they are and how they may interact with other substances in the air⁷⁹. Numerous airborne particulates are associated with motorised vehicles, energy production and industrial processes some of which are known to adversely impact ecosystem health, many of which are subtle, but long-term⁸⁰.

7.1.2 Poor air quality is directly linked to mortality, such as through heart disease, lung disease and various cancers. In particular, vulnerable groups susceptible to the impacts of air pollution include children and older people, and those with heart and lung conditions. Particulate matter (PM) are particles within the air that are invisible to the naked eye. The smaller the particles, the greater the threat they represent to human health. PM is predominantly associated with vehicular emissions, although agriculture, combustion from domestic heating and the construction industry are also significant sources. The fraction of mortality within Norwich is higher than Broadland and South Norfolk, and higher the average for the East of England (see **Table 7.1**)⁸¹.

Table 7.1: Rates of mortality associated with long-term exposure to air borne particulates in 2015⁸²

Region	Mortality associated with air pollution
Broadland	4.9
Norwich	5.9
South Norfolk	4.8
East of England	5.1
England	4.7

⁷⁹ Defra (2019) Clean Air Strategy 2019. Available at: <https://www.gov.uk/government/publications/clean-air-strategy-2019> [Date Accessed: 22/10/20]

⁸⁰ IAQM (2017) Land-Use Planning & Development Control: Planning for Air Quality. Available at: <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [Date Accessed: 22/10/20]

⁸¹ NHS England (2017) Fraction of mortality attributable to particulate air pollution. Available at: <https://data.england.nhs.uk/dataset/phe-indicator-30101/resource/5ae3ced3-1029-42d3-bdf0-b3ea81651370> [Date Accessed: 22/10/20]

⁸² Ibid

- 7.1.3 Poor air quality, and in particular excess atmospheric nitrogen deposition, can lead to a variety of impacts on the natural environment which can result in losses of biodiversity⁸³. Whilst nitrogen is a major growth nutrient for plants, too much nitrogen can cause eutrophication, acidification and toxicity and is generally accepted as one of the main drivers of biodiversity change across the globe⁸⁴.
- 7.1.4 Local Authorities in the UK have a responsibility under Local Air Quality Management (LAQM) legislation to monitor and report on Air Quality to Defra. The Air Quality Action Plan for Norwich⁸⁵ sets out how the Council reviewed and assessed the air quality in the City to determine whether certain air pollutants are likely to meet prescribed government air quality objectives. In addition, Broadland and South Norfolk have prepared a combined Air Quality Annual Status Report⁸⁶ and Norwich City a separate report⁸⁷.
- 7.1.5 Where an authority finds that National Air Quality Objectives⁸⁸ are not likely to be met, the authority must establish an Air Quality Management Area (AQMA) and implement an Air Quality Action Plan in order to improve air quality. There is currently only one AQMA within the Plan area: Central Norwich AQMA⁸⁹ (see **Figure 7.1**).
- 7.1.6 It is widely accepted that the effects of air pollution from road transport decreases with distance from the source of pollution. The Department for Transport (DfT) in their Transport Analysis Guidance (TAG) consider that, “*beyond 200m from the link centre, the contribution of vehicle emissions to local pollution levels is not significant*”⁹⁰. This statement is supported by Highways England and Natural England based on evidence presented in a number of research papers^{91 92}.

⁸³ Sala, O. E.; *et al.*, (2000) Global biodiversity scenarios for the year 2100. *Science*. 287 :1770-1774

⁸⁴ Air Pollution Information System (2016) Nitrogen Oxides (NOx). Available at: http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm [Date Accessed: 22/10/20].

⁸⁵ Norwich City Council (2015) Local Air Quality Management, Air Quality Action Plan. Available at: <http://agma.defra.gov.uk/action-plans/airqualityactionplan20152.pdf> [Date Accessed: 10/11/20]

⁸⁶ Broadland District Council and South Norfolk District Council (2019) 2019 Air Quality Annual Status Report. Available at: https://www.broadland.gov.uk/downloads/file/5394/air_quality_annual_status_report_2019 [Date Accessed: 22/10/20]

⁸⁷ Norwich City Council (2019) 2019 Air Quality Annual Status Report. Available at: https://www.norwich.gov.uk/downloads/file/5582/2019_air_quality_annual_status_report [Date Accessed: 22/10/20]

⁸⁸ Defra (no date) UK and EU Air Quality Limits. available at: <https://uk-air.defra.gov.uk/air-pollution/uk-eu-limits> [Date Accessed: 22/10/20]

⁸⁹ Department for Environment Food and Rural Affairs (2020) AQMAs Declared by Norwich City Council. Available at: https://uk-air.defra.gov.uk/agma/local-authorities?la_id=187 [Date Accessed: 22/10/20]

⁹⁰ Department for Transport (2019) TAG unit A3 Environmental Impact Appraisal. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825064/tag-unit-a3-environmental-impact-appraisal.pdf [Date Accessed: 22/10/20]

⁹¹ Bignal, K., Ashmore, M & Power, S. (2004) The ecological effects of diffuse air pollution from road transport. English Nature Research Report No. 580, Peterborough.

⁹² Ricardo-AEA (2016) The ecological effects of air pollution from road transport: an updated review. Natural England Commissioned Report No. 199.

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- 7.1.7 There are no motorways which pass across the Plan area. There is a network of A-roads which provide good road access to Norwich City and its surroundings; towards the Norfolk coastline and towards Ipswich, Cambridge and Peterborough such as A140, A11 and A47 (see **Figure 7.2**).
- 7.1.8 The issue of air quality was taken into account under SA Objective 1, which seeks to minimise air, noise and light pollution to improve wellbeing. Indicators of this objective include the number of residents in areas of poor air pollution, proximity to pollutants (e.g. main roads and railway lines) and proximity to AQMAs.

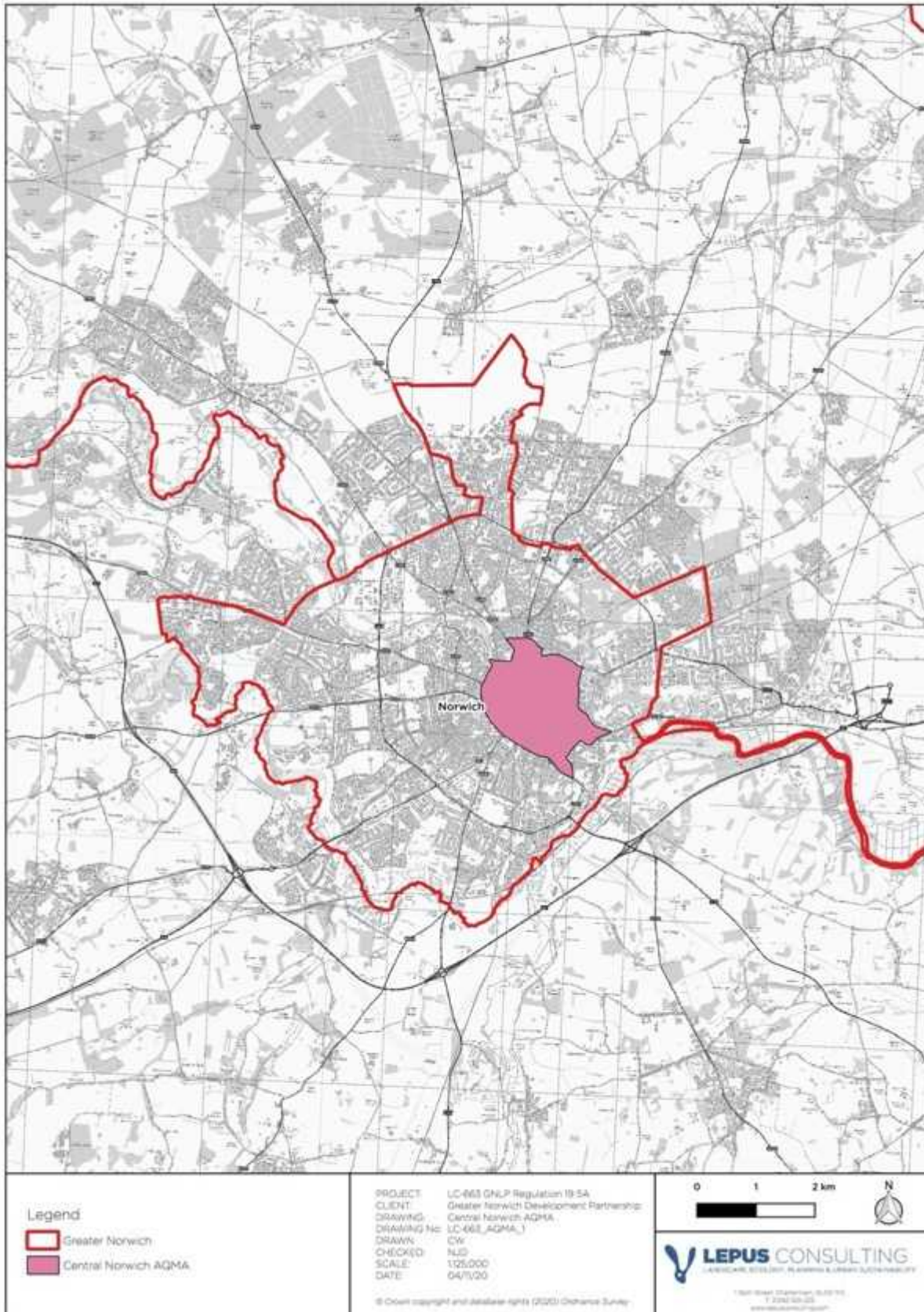


Figure 7.1: Central Norwich AQMA (source: DEFRA)

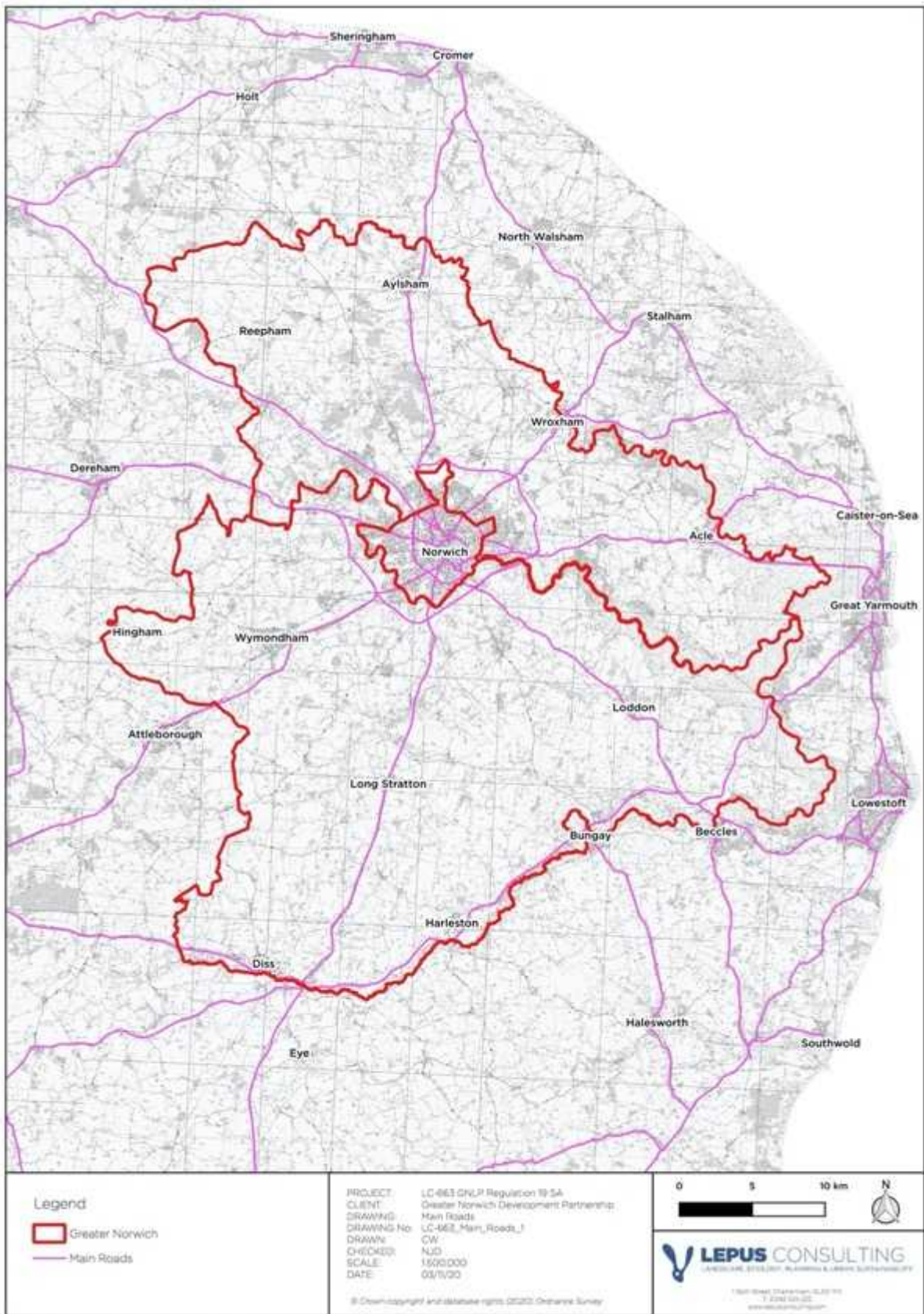


Figure 7.2: Main roads in and around the Plan area (source: Ordnance Survey)

7.2 Impacts on air

7.2.1 **Box 7.1** sets out a plan-wide summary of the likely impacts on air that have been identified through the SA process. These impacts are those identified prior to the consideration of mitigation in the form of GNLP policies and Local Plan DM policies. **Box 7.2** lists the GNLP strategic and site policies, as well as Local Plan DM policies for the three districts which would be likely to mitigate, either fully or partially, some of the identified impacts. Policies which would improve identified impacts have also been listed. Where mitigating policies or proformas are silent, or the contents of the GNLP only partially mitigates the adverse impacts, a residual adverse effect is identified. **Box 7.3** explores the nature of these residual effects.

Box 7.1: Summary of identified impacts on air

Reduction in air quality with implication on human health and biodiversity

The proposed development within the GNLP would be likely to situate approximately 64 allocated sites are located within 200m of a main road, most of which are within Norwich city. A total of 21 allocated sites are coincident with the Central Norwich AQMA. The proposed development in these locations would be likely to situate new residents in areas where air quality is below the National Air Quality Objectives⁹³. This could potentially have negative impacts on the health of local residents, with children, the elderly and those of poor health identified as the most vulnerable.

It should also be noted that the proposed development within, or in close proximity to, AQMAs, would be likely to make it more difficult to achieve National Air Quality Objectives in these areas.

1 The proposed development within the GNLP would be likely to increase the volume of traffic within the Plan area. This would be likely to result in an increase in traffic-related emissions and consequently, further decrease air quality within Greater Norwich. This would be expected to have negative health implications for current and new residents.

A reduction in local air quality, due to the construction and occupation of new dwellings, could potentially result in adverse impacts on local biodiversity assets and habitats. The occupation of new dwellings would be expected to increase local traffic volumes and, in turn, result in increased traffic-related emissions. An increase in air pollution from vehicle emissions could potentially have adverse impacts on biodiversity assets through mechanisms such as eutrophication, acidification and toxicity. Some sensitive ecosystems, including the Broads SAC and Broadland SPA and Ramsar are identified to be vulnerable to the impact of atmospheric nitrogen deposition, which would be expected with an increase in vehicular emissions

Increased pollutant emissions

2 The proposed development within the GNLP would be likely to increase the volume of traffic within the Plan area, and as a result, associated transport-related emissions including NO₂ and PM₁₀ would be released into the atmosphere, with detrimental effects on local air quality.

⁹³ Defra (no date) UK and EU Air Quality Limits. available at: <https://uk-air.defra.gov.uk/air-pollution/uk-eu-limits> [Date Accessed: 18/11/20]

7.3 Local Plan mitigation

- 7.3.1 The GNLP proposes the development of 49,492 dwellings over the Plan period. GNLP and adopted Local Plan DM policies aim to prevent the reduction of local air quality and seek to mitigate the impact of air pollution. Many of the policies also aim to promote sustainable transport use, reduce residents' reliance on personal car use and promote the provision of green infrastructure. Policies which would be expected to help mitigate the impact of development on air quality are presented in **Box 7.2**. The effects of the GNLP on biodiversity is discussed further in **Chapter 8** and matters in relation to human health discussed further in **Chapter 11**.

Box 7.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on air

Reduction in air quality

GNLP Policies 2 and 4 would help to ensure that the proposed development seeks to minimise pollution and protect air quality.

GNLP Policy 2 could potentially reduce local air pollution through the promotion of electric vehicle infrastructure, and the requirement for major developments to submit a Sustainability Statement.

GNLP Policy 4 aims to support the promotion of sustainable transport through the Transport for Norwich Strategy⁹⁴, which would be expected to help reduce local air pollution by reducing personal car use.

Policies EN4 (Broadland), DM3.14 (South Norfolk), DM2 and DM11 (Norwich) seek to ensure that development proposals are adequately protected from air pollution and do not generate unacceptable levels of air pollution.

Site Policies GNLP0068, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0506, GNLP3054, CC2 and CC30 require air quality assessments to be carried out.

Numerous site policies CC3, CC16, GNLP0133-BR, GNLP0133-DR, GNLP0133-E, GNLP0282, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0506, GNLP0608, GNLP2114, GNLP2163, GNLP2164, GNLP3054, R7, R13, R14/R15 and R33 would be likely to reduce personal vehicle use.

Increased pollutant emissions

GNLP Policy 4 aims to encourage the integration of sustainable transport options in the design of new development, and therefore, contribute towards a reduction in traffic related emissions.

Policies GC4, H5, TS1, TS2 (Broadland), DM1.2, DM3.10 (South Norfolk), DM12, DM14, DM18, DM26, DM27, DM28 and DM33 (Norwich) would be expected to encourage sustainable travel through ensuring sites are accessible via a range of public transport and pedestrian links.

Site Policies ACL1, ACL2, BAW2, BLO5, BRU2, BRU3, BUX1, CAW2, CC4a, CC4b, CC7, CC15, CC16, CC24, CC30, COL1 [Emp], COL1 [Res], COL2, COL3, COS3/GNLP2008, COS5/GNLP2074, DRA1, EAS1, GNLP0102, GNLP0125, GNLP0132, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0172, GNLP0188, GNLP0253, GNLP0264, GNLP0293, GNLP0297, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0331RB, GNLP0331RC, GNLP0337R, GNLP0351, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0382, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0503, GNLP0506, GNLP0520, GNLP0581/2043, GNLP0596R, GNLP0605, GNLP0608, GNLP1001, GNLP1048R, GNLP2034, GNLP2108, GNLP2114, GNLP2136, GNLP2143, GNLP3003, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HEL1, HEL2, HEL4/GNLP1019, HET1, HETHEL2, HNF1, HNF2/GNLP0466R, KES2, R1, R2, R7, R17, R18, R19, R29, R30, R36, R37, R38, REP1, REP2 and TROW1 would be likely to increase the use of public transport or travel by walking or cycling.

⁹⁴ Norfolk County Council (2020) About Transport for Norwich. Available at: <https://www.norfolk.gov.uk/roads-and-transport/major-projects-and-improvement-plans/norwich/city-centre-improvements/about-transport-for-norwich> [Date Accessed: 28/10/20]

7.4 Residual effects on air

7.4.1 Following the adoption of the GNLP and continued implementation of Local Plan DM policies, residual adverse effects on air quality would be anticipated. This is primarily in relation to a likely increase in vehicles and traffic-associated emissions. Further details are presented in **Box 7.3**.

Box 7.3: Residual effects for air

Identified impact	Residual effects
Reduction in air quality	<p>Over time, advances in technologies would be expected to help reduce the volume of pollutants released into the atmosphere from vehicles. This may be in the form of replacing petrol and diesel cars with electric cars and promoting the use of other sustainable transport options rather than personal car use. Advances in legislation, national policy and behavioural changes would also be expected to lead to improvements in local air quality. Strategies implemented through the Local Transport Plan⁹⁵ and AQMA Air Quality Action Plan⁹⁶ would complement GNLP policies. The Clean Air Strategy⁹⁷ also sets out strategies to reduce emissions. Together, this would be expected to target specific mitigation and reduce air pollution due to development, to some extent.</p> <p>The introduction of some 110,367 new residents under the GNLP would be expected to increase vehicle emissions in the Plan area. The policies outlined in Box 7.2 would be expected to reduce the likelihood of adverse impacts occurring and could potentially help reduce these adverse impacts. However, due to the volume of development proposed, an increase in traffic flows and subsequent reduction of air quality would be expected to have residual adverse effects.</p> <p>A reduction in air quality across the Plan area would be expected to be a long-term but temporary significant effect.</p>
Increased pollutant emissions	<p>Whilst the policies outlined in Box 7.2 would be expected to reduce the likelihood of adverse impacts occurring, an increase in pollutants including NO₂ and PM₁₀ would be expected following the development proposed within the GNLP. The introduction of 110,367 residents would be expected to increase traffic volumes and energy demand, which would be expected to result in an increase of pollutant emissions and resulting in a worsening of air quality. However, it would be expected that over time, advances in technologies and alternative solutions to energy generation would be expected to reduce this adverse impact by some extent.</p> <p>An increase in pollutant emissions in Greater Norwich would be likely to be a long-term but potentially temporary significant effect.</p>

⁹⁵ Norfolk County Council (2011) Norfolk Local Transport Plan 2011 -2026. Available at: <https://www.norfolk.gov.uk/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/roads-and-travel-policies/local-transport-plan> [Date Accessed: 18/11/20]

⁹⁶ Norwich City Council (2015) Local Air Quality Management, Air Quality Action Plan. Available at: <http://aqma.defra.gov.uk/action-plans/airqualityactionplan20152.pdf> [Date Accessed: 18/11/20]

⁹⁷ DEFRA (2019) Clean Air Strategy 2019. Available at: <https://www.gov.uk/government/publications/clean-air-strategy-2019> [Date Accessed: 18/11/20]

8 Biodiversity, flora and fauna

8.1 Baseline

- 8.1.1 Individually and collectively, 'ecosystem services' provide significant environmental, economic and social benefits that support sustainable development and prosperous communities⁹⁸. The range of ecosystem services provided by the natural environment can include crop production, water regulation, climate regulation, green energy and spaces for recreation and education.
- 8.1.2 Paragraph 170 of the NPPF⁹⁹ states that *"planning policies and decisions should contribute to and enhance the natural and local environment by ... recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services"*.
- 8.1.3 The Plan area's natural capital (i.e. its natural resources and ecological processes that contribute to human welfare) yield the flow of valuable ecosystem services into the future. Flows of ecosystem services are diminished when natural capital is degraded.
- 8.1.4 The 2011 White Paper 'The Natural Choice: securing the value of nature'¹⁰⁰ highlighted a continued loss of biodiversity in the UK, increasing fragmentation of habitats and a need for coordinated action across sectors to put the value of nature at the heart of decision making.
- 8.1.5 The 'State of Nature'¹⁰¹ report documents that since the 1970s there has been a 13% decline in average species abundance, 5% decline in average species distribution and that 41% of species have decreased in abundance. Pressures that have caused the net loss of biodiversity include intensification of agricultural land management, an increase in average temperatures and the urbanisation of the countryside for residential development.

⁹⁸ UK National Ecosystem Assessment (2012) Millennium Ecosystem Assessment. Available at: <http://uknea.unep-wcmc.org/About/ConceptualFramework/MillenniumEcosystemAssessment/tabid/112/Default.aspx> [Date Accessed: 22/10/20]

⁹⁹ MHCLG (2019) National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Date Accessed: 22/10/20]

¹⁰⁰ Defra (2011) The Natural Choice: securing the value of nature. Available at: <https://www.gov.uk/government/publications/the-natural-choice-securing-the-value-of-nature> [Date Accessed: 22/10/20]

¹⁰¹ State of Nature Partnership (2019) State of Nature 2019. Available at: <https://nbn.org.uk/wp-content/uploads/2019/09/State-of-Nature-2019-UK-full-report.pdf> [Date Accessed: 22/10/20]

8.1.6 Species loss has largely been the result of climate change and land use change induced habitat loss¹⁰², a phenomenon which leads to a reduction in total habitat area and increasingly fragmented habitats¹⁰³. The movement of species between fragmented habitats is restricted by barriers, such as roads, fences and buildings, which leads to populations of species being isolated in small gene pools¹⁰⁴. The consequences of this are local extinctions, which erodes the resilience of ecosystems and undermines their functions and service provision¹⁰⁵.

Internationally and European designated sites

8.1.7 European sites provide valuable ecological infrastructure for the protection of rare, endangered and/or vulnerable natural habitats and species of exceptional importance within the EU. These sites consist of Special Areas of Conservation (SACs), designated under European Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive), and Special Protection Areas (SPAs), classified under European Directive 2009/147/EC on the conservation of wild birds (the Birds Directive). Additionally, paragraph 176 of the NPPF requires that sites listed under the Ramsar Convention (The Convention on Wetlands of International Importance, especially as Waterfowl Habitat) are to be given the same protection as fully designated European sites.

8.1.8 The area within which development proposals could potentially have direct, indirect and in-combination impacts on the integrity of a European site is referred to as the Zone of Influence (Zoi). Sometimes, a specific geographic zone has been determined on the basis of an analysis of survey data and consideration of sensitive receptors at each European site, known as its qualifying features. Beyond any geographic zone, pathways via which the Local Plan may have an impact outside of the Zoi also need to be considered.

8.1.9 A Habitats Regulations Assessment (HRA) has been undertaken alongside the preparation of the Local Plan to provide an assessment of the potential threats and pressures to European sites and analysis of potential impact pathways. The evolving outputs of this process have informed the SA.

8.1.10 There are four European designated biodiversity sites within the GNLP area: Broadland SPA and Ramsar; The Broads SAC; River Wensum SAC; and Norfolk Valley Fens SAC (see **Figure 8.1, 8.2 and 8.3**).

¹⁰² UK National Ecosystem Assessment (2014) The UK National Ecosystem Assessment: Synthesis of the Key Findings. Available at: <https://www.unep-wcmc.org/resources-and-data/the-uk-national-ecosystem-assessment--synthesis-of-the-key-findings-and-technical-reports> [Date Accessed: 30/09/19]

¹⁰³ Landscape Institute (2016) Connectivity and Ecological Networks, Technical Information Note. Available at: <https://www.landscapeinstitute.org/publication/connectivity-and-ecological-networks-tin/> [Date Accessed: 30/09/19]

¹⁰⁴ Krosby, M., *et al.*, (2010) Ecological connectivity for a changing climate. *Conservation Biology*, 24:1686-1689.

¹⁰⁵ Oliver, TH., *et al.*, (2015) Declining resilience of ecosystem functions under biodiversity loss. *Nature Communications*, 8:10122

8.1.11 Threats and pressures to which each European site is vulnerable have been identified through reference to data held by the JNCC on Natura 2000 Data Forms, Ramsar Information Sheets and Site Improvement Plans (SIPs). The threats and pressures identified for European sites located within the GNLP area are presented in **Table 8.1**.

Table 8.1: Threats and pressures of the European sites located within the Plan area

European Site	Threats and Pressures
Broadland SPA ¹⁰⁶	<ul style="list-style-type: none"> • Water pollution; • Inappropriate water levels; • Hydrological changes; • Water abstraction; • Public access and disturbance; and • Air pollution.
Broadland Ramsar ¹⁰⁷	<ul style="list-style-type: none"> • None identified.
The Broads SAC ¹⁰⁸	<ul style="list-style-type: none"> • Water pollution; • Inappropriate water levels; • Hydrological changes; • Water abstraction; and • Air pollution.
River Wensum SAC ¹⁰⁹	<ul style="list-style-type: none"> • Water pollution; • Water abstraction; • Impacts on riparian zone habitats; and • Air quality.
Norfolk Valley Fens SAC ¹¹⁰	<ul style="list-style-type: none"> • Hydrological change; • Water pollution; • Water abstraction; and • Air pollution – impact of atmospheric nitrogen deposition.

8.1.12 Other European sites located in close proximity to the Plan area include:

- Breydon Water SPA and Ramsar;
- Great Yarmouth North Deans SPA;
- Winterton-Horsey Dunes SAC;
- Paston Great Barn SAC;
- Overstrand Cliffs SAC;
- Waveney & Little Ouse Valley Fens SAC;

¹⁰⁶ Natural England (2018) Broadland SIP (covering Broadland SPA and The Broads SAC). Available at: <http://publications.naturalengland.org.uk/file/6218680128241664> [Date Accessed: 09/11/20]

¹⁰⁷ JNCC. 2008. Information Sheet on Ramsar Wetlands. Broadland Ramsar <https://jncc.gov.uk/jncc-assets/RIS/UK11010.pdf> [Date Accessed: 09/11/20].

¹⁰⁸ Natural England (2018) Broadland SIP (covering Broadland SPA and The Broads SAC). Available at: <http://publications.naturalengland.org.uk/file/6218680128241664> [Date Accessed: 09/11/20]

¹⁰⁹ Natural England (2014) River Wensum SAC SIP. Available at: <http://publications.naturalengland.org.uk/file/5795274547003392> [Date Accessed: 09/11/20]

¹¹⁰ Natural England (2014) Norfolk Valley Fens SAC SIP. Available at: <http://publications.naturalengland.org.uk/file/4592297601662976> [Date Accessed: 09/11/20]

- Redgrave and South Lopham Fens Ramsar;
- Breckland SAC and SPA;
- Benacre to Easton Bavents Lagoons SAC and SPA;
- Dew's Ponds SAC;
- The Wash and North Norfolk Coast SAC;
- The Wash SPA and Ramsar;
- The Greater Wash SPA;
- North Norfolk Coast SAC, SPA and Ramsar;
- Southern North Sea SAC;
- Outer Thames Estuary SPA;
- Hainsborough, Hammond and Winterton SAC;
- Minsmere to Walkerswick SAC, SPA and Ramsar;
- Roydon Common & Dersingham Bog SAC;
- Roydon Common Ramsar;
- Dersingham Bog Ramsar;
- Alde-Ore Estuary SPA and Ramsar;
- Alde-Ore & Butley Estuaries SAC
- Orfordness-Shingle Street SAC;
- Staverton Park & The Thicks Wantisden SAC;
- Sandlings SPA;
- Debden Estuary SPA and Ramsar; and
- Stour and Orwell Estuary SPA and Ramsar.

8.1.13 The Norfolk Green Infrastructure and Recreational Impact Avoidance and Mitigation Strategy¹¹¹ (GI RAMS) has been produced with the aim of supporting Local Planning Authorities in addressing mitigation needs of Local Plans in-combination with European sites. New residents could potentially visit nearby European sites for recreation and could potentially result in harming of the sites. The strategy seeks to use green infrastructure (GI) at the Local Plan level to divert and deflect new residents from visiting European sites on a daily basis. Recommendations within the strategy include:

- The provision of a 'delivery officer';
- The provision of a team of 'rangers';
- Monitoring commencement of residential developments within ZOIs;
- Recording the implementation of mitigation and track locations;
- Setting up a county-wide 'dog project' to engage with dog walkers, promoting sites for dog walking, providing information on dog walking and highlighting issues at European sites
- Filling in gaps in data for Habitats Sites to calculate individual ZOIs and continuous updating of 'Visitor Surveys' at selected locations to monitor effects and update the need for Rangers and any additional measures; and
- Monitoring of sensitive habitats and species.

¹¹¹ Place Service (2020) Norfolk Green Infrastructure and Recreational Impact Avoidance and Mitigation Strategy.

Nationally designated sites

- 8.1.14 Natural England designates National Nature Reserves and Sites of Special Scientific Interest (SSSIs) in England under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended). There are 49 Sites of Special Scientific Interest (SSSIs) located within the Plan area¹¹² (see **Figure 8.4**).
- 8.1.15 There are two National Nature Reserves (NNRs) located within the Plan area: 'Mid-Yare' NNR and 'Bure Marshes' NNR. Mid-Yare NNR is a 779ha site of peatland and floodplain wetland with a mix of wet woodlands, shallow lakes and meadows¹¹³. Bure Marshes NNR is a wetland habitat of open water, tall-herb fen, wet scrub and woodland, covering approximately 450ha¹¹⁴.
- 8.1.16 Natural England has developed Impact Risk Zones (IRZs) for each SSSI unit in the country. IRZs are a Geographical Information System (GIS) tool which allow a rapid initial assessment of the potential risks posed by development proposals to SSSIs. Where a development proposal falls within more than one SSSI IRZ the worst-case risk zone is reported upon in the assessment. The IRZ attribute data draws a distinction between 'rural' and 'non-rural' development. For the purposes of this assessment, non-rural proposals are considered to be those that are located within an existing built-up area.

Locally designated sites

- 8.1.17 Greater Norwich contains an important network of local designations running through the urban area, including Local Nature Reserves (LNR) and County Wildlife Sites (CWSs). These also form important wildlife corridors, allowing species to move between habitats.
- 8.1.18 Natural England encourages local authorities to formally designate appropriate sites as LNRs under Section 21 of the National Parks and Access to the Countryside Act 1949. An LNR designation demonstrates a commitment by the local authority to manage land for biodiversity, protect it from inappropriate development and provide opportunities for local people to study and enjoy wildlife. There are 19 LNRs within the GNLP area (see **Figure 8.5**).
- 8.1.19 County Wildlife Sites (CWSs) are non-statutory designated sites, identified by local authorities in partnership with nature conservation charities, statutory agencies and ecologists, although they are privately owned. There are approximately 600 CWSs across the Plan area, including 'Marriott's Way', 'Horsford Woods' and 'Earlham Cemetery' (see **Figure 8.6**).

¹¹² Natural England (2020) Sites of Special Scientific Interest (England) Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/f10cbb4425154bfda349ccf493487a80_0 [Date Accessed: 22/10/20]

¹¹³ Natural England (2020) Norfolk's National Nature Reserves. Available at: <https://www.gov.uk/government/publications/norfolks-national-nature-reserves/norfolks-national-nature-reserves#mid-yare> [Date Accessed: 09/11/20]

¹¹⁴ Ibid

Non-designated sites

- 8.1.20 Ancient woodland is defined as having been continuously wooded since at least 1600AD and includes ‘ancient semi-natural woodland’ and ‘plantations on ancient woodland sites’, both of which have equal protection under the NPPF.
- 8.1.21 Paragraph 175 of the NPPF states: *“when determining planning applications, local planning authorities should apply the following principles ... development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons, and a suitable compensation strategy exists”*.
- 8.1.22 There are approximately 170 stands of ancient woodland across the Plan area, mostly located towards the north and east of the Plan area (see **Figure 8.7**).
- 8.1.23 There are 56 habitats recognised as being of ‘principal importance’ for the conservation of biological diversity in England under section 41 of the Natural Environment and Rural Communities Act 2006. Priority habitats are a focus for conservation action in England (see **Figure 8.8**).
- 8.1.24 Paragraph 174 of the NPPF states: *“to protect and enhance biodiversity and geodiversity, plans should ... promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity”*.
- 8.1.25 There are a number of priority habitats, protected under the 2006 NERC Act¹¹⁵, distributed throughout Greater Norwich. These include deciduous woodland, coastal and floodplain grazing marsh and good quality semi-improved grassland.

Geodiversity

- 8.1.26 Geodiversity is the collective term describing the geological variety of the earth’s rocks, fossils, minerals, soils and landscapes together with the natural process that form and shape them. Geodiversity underpins biodiversity by providing diversity of habitat and the ecosystem, with the soil being the link between them. It also embraces the built environment by providing the basis for neighbourhood character and local distinctiveness through building stone and material.
- 8.1.27 There are 39 SSSIs designated for their Earth Heritage features in Norfolk and twelve SSSIs which are designated for biodiversity features but have important geological interest¹¹⁶.

¹¹⁵ Natural Environment and Rural Communities Act 2006. Available at: <http://www.legislation.gov.uk/ukpga/2006/16/contents> [Date Accessed: 24/01/20]

¹¹⁶ Norfolk Geodiversity Partnership (no date) SSSIs. Available at: <https://sites.google.com/site/norfolkgeodiversity/action-ngap/3-protecting/protected/sssis> [Date Accessed: 04/11/20]

8.1.28 There are seven County Geodiversity Sites (CGSs) across Norfolk. ‘Pinebanks’ CGS is the only designated site in the Plan area (see **Figure 8.9**). CGSs are sites of substantive conservation value at county level and are designated by the County Geodiversity Sites Group.

Green Infrastructure

8.1.29 Green Infrastructure (GI) is an important aspect of biodiversity. It is often described as a strategically planned network of multifunctional assets including natural and semi-natural areas, features and green spaces in rural and urban, terrestrial and freshwater environments. Together, these assets enhance ecosystem health and resilience, contribute to biodiversity conservation and benefit human populations through the maintenance and enhancement of ecosystem services.

8.1.30 The Green Infrastructure Strategy¹¹⁷ for Greater Norwich seeks to “ensure that pressures on important natural and historic aspects of green infrastructure are minimised, and opportunities to enhance green infrastructure to meet the needs of people and biodiversity are maximised”. The six core GI principles are:

- Safeguard and protect valuable green infrastructure resources;
- Integrate green infrastructure into development schemes and existing developments;
- Secure new and enhanced green infrastructure before development proceeds where there is a clear need for provision;
- Enhance green infrastructure where of low quality, in decline or requiring investment to realise its potential to meet future demands;
- Mitigate potential adverse effects of development, new land uses and climate change;
- Create new green infrastructure where there is an identified deficit, or growth is planned, and additional provision or compensatory measures are needed.

River ecology

8.1.31 The majority of the GNLP area lies within the Anglian river basin. The Anglian River Basin Management Plan (RBMP)¹¹⁸ provides an update on the ecological status of the water environment. An overview of the ecological status of the water bodies comprising the Anglian river basin is presented in **Table 8.2**.

¹¹⁷ Chris Blandford Associated (2007) Greater Norwich Development Partnership Green Infrastructure Strategy. Available at: <https://www.greaternorwichgrowth.org.uk/dmsdocument/109> [Date Accessed: 09/11/20]

¹¹⁸ Environment Agency (2016) Anglian river basin district river basin management plan. Available at: <https://www.gov.uk/government/publications/anglian-river-basin-district-river-basin-management-plan> [Date Accessed: 09/11/20]

Table 8.2: Ecological status of Anglian river basin surface waterbodies¹¹⁹

Ecological status or potential	Definition of status	No. of water bodies in Anglian river basin
High	Near natural conditions. No restriction on the beneficial uses of the water body. No impacts on amenity, wildlife or fisheries.	0
Good	Slight change from natural conditions as a result of human activity. No restriction on the beneficial uses of the water body. No impact on amenity or fisheries. Protects all but the most sensitive wildlife.	65
Moderate	Moderate change from natural conditions as a result of human activity. Some restriction on the beneficial uses of the water body. No impact on amenity. Some impact on wildlife and fisheries.	419
Poor	Major change from natural conditions as a result of human activity. Some restrictions on the beneficial uses of the water body. Some impact on amenity. Moderate impact on wildlife and fisheries.	106
Bad	Severe change from natural conditions as a result of human activity. Significant restriction on the beneficial uses of the water body. Major impact on amenity. Major impact on wildlife and fisheries with many species not present.	13

8.1.32 Biodiversity, flora and fauna are predominantly considered under SA Objective 3 ‘Biodiversity, Geodiversity and Green Infrastructure’ which, in part, aims to help protect, enhance and manage the natural environment of the Plan area.

¹¹⁹ Ibid

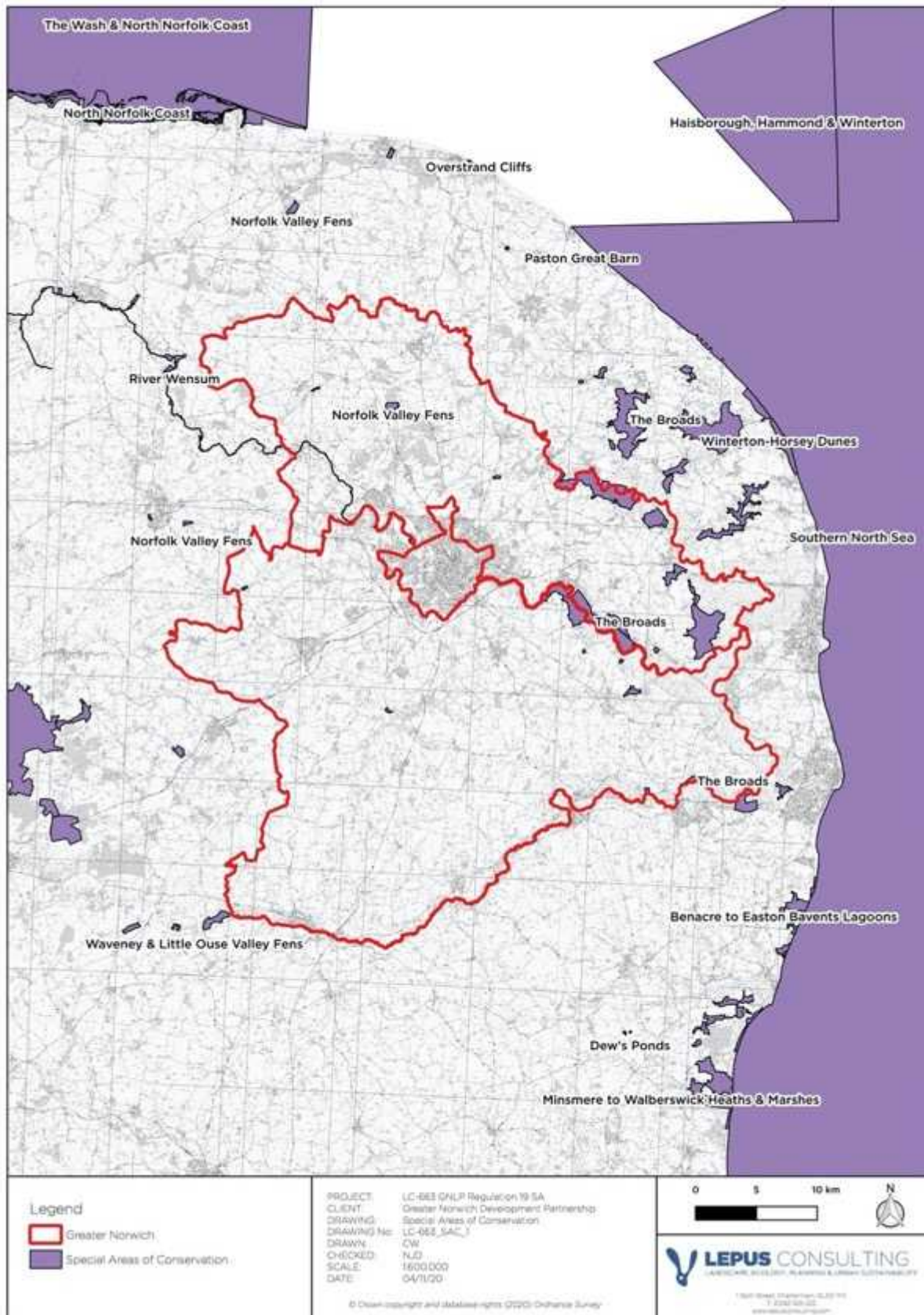


Figure 8.1: Special Areas of Conservation in and around the Plan area (source: Natural England)

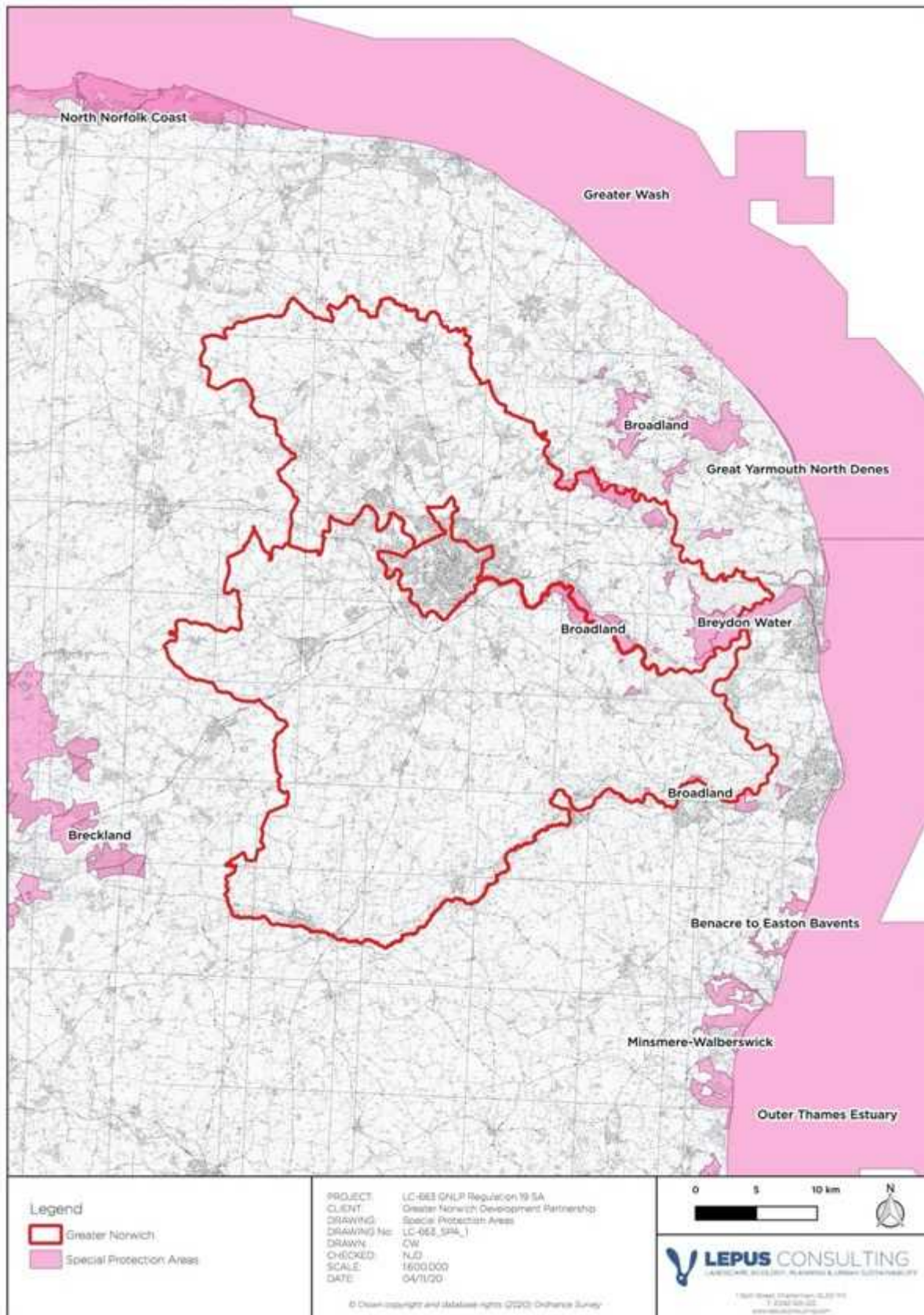


Figure 8.2: Special Protection Areas in and around the Plan area (source: Natural England)

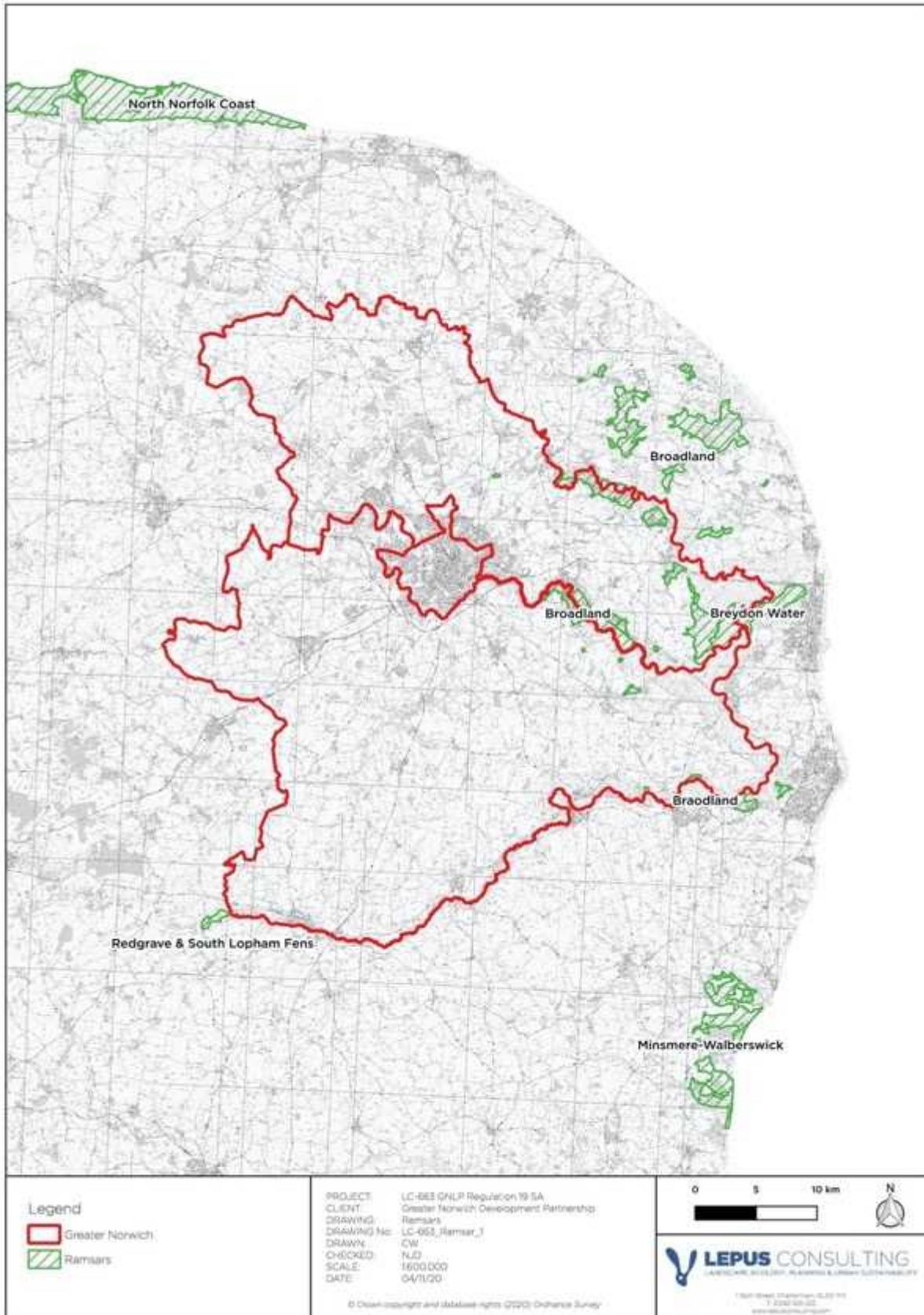


Figure 8.3: Ramsar sites in and around the Plan area (source: Natural England)

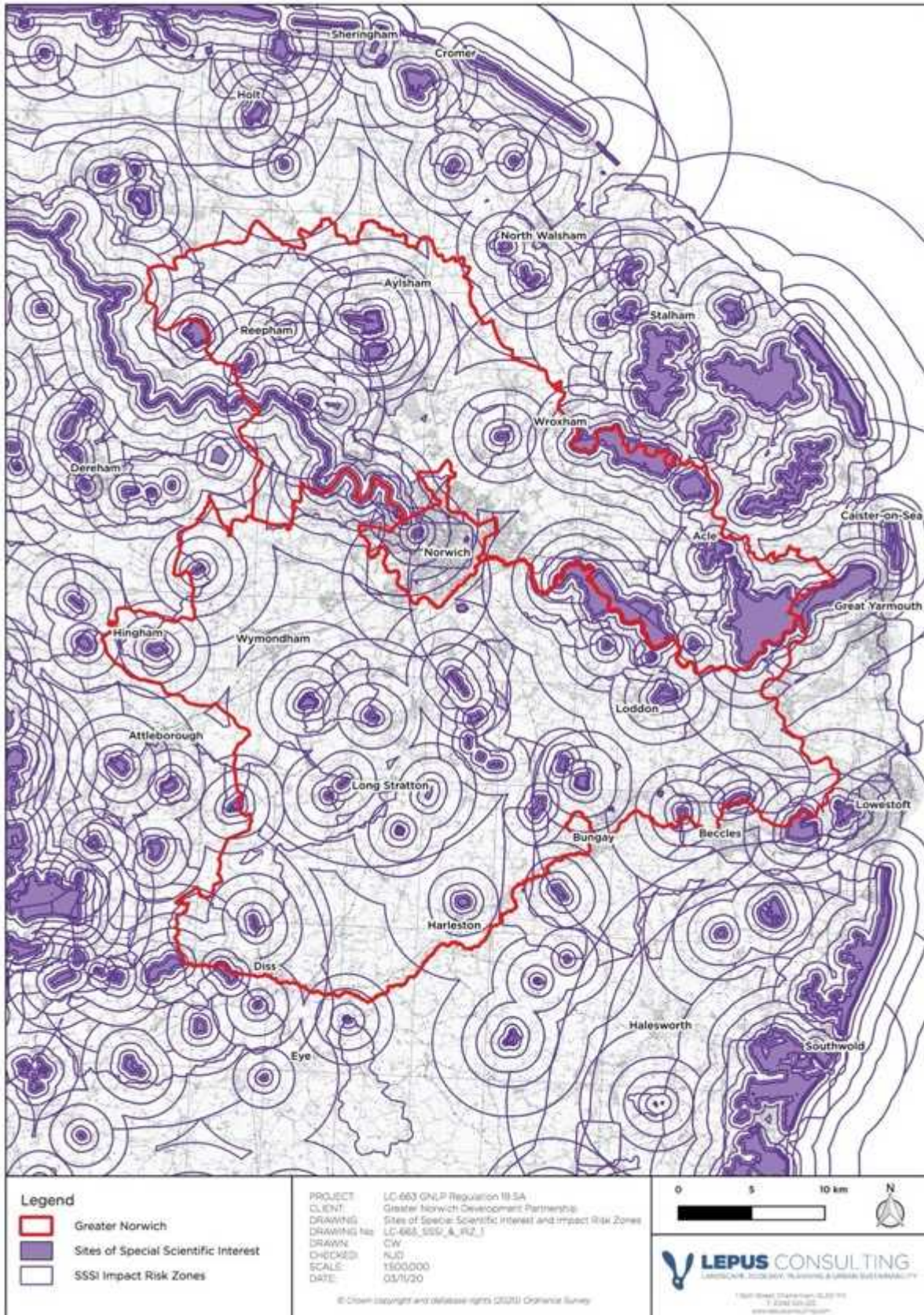


Figure 8.4: Sites of Special Scientific Interest and Impact Risk Zones in and around the Plan area (source: Natural England)

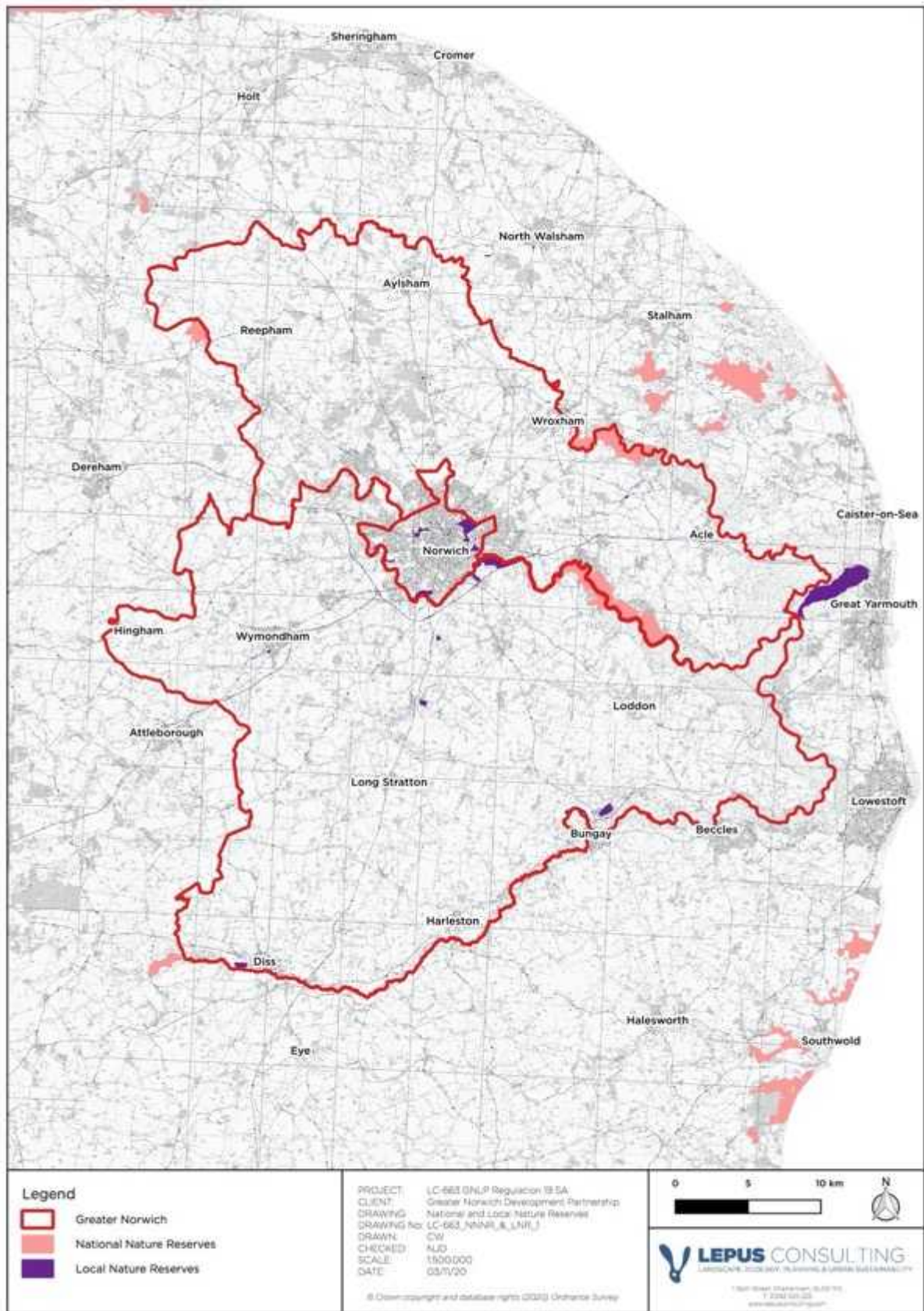


Figure 8.5: National Nature Reserves and Local Nature Reserves in and around the Plan area (source: Natural England)

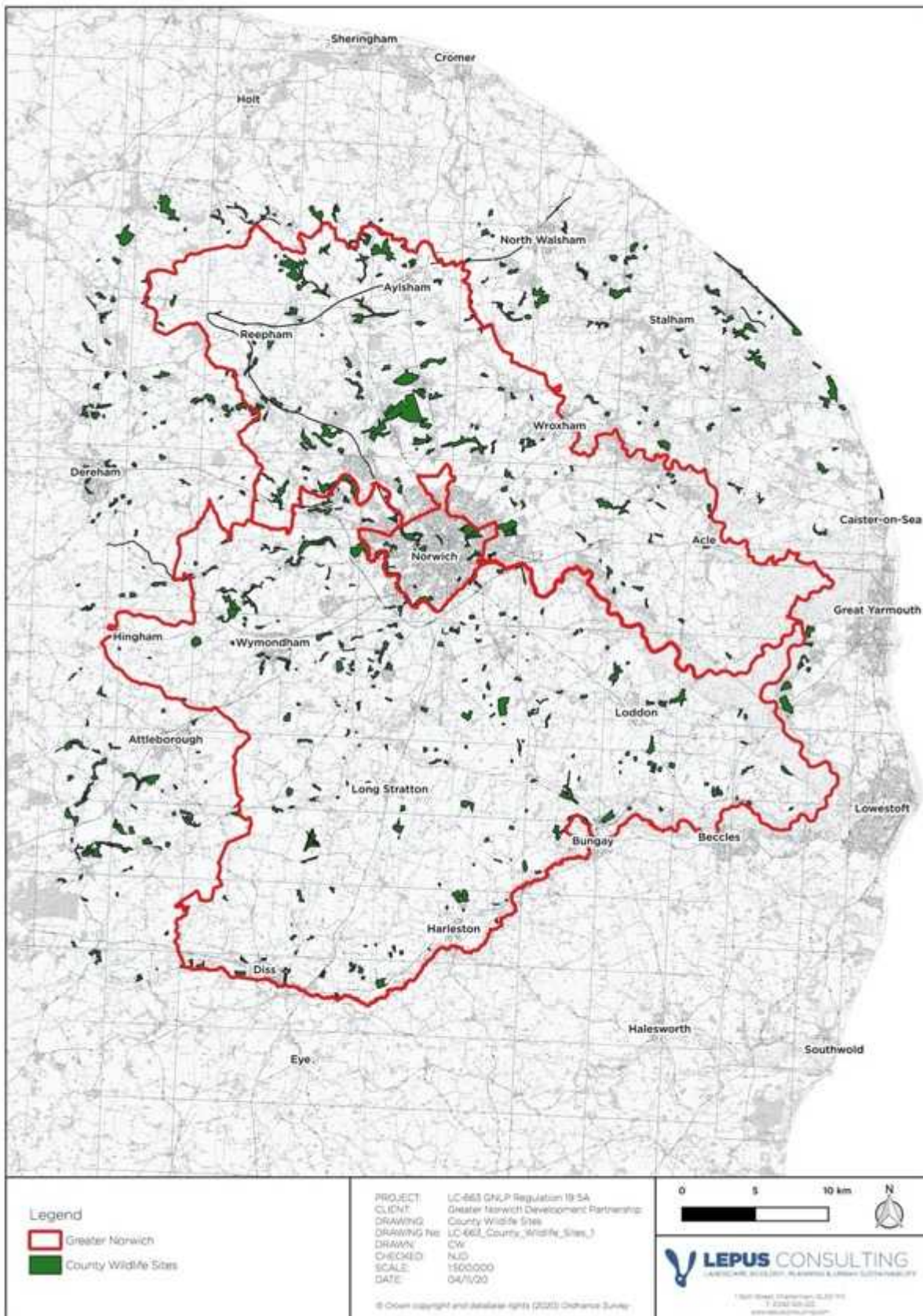


Figure 8.6: County Wildlife Sites in and around the Plan area (source: GNDP)

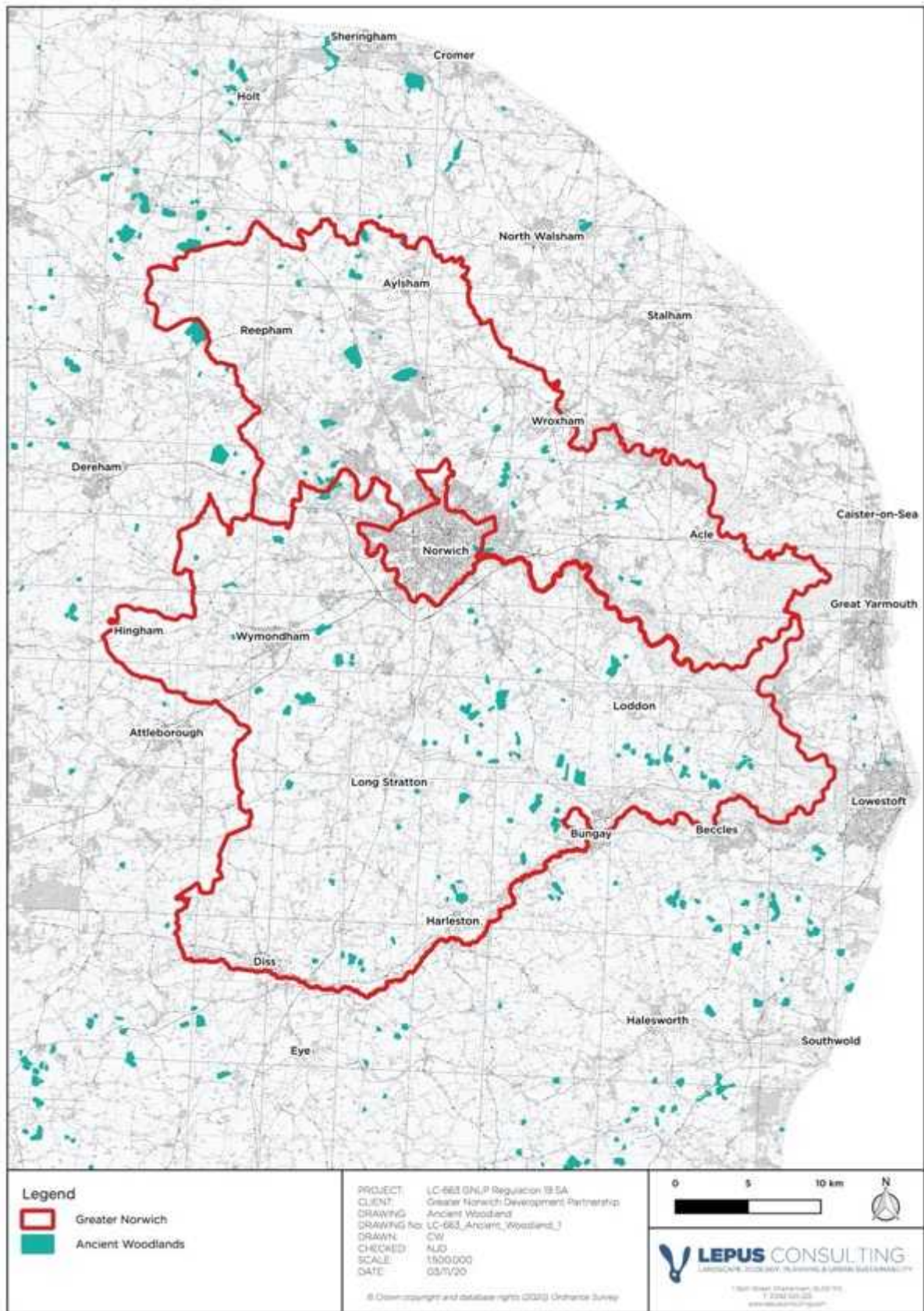


Figure 8.7: Ancient woodland in and around the Plan area (source: Natural England)

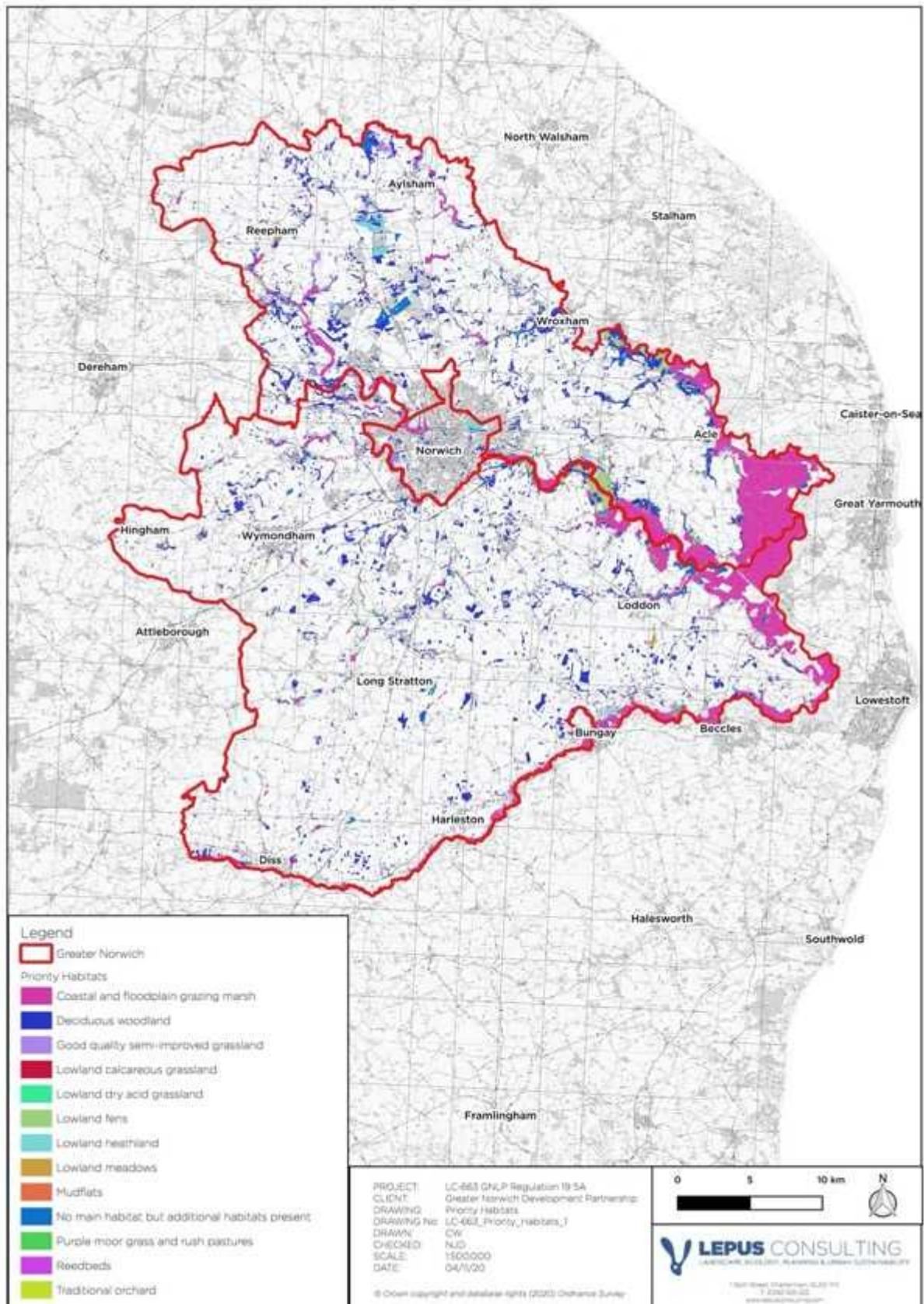


Figure 8.8: Priority habitats within the Plan area (source: Natural England)

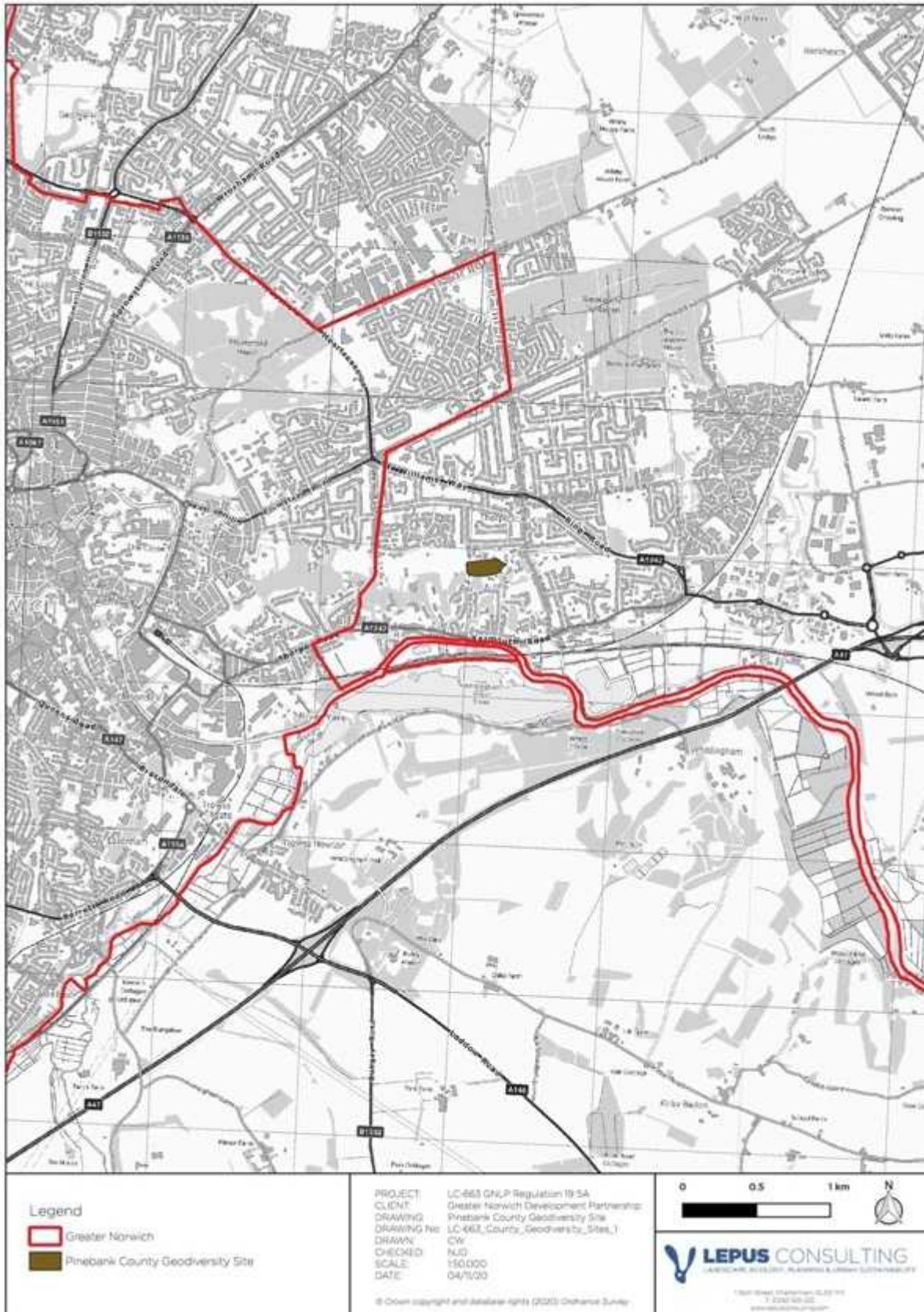


Figure 8.9: Pinebanks County Geodiversity Site (source: GNLP)

8.2 Impacts on biodiversity, flora and fauna

8.2.1 **Box 8.1** sets out a plan-wide summary of the likely impacts on biodiversity, flora and fauna that have been identified through the SA process. These impacts are those identified prior to the consideration of mitigation in the form of GNLP policies and Local Plan DM policies. **Box 8.2** lists the GNLP strategic and site policies, as well as Local Plan DM policies for the three districts which would be likely to mitigate, either fully or partially, some of the identified impacts. Policies which would improve identified impacts have also been listed. Where mitigating policies or proformas are silent, or the contents of the GNLP only partially mitigates the adverse impacts, a residual adverse effect is identified. **Box 8.3** explores the nature of these residual effects.

Box 8.1: Summary of identified impacts on biodiversity, flora and fauna

1	<p>Threats or pressures to internationally and European designated biodiversity sites</p> <p>There are four European designated biodiversity sites within the GNLP area: Broadland SPA and Ramsar; The Broads SAC; River Wensum SAC; and Norfolk Valley Fens SAC. These sites are vulnerable to threats and pressures which may arise due to development, including poor air quality, hydrological changes and increased recreational disturbances. The HRA has considered the impact of the GNLP on the European sites in further detail.</p>
2	<p>Threats or pressures to nationally designated biodiversity sites</p> <p>Although none of the site allocations within the GNLP are coincident with, or located adjacent to, a SSSI or NNR, many of the sites are located within a SSSI IRZ, which states that development proposals in these zones should be consulted upon with Natural England. Potential impacts on SSSIs include increased recreational disturbance caused by residents visiting the designated sites and poor air quality due to an increase in vehicular movements on roads near to sensitive habitats.</p>
3	<p>Threats or pressures to locally designated biodiversity sites</p> <p>A small section of Site GNLP0360/GNLP3053/R10 coincides with 'Whitlingham' LNR. This site also coincides with 'Carrow Abbey Marsh' and 'Trowse Meadows' CWS. Sites BAW2 and GNLP0253 coincide with 'Bawburgh/Colney Gravel Pits' CWS. Sites GNLP0337R coincides with 'Marriott's Way' CWS. Numerous of the allocated are located in close proximity to locally designated biodiversity sites. Adverse impacts due to development on these locally designated sites could potentially include increased recreational disturbance and localised poor air quality caused by local residents visiting these sites.</p>
4	<p>Impacts on priority habitats and ancient woodland</p> <p>Several site allocations are coincident with priority habitats, including deciduous woodland and lowland fens. These habitats are capable of supporting a range of priority species. The scale of development proposed within the GNLP could potentially make it difficult to protect and enhance priority habitats and prevent the direct loss of these biodiversity assets.</p> <p>There are several stands of ancient woodland within the Plan area, with clusters of woodland located near Hevingham, Ringland, Saxlingham Nethergate and Raveningham. Site GNLP0132 coincides with 'Bulmer Coppice' ancient woodland. Sites GNLP0159R, GNLP2109, HETHEL1 and HETHEL2 are located within 500m of stands of ancient woodland.</p>

Box 8.1: Summary of identified impacts on biodiversity, flora and fauna

5 Fragmentation of the multi-functional green infrastructure network

The Plan area has a far-reaching and diverse multi-functional green infrastructure network. A total of 85 allocated sites are located on previously undeveloped land, resulting in the loss of approximately 1,019ha of soil. Some of this land is thought to provide links between important habitats (e.g. due to the presence of hedgerow, mature trees or scrubland). Whilst in many cases these linkages can be conserved alongside development, it would be likely that in some cases there will be a direct loss of the multi-functional green infrastructure network. It is considered that development could reduce the effectiveness of links in some circumstances, through construction impacts, ongoing urban edge effects associated with settlements that are close to these areas and, potentially, fragmentation of the ecological network.

6 Fragmentation of the ecological network

Paragraph 170 of the NPPF states “*Planning policies and decisions should contribute to and enhance the natural and local environment by ... d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*”. The proposed development of 49,492 dwellings and the estimated loss of 1,019ha of previously undeveloped land would be expected to result in the loss of some of the ecological network and reduce its functionality within Greater Norwich, resulting in a strategic cumulative adverse impact on biodiversity. Direct impacts associated with the Plan include construction impacts, ongoing urban edge effects associated with settlements that are close to these areas and, potentially, fragmentation of the ecological network through the loss of habitat corridors that connect important habitats and support species rich assemblages.

8.3 Local Plan mitigation

- 8.3.1 Policy 3 of the GNLP aims to conserve and enhance the natural environment, including biodiversity, flora and fauna. The policies discussed in **Box 8.2** below would be expected to provide effective levels of protection for biodiversity assets, and therefore, would be expected mitigate some of the adverse impacts identified in **Box 8.1**.

Box 8.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on biodiversity, flora and fauna

Threats or pressures to European designated biodiversity sites

GNLP Policy 3 seeks to address impacts of visitor pressure caused by residents of new development on European sites. The policy would be expected to ensure that developments provide, or provide funding for, significantly higher amounts of appropriate amenity green infrastructure to protect European sites identified within the HRA.

Policies EN1, EN3 (Broadland), DM1.4, DM3.8, DM4.2, DM4.4 (South Norfolk), DM3, DM6, DM8 and DM26 (Norwich) could potentially help to safeguard and enhance biodiversity including at internationally designated sites.

Site Policies ACL2, GNLP0312, GNLP0463R and LOD3 would be likely to help mitigate adverse impacts on European sites.

Threats or pressures to nationally designated biodiversity sites

GNLP Policy 2 would seek to ensure that development proposals contribute towards green infrastructure network, and GNLP Policy 3 aims to conserve and enhance the natural environment, protected habitats and species, and result in a biodiversity net gain.

Box 8.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on biodiversity, flora and fauna

Policies EN1, EN3 (Broadland), DM1.4, DM3.8, DM4.2, DM4.4 (South Norfolk), DM3, DM6, DM8 and DM26 (Norwich) could potentially help to safeguard and enhance biodiversity including at SSSIs.

Site Policies GNLP0312, GNLP0409AR, GNLP0409BR, GNLP0463R, GNLP0520, LOD3 and R36 would be likely to help mitigate adverse impacts on nationally designated sites.

Threats or pressures to locally designated biodiversity sites

GNLP Policy 3 aims to conserve and enhance the natural environment, protected habitats/species, and ensure development proposals result in biodiversity net gain.

Policies EN1, EN3 (Broadland), DM1.4, DM3.8, DM4.2, DM4.4 (South Norfolk), DM3, DM6, DM8 and DM26 (Norwich) could potentially help to safeguard and enhance biodiversity including at designated biodiversity sites.

Site Policies COS3/GNLP2008, GNLP0360/GNLP3053/R10, GNLP0409AR, GNLP0409BR, GNLP2164, HET1, KES2, R2, REP1 and GNLP2007/GNLP4061/HNF3 would be likely to help mitigate adverse impacts on locally designated sites.

Impacts on priority habitats and ancient woodland

GNLP Policy 3 aims to conserve and enhance the natural environment, protected habitats/species, and ensure development proposals result in biodiversity net gain.

Policies EN1, EN3 (Broadland), DM1.4, DM3.8, DM4.2, DM4.4 (South Norfolk), DM3, DM6, DM8 and DM26 (Norwich) could potentially help to safeguard and enhance biodiversity including at non-designated biodiversity sites.

Site Policies BAW2, GNLP0132, GNLP0360/GNLP3053/R10 and R36 would be likely to help mitigate adverse impacts on non-designated sites.

Fragmentation of the multi-functional green infrastructure network

GNLP Policy 2 would contribute towards the protection and enhancement of the green infrastructure network.

GNLP Policy 3 aims to conserve and enhance the natural environment, protected habitats/species, and ensure development proposals result in biodiversity net gain.

Policies EN1, EN3 (Broadland), DM1.4, DM4.4 (South Norfolk), DM3 and DM6 (Norwich) would be expected to ensure proposals incorporate multi-functional green infrastructure and contribute to the multi-functional green infrastructure network.

Site Policies ACL3, BRU2, CC2, CC4b, CC7, CC8, CC10, CC15, CC16, CC24, COL1 [Emp], COL2, COL3, DRA1, EAS1, GNLP0102, GNLP0132, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0253, GNLP0293, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0312, GNLP0331RB, GNLP0331RC, GNLP0337R, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0506, GNLP0520, GNLP0581/2043, GNLP0596R, GNLP0608, GNLP0608R, GNLP1001, GNLP1048R, GNLP2019, GNLP2034, GNLP2109, GNLP2114, GNLP2136, GNLP2163, GNLP2164, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HET1, HIN2, HNF2/GNLP0466R, KES2, LOD3, POR3, R1, R2, R7, R13, R14/R15, R17, R18, R19, R29, R31, R33, R36, R37, R42 and REP1 would be likely to ensure proposals contribute to the multi-functional green infrastructure network.

Fragmentation of the ecological network

GNLP Policy 2 would contribute towards the protection and enhancement of the green infrastructure network.

GNLP Policy 3 aims to conserve and enhance the natural environment, protected habitats/species, and ensure development proposals result in biodiversity net gain.

Site Policies ACL3, BRU2, CC2, CC4b, CC7, CC8, CC10, CC15, CC16, CC24, COL1 [Emp], COL2, COL3, DRA1, EAS1, GNLP0102, GNLP0132, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0253, GNLP0293, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0312, GNLP0331RB, GNLP0331RC, GNLP0337R,

Box 8.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on biodiversity, flora and fauna

GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0506, GNLP0520, GNLP0581/2043, GNLP0596R, GNLP0608, GNLP0608R, GNLP1001, GNLP1048R, GNLP2019, GNLP2034, GNLP2109, GNLP2114, GNLP2136, GNLP2163, GNLP2164, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HET1, HIN2, HNF2/GNLP0466R, KES2, LOD3, POR3, R1, R2, R7, R13, R14/R15, R17, R18, R19, R29, R31, R33, R36, R37, R42 and REP1 would be likely to ensure proposals result in biodiversity enhancements have help to reduce the fragmentation of the ecological network.

8.4 Residual effects on biodiversity, flora and fauna

8.4.1 Following the implementation of the GNLP policies, and subject to the findings of the HRA, the GNLP would not be expected to result in adverse effects in relation to biodiversity. The GNLP proposes the provision of green infrastructure and other benefits to the local ecological network and seeks to ensure development is in accordance with guidance such as the River Wensum Strategy and the GI RAMS where appropriate. Further details of the residual effects are presented in **Box 8.3**.

Box 8.3: Residual effects for biodiversity, flora and fauna

Identified impact	Residual effects
Threats or pressures to European designated biodiversity sites	None of the allocated sites coincide with, or are located adjacent to, a European site. Several allocated sites are in close proximity to European sites including the River Wensum SAC, the Broads SAC and Broadland SPA and Ramsar. GNLP Policy 3 seeks to ensure development within Greater Norwich does not harm designated sites, and states that “all residential development will address the potential visitor pressure, caused by residents of the development, that would detrimentally impact on sites protected under the Habitats Regulations Directive”. The HRA will provide further detail on the impact of the development within the GNLP on European designated sites. At the time of writing, the draft HRA has not been able to provide conclusive findings but emerging findings suggest that subject to satisfactory resolution of the outstanding matters listed in the report (version dated 18 th December 2020), there would be no adverse effect upon the integrity of any European site.
Threats or pressures to nationally designated biodiversity sites	None of the allocated sites within the GNLP coincide with, or are located adjacent to, a SSSI. Where a site allocation is in close proximity to a SSSI, the site policy seeks to ensure adverse impacts do not occur at the SSSI as a result of the proposed development. Many site allocations are within a SSSI IRZ which states that the proposed development should be consulted on with Natural England. Through the consultation of the GNLP, this SA and the planning application stage, Natural England will be consulted on in regard to these development proposals, and as a result, the GNLP would not be expected to result in a residual adverse impact on SSSIs.
Threats or pressures to locally designated biodiversity sites	The GNLP policies would be expected to mitigate adverse impacts arising from development proposals which are situated in close proximity to designated biodiversity assets. A small section of Site GNLP0360/GNLP3053/R10 coincides with ‘Whitlingham’ LNR. This site also coincides with ‘Carrow Abbey Marsh’ and ‘Trowse Meadows’ CWS. Policy GNLP0360/GNLP3053/R10 states development will achieve site-specific requirements including the requirement to “secure remediation and long term management of the

Identified impact	Residual effects
	<p><i>Carrow Abbey County Wildlife site</i>” and <i>“preserve the integrity and wooded landscape character and biodiversity interest of the eastern margin of the Deal Ground around Carrow Abbey Marsh and Whitlingham Country Park to the east”</i>. Sites BAW2 and GNLP0253 coincide with ‘Bawburgh/Colney Gravel Pits’ CWS. Site BAW2 is proposed for a country park and would therefore help protect the CWS, and Site Policy GNLP0253 requires a site-specific ecological survey to be carried out prior to development. Site GNLP0337R coincides with ‘Marriott’s Way’ CWS. The site policy requires the <i>“safeguarding landscape enhancement and buffer of the Marriott’s Way”</i> as part of development.</p>
<p>Impacts on priority habitats and ancient woodland</p>	<p>GNLP Policy 3 would be expected to mitigate adverse impacts arising from development proposals which are situated in close proximity to non-designated biodiversity assets.</p> <p>Site GNLP0132 coincides with a stand of ancient woodland. However, the site policy seeks to protect the ancient woodland through the preparation of an Arboricultural Impact Assessment and ecological appraisal. In addition, many of the site policies seek to provide green infrastructure and biodiversity enhancements which would be expected to help reduce the loss of priority habitats.</p>
<p>Fragmentation of the multi-functional green infrastructure network</p>	<p>GNLP strategic policies and site policies aim to ensure development proposals incorporate green infrastructure and contribute to the increased provision of the multi-green infrastructure network. Although the proposed development would be expected to result in the loss of 1,019ha of previously undeveloped land, GNLP policies would be expected to result in a positive residual effect on the multi-functional green infrastructure network.</p>
<p>Fragmentation of the ecological network</p>	<p>The GNLP would be expected to result in the loss of approximately 1,019ha of previously undeveloped land. This loss of land would be expected to include important habitats and ecological links between designated biodiversity assets.</p> <p>The fragmentation of the ecological network would be expected to be a long-term significant effect. It may be temporary if a positive net gain policy is adopted in the plan however the gradual denudation and loss of habitats in an ongoing trend in the baseline which is unlikely to be reversed without significant changes to the development control and biodiversity protection and enhancement processes.</p>

9 Climatic factors

9.1 Baseline

9.1.1 Anthropogenic climate change is predominantly the result of greenhouse gas (GHG) emissions. GHGs are emitted from a wide variety of sources, including transport, construction, agriculture and waste. Typically, development leads to a net increase in GHG emissions in the local area, although efforts can be made to help limit these increases. It is necessary for local authorities to help minimise their contribution to its causes, such as by reducing GHG emissions and enhancing natural carbon sinks through increasing tree cover.

9.1.2 Norwich City Council declared a climate emergency in January 2019¹²⁰.

Energy consumption

9.1.3 Total energy consumption across the East of England has increased slightly between 2016 and 2018 (see **Table 9.1**). The total energy consumption across the three districts has fluctuated between these years. Energy consumption in the transport sector has increased in Broadland and South Norfolk but decreased slightly in Norwich.

Table 9.1: Energy consumption in GigaWatt hours (GWh) in the commercial, domestic and transport sectors for the three districts and the East of England, as well as total energy consumption, between 2016 and 2018¹²¹

Energy Consumption (GWh)		Year		
District	Sector	2016	2017	2018
Broadland	Industry & Commercial	1,130.0	953.7	1,052.9
	Domestic	981.4	1,004.9	996.3
	Transport	759.1	786.8	859.8
	Total	2,870.5	2,745.5	2,909.0
Norwich	Industry & Commercial	903.0	948.1	938.6
	Domestic	899.7	922.1	908.2
	Transport	425.3	425.3	407.6
	Total	2,228.0	2,295.6	2,254.4
South Norfolk	Industry & Commercial	801.5	814.9	812.8

¹²⁰ Declare a Climate Emergency (2020) List of Councils who have declared a climate emergency, Available at: <https://www.climateemergency.uk/blog/list-of-councils/> [Date Accessed: 09/11/20]

¹²¹ Department for Business, Energy and Industrial Strategy (2020) Sub-national total final energy consumption statistics: 2005 to 2018. Available at: <https://www.gov.uk/government/statistics/total-final-energy-consumption-at-regional-and-local-authority-level-2005-to-2018> [Date Accessed: 28/10/20]

Energy Consumption (GWh)		Year		
District	Sector	2016	2017	2018
	Domestic	972.8	993.0	994.7
	Transport	1,373.0	1,458.9	1,483.7
	Total	3,147.3	3,266.7	3,291.2
East of England	Total	131,249.7	134,720.1	135,427.3

Renewable Energy

9.1.4 East of England has seen an increase in renewable energy generation between 2017 and 2019 (see **Table 9.2**). Renewable energy generation in Norwich is significantly lower than Broadland and South Norfolk, but the total generation in these two rural districts has decreased between 2018 and 2019, whereas generation is increasing in Norwich. The majority of the renewable energy is generated by photovoltaics in all three districts¹²². Onshore wind energy generation, anaerobic digestion, sewage gas and landfill gas are also sources of energy generation in Broadland and South Norfolk.

Table 9.2: Total renewable energy generation in MegaWatt hours (MWh) in the three districts and the East of England between 2017 and 2019¹²³

Renewable Energy Generation (MWh)	2017	2018	2019
Broadland	75,495	77,272	77,051
Norwich	6,198	7,069	7,368
South Norfolk	104,726	108,837	102,686
East of England	9,812,968	12,183,538	12,558,154

Carbon emissions

9.1.5 The Climate Change Act 2008¹²⁴ is the basis for the UK’s approach to tackling and responding to climate change. It requires that emissions of carbon dioxide and other greenhouse gases are reduced and that climate change risks are prepared for. The Act also establishes the framework to deliver on these requirements.

¹²² Department for Business, Energy & Industrial Strategy (2020) Renewable electricity by local authority 2014 to 2019. Available at: <https://www.gov.uk/government/statistics/regional-renewable-statistics> [Date Accessed: 28/10/20]

¹²³ Ibid

¹²⁴ Climate Change Act 2008. Available at: <http://www.legislation.gov.uk/ukpga/2008/27/contents> [Date Accessed: 28/10/20]

- 9.1.6 The UK is a member of the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC is the key forum which oversees international action to tackle climate change. The UNFCCC led the development and adoption of The Paris Agreement in 2015¹²⁵. A total of 160 countries have pledged to cut their emissions as part of this process. The Committee on Climate Change (CCC) report ‘Net Zero – The UK’s contribution to stopping global warming’¹²⁶ recommended new emission targets which include reducing GHG emissions by at least 100% of 1990 levels (net zero) by 2050.
- 9.1.7 The CCC’s latest progress report¹²⁷ discusses the need for further measures to be implemented by the Government to ensure the UK meets the target of net zero by 2050. The delay of COP26 until November 2021 has provided an opportunity for the UK Government to continue to strengthen its focus on climate change resilience and adaptation and to ensure COVID-19 recovery plans help to accelerate the UK’s transition to net zero.
- 9.1.8 The estimated CO₂ emissions in the three authorities in 2018 are presented in **Table 9.3**. Carbon emissions per capita in the Plan area is greatest in South Norfolk, almost double of the per capita emissions in Norwich.

Table 9.3: Estimated CO₂ emissions per authority in 2018¹²⁸

	Total CO ₂ emissions estimates (tonnes)	Per Capita CO ₂ emissions estimates (tonnes)
Broadland	748,430	5.78
Norwich	496,812	3.52
South Norfolk	836,500	6.06
Greater Norwich	Total = 2,081,742	Average = 5.12

- 9.1.9 **Table 9.4** sets out the carbon emissions for the three districts and the east of England per sector. The majority of carbon emissions in Broadland and Norwich are from the industry and commercial sector. For South Norfolk, the sector which emits the greatest proportion of carbon emission is the transport sector. Carbon emissions have gradually decreased between 2016 and 2016 across all sectors for the East of England as a whole.

¹²⁵ United Nations Climate Change (2015) The Paris Agreement. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> [Date Accessed: 28/10/20]

¹²⁶ Committee on Climate Change (2019) Net Zero – The UK’s contribution to stopping global warming. Available at: <https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/> [Date Accessed: 28/10/20]

¹²⁷ Reducing UK emissions: 2020 Progress Report to Parliament. Available at: <https://www.theccc.org.uk/publication/reducing-uk-emissions-2020-progress-report-to-parliament/> [Date Accessed: 28/10/20]

¹²⁸ Department for Business, Energy & Industrial Strategy (2019) 2005 to 2017 UK local and regional CO₂ emissions – data tables. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/812142/2005-17_UK_local_and_regional_CO2_emissions_tables.xlsx [Date Accessed: 17/02/20]

Table 9.4: Carbon emissions (CO₂) by sector between 2016 and 2018¹²⁹

Carbon emissions (kt CO ₂)		Year		
District	Sector	2016	2017	2018
Broadland	Industry & Commercial	297,509	250,248	273,073
	Domestic	213,250	202,027	198,599
	Transport	240,806	250,167	269,983
	Total	759,982	709,964	748,430
Norwich	Industry & Commercial	216,008	204,431	197,547
	Domestic	189,996	179,079	175,803
	Transport	129,373	130,070	124,566
	Total	534,386	512,506	496,812
South Norfolk	Industry & Commercial	214,418	203,729	200,132
	Domestic	220,856	209,821	206,371
	Transport	415,220	441,113	446,203
	Total	836,655	839,728	836,500
East of England	Industry & Commercial	9,813,127	9,415,814	9,476,076
	Domestic	9,570,068	8,993,358	8,879,496
	Transport	14,125,377	14,471,697	14,305,154
	Total	33,341,443	32,690,152	32,446,571

9.1.10 A major source of GHGs is from vehicle emissions. The vast majority of residents would be likely to have at least one vehicle per household. It is likely that residential development proposed within the GNLP would result in an associated increase in the number of vehicles on the road in the Plan area, and as such, a consequent increase in GHG emissions would be expected, exacerbating anthropogenic climate change. These GHG emissions are also likely to have implications for human health and biodiversity (see **Chapters 8 and 11**).

¹²⁹ Ibid

- 9.1.11 One strategy to combat GHG emissions is to reduce the quantity of energy produced via fossil fuel led energy production¹³⁰. In the last two decades, there has been a significant increase in the volume of energy generated through renewable energy sources. In 2019, 37.1% of the electricity generated in the UK was from renewable sources, compared to 33.1% in 2018¹³¹.
- 9.1.12 Vegetation acts as a carbon sink, providing an important ecosystem service. Some site allocations proposed in the GNLP would be likely to result in a net loss in vegetation cover (i.e. those comprising previously undeveloped land), and as such, may compromise the carbon storage capacity of the natural environment.
- 9.1.13 Climatic factors have been predominantly taken into account in SA Objective 2 'Climate Change Mitigation and Adaptation', which seeks to reduce carbon emissions, adapting to and mitigating against the effects of climate change.

9.2 Impacts on climatic factors

- 9.2.1 **Box 9.1** sets out a plan-wide summary of the likely impacts on climatic factors that have been identified through the SA process. These impacts are those identified prior to the consideration of mitigation in the form of GNLP policies and Local Plan DM policies. **Box 9.2** lists the GNLP strategic and site policies, as well as Local Plan DM policies for the three districts which would be likely to mitigate, either fully or partially, some of the identified impacts. Policies which would improve identified impacts have also been listed. Where mitigating policies or proformas are silent, or the contents of the GNLP only partially mitigates the adverse impacts, a residual adverse effect is identified. **Box 9.3** explores the nature of these residual effects.

Box 9.1: Summary of identified impacts on climatic factors

- | | |
|---|---|
| 1 | Increased carbon emissions
The proposed development within the GNLP could potentially increase local carbon emissions by approximately 27.1% ¹³² . This would be likely to result in adverse impacts, due to the acceleration of anthropogenic climate change. |
| 2 | Loss of multi-functional green infrastructure
The proposed development within the GNLP could potentially result in the loss of large quantities of previously undeveloped land. Some of the proposed development could potentially also result in the loss of trees, hedgerows and other vegetation currently on site. Multi-functional green infrastructure is vital in helping to reduce the adverse impacts of climate change. |

¹³⁰ RTPI (2018) Renewable Energy: Planning's role in delivering renewable energy in the new low carbon economy. Available at: <https://www.rtpi.org.uk/research/2018/june/renewable-energy/> [Date Accessed: 28/10/20]

¹³¹ Department for Business, Energy and Industrial Strategy (2020) UK Energy in Brief. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/904503/UK_Energy_in_Brief_2020.pdf [Date Accessed: 28/10/20]

¹³² See paragraph C.1.3.3 of Appendix C which sets out in full the calculation used

9.3 Local Plan mitigation

- 9.3.1 The contents of the GNLP would be likely to help reduce the adverse impacts of the Plan in relation climatic factors, with policies focusing on the integration of multi-functional green infrastructure. Policies which are anticipated to help mitigate the impacts identified in **Box 9.1**, are discussed in **Box 9.2**.

Box 9.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on climatic factors

Increased carbon emissions

GNLP Policy 2 aims to meet national carbon reduction targets by facilitating a reduction in carbon emissions through the promotion of low carbon energy generation and sustainable building design.

GNLP Policies 2, 3, 4 and 6 outline the requirement for development to contribute towards the multi-functional green infrastructure network, which would be expected to provide additional carbon storage capacity.

GNLP Policy 4 aims to encourage the integration of sustainable transport options in the design of new development, and therefore, contribute towards a reduction in traffic related carbon emissions.

Policies GC5 (Broadland), DM1.4, DM4.1 (South Norfolk), DM1, DM3 and DM4 (Norwich) seek to encourage the generation and use of renewable energy with the aim of reducing the carbon footprint of residents.

Policies GC4, H5, TS1, TS2 (Broadland), DM1.2, DM3.10 (South Norfolk), DM12, DM14, DM18, DM26, DM27, DM28 and DM33 (Norwich) would be expected to encourage sustainable travel through ensuring sites are accessible via a range of public transport and pedestrian links.

Site Policies GNLPO133-BR, GNLPO133-C, GNLPO133-DR, GNLPO133-E, GNLPO282, GNLPO506, GNLPO2164 and R38 seek to ensure development achieves an energy efficient design and Site Policy GNLPO133-BR also seeks for development to achieve a low carbon design.

Site Policies GNLPO133-BR, GNLPO133-C, GNLPO133-DR and GNLPO133-E seek to link development to the university district heating network.

Loss of multi-functional green infrastructure

GNLP Policies 2, 3, 4 and 6 outline the requirement for development to contribute towards the multi-functional green infrastructure network.

Policies EN1, EN3 (Broadland), DM1.4, DM4.4 (South Norfolk), DM3 and DM6 (Norwich) would be expected to ensure proposals incorporate multi-functional green infrastructure and contribute to the local green infrastructure network.

Site Policies ACL3, BRU2, CC2, CC4b, CC7, CC8, CC10, CC15, CC16, CC24, COL1 [Emp], COL2, COL3, DRA1, EAS1, GNLPO102, GNLPO132, GNLPO133-BR, GNLPO133-C, GNLPO133-DR, GNLPO133-E, GNLPO159R, GNLPO253, GNLPO293, GNLPO307/GNLPO327, GNLPO311/0595/2060, GNLPO312, GNLPO331RB, GNLPO331RC, GNLPO337R, GNLPO354R, GNLPO360/GNLPO3053/R10, GNLPO378R/GNLPO2139R, GNLPO401, GNLPO409AR, GNLPO409BR, GNLPO451, GNLPO463R, GNLPO506, GNLPO520, GNLPO581/2043, GNLPO596R, GNLPO608, GNLPO608R, GNLPO1001, GNLPO1048R, GNLPO2019, GNLPO2034, GNLPO2109, GNLPO2114, GNLPO2136, GNLPO2163, GNLPO2164, GNLPO3013, GNLPO3054, HAR4, HAR6, HAR7, HET1, HIN2, HNF2/GNLPO466R, KES2, LOD3, POR3, R1, R2, R7, R13, R14/R15, R17, R18, R19, R29, R31, R33, R36, R37, R42 and REP1 would be likely to ensure proposals contribute to the multi-functional green infrastructure network.

9.4 Residual effects on climatic factors

9.4.1 The GNLP and adopted Local Plan policies aim to help mitigate the adverse impacts relating to climatic factors. However, the implementation of these requirements would not be expected to fully mitigate the adverse impacts associated with net increases in carbon emissions. Further details, and where applicable, potential recommendations to help monitor these adverse impacts are presented in **Box 9.3**.

Box 9.3: Residual effects for climatic factors

Identified impact	Residual effects
<p>Increased carbon emissions</p>	<p>The proposed development of 49,492 dwellings across the Plan area would be expected to increase the local population by 110,367 residents. These residents would be expected to increase traffic flows and vehicular emissions, as well as increase energy demand in the Plan area. This would, in turn, exacerbate the effects of climate change. The construction and occupation of 49,492 dwellings, as well as the development of large areas of employment floorspace to help create at least 33,000 new employment opportunities, would be likely to rely on the use of materials known to have a high carbon footprint, such as concrete, cement and steel. Although the GNLP policies would be expected to have a positive impact in helping to reduce emissions, they would not be expected to fully mitigate this impact and would be unlikely to facilitate significant reductions in carbon emissions, in line with objectives set under the 2018 DEFRA Clean Growth Strategy (30% reduction in carbon emissions from road transport by 2032)¹³³. However, it would be expected that over time, advances in technologies and alternative solutions to energy generation would be expected to reduce this adverse impact by some extent.</p> <p>An increase in carbon emissions in Greater Norwich would be likely to be a long-term but potentially temporary significant effect.</p>
<p>Loss of multi-functional green infrastructure</p>	<p>Numerous policies aim to ensure development proposals incorporate links and increase the provision of the multi-functional green infrastructure network. Although the proposed development within the GNLP would be expected to result in the loss of greenfield land and associated green infrastructure to some extent, policies within the GNLP would be expected to mitigate this loss of multi-functional green infrastructure.</p>

¹³³ HM Government (2018). The Clean Growth Strategy – Leading the Way to a Low Carbon Future. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf [Date Accessed: 18/11/20].

10 Cultural heritage

10.1 Baseline

10.1.1 Historic environment priorities from the international to the local level seek to address a range of issues, particularly in relation to the conservation and enhancement of heritage assets that are irreplaceable and play an important role in place making and the quality of life for local residents.

10.1.2 National and local guidance seeks to protect designated assets and their settings (such as Listed Buildings, Conservation Areas, Scheduled Monuments, and Registered Parks and Gardens). Guidance also recognises the cultural aspects of landscape and establish mechanisms for their protection against inappropriate development; recognises the potential and actual value of unknown and undesignated assets; and conserves/enhances sites and landscapes of archaeological and heritage interest so that they may be enjoyed by both present and future generations.

10.1.3 Historic England advocate the seeking of opportunities alongside development for delivering heritage-led regeneration¹³⁴, creating a strong sense of place and local distinctiveness, encouraging the use of traditional building skills, and promoting climate change resilience and innovative reuse of historic buildings where appropriate¹³⁵.

Designated features

10.1.4 Greater Norwich has a wide range of designated statutory and non-statutory heritage assets. These important heritage assets are protected through the planning system via conditions imposed on developers and other mechanisms. Historic England is the statutory consultee for certain categories of listed building consent and all applications for scheduled monument consent, as well as statutory consultee in the SEA and Local Plans processes.

10.1.5 The Register of Parks and Gardens (RPGs) of Special Historic Interest was first published by English Heritage in 1988¹³⁶. Although inclusion on the Register brings no additional statutory controls, registration is a material consideration in planning terms. RPG are registered as: Grade I, deemed to be of international importance; Grade II*, deemed to be of exceptional significance; and Grade II, deemed to be of sufficiently high level of interest to merit a national designation. Within Greater Norwich, there are a total of 22 RPGs (see **Figure 10.1**).

¹³⁴ Deloitte (2017) Heritage Works: A toolkit of best practice in heritage regeneration. Available at: <https://historicengland.org.uk/images-books/publications/heritage-works/> [Date Accessed: 28/10/20]

¹³⁵ Historic England (2016) Sustainability Appraisal and Strategic Environmental Assessment – Historic England Advice Note 8. Available at: <https://historicengland.org.uk/images-books/publications/sustainability-appraisal-and-strategic-environmental-assessment-advice-note-8/> [Date Accessed: 28/10/20]

¹³⁶ Historic England (2020) Registered Parks & Gardens. Available at: <https://historicengland.org.uk/listing/what-is-designation/registered-parks-and-gardens/> [Date Accessed: 28/10/20]

- 10.1.6 Scheduled Monument (SMs) are the oldest form of heritage protection in England, going back to the 1882 Ancient Monuments Protection Act¹³⁷. There are 82 SMs across the Plan area (see **Figure 10.1**).
- 10.1.7 Listed Buildings are those that have been placed on the Statutory List of Buildings of Special Architectural or Historic Interest. There are a total of 213 Grade I Listed, 355 Grade II* Listed and 4,437 Grade II Listed Buildings across the Plan area (see **Figure 10.2**). Historic England defines Grade I Listed Buildings as being of “*exceptional interest*”, Grade II* Listed Buildings as “*particularly important buildings of more than special interest*” and Grade II Listed Buildings as “*of special interest*”¹³⁸.
- 10.1.8 Conservation areas are areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance¹³⁹. Each local authority has the power to designate conservation areas in any area of ‘special architectural or historic interest’ whose character or appearance is worth protecting or enhancing. Conservation Area designations increase the planning authority’s control over demolition of buildings and over certain alterations to residential properties that would normally be classed as ‘permitted development’ and not require planning permission. There are 137 Conservation Areas across Greater Norwich (see **Figure 10.3**), of which there is a higher number located in South Norfolk.
- 10.1.9 Since 1998, Historic England has released an annual Heritage at Risk Register. The Heritage at Risk Register highlights the Grade I and Grade II* Listed Buildings, SMs, Conservation Areas, wreck sites and RPGs in England deemed to be ‘at risk’. In Greater Norwich, this includes 30 heritage assets¹⁴⁰.

Non-designated assets

- 10.1.10 Paragraph 187 of the NPPF states “*Local planning authorities should maintain or have access to a historic environment record. This should contain up-to-date evidence about the historic environment in their area and be used to: a) assess the significance of heritage assets and the contribution they make to their environment; and b) predict the likelihood that currently unidentified heritage assets, particularly sites of historic and archaeological interest, will be discovered in the future*”.

¹³⁷ Historic England (2020) Scheduled Monuments. Available at: <https://historicengland.org.uk/listing/what-is-designation/scheduled-monuments/> [Date Accessed: 28/10/20]

¹³⁸ Historic England (2020) Listed Buildings. Available at: <https://historicengland.org.uk/listing/what-is-designation/listed-buildings/> [Date Accessed: 28/10/20]

¹³⁹ Historic England (2020) Designating and Managing a Conservation Area. Available at: <https://historicengland.org.uk/advice/planning/conservation-areas/> [Date Accessed: 28/10/20]

¹⁴⁰ Historic England (2020) Heritage at Risk Register. Available at: <https://historicengland.org.uk/advice/heritage-at-risk/search-register/> [Date Accessed: 28/10/20]

- 10.1.11 Whilst not listed, many historic buildings and infrastructure such as roads, canals, railways and their associated industries are of historic interest. Likewise, not all nationally important archaeological remains are scheduled. There will also be unrecorded archaeological artefacts in the area, which have not yet been discovered. The Historic Environment Record¹⁴¹ maintained by Norfolk County Council provides a reliable data source on local heritage assets for monitoring over time.
- 10.1.12 Maintaining local distinctiveness, character and sense of place alongside delivering development can present challenges. However, new development can also stimulate new investment and potentially enhance the local townscape or improve the accessibility of heritage assets for local residents.
- 10.1.13 Building in Context¹⁴² is a toolkit which aims to help local authorities enhance development proposals to better reflect its historic surroundings and local context. The eight Building in Context principles are that a successful project will:
- Start with an assessment of the value of retaining what is there;
 - Relate to the geography and history of the place and lie of the land;
 - Be informed by its own significance so that its character and identity will be appropriate to its use and context;
 - Sit happily in the pattern of existing development and the routes through and around it;
 - Respect important views;
 - Respect the scale of neighbouring buildings;
 - Use materials and building methods which are as high quality as those used in existing buildings; and
 - Create new views and juxtapositions which add to the variety and texture of the setting.
- 10.1.14 Heritage assets are predominantly considered under SA Objective 13 ‘Historic Environment’, which seeks to conserve and enhance the historic environment, heritage assets and their setting.

¹⁴¹ Norfolk County Council (2020) Historic Environment Record. Available at: <https://www.norfolk.gov.uk/libraries-local-history-and-archives/archaeology-and-historic-environment/historic-environment-record> [Date Accessed: 28/10/20]

¹⁴² Building in Context (no date) The BiC Toolkit. Available at: <http://www.building-in-context.org/the-bic-toolkit/> [Date Accessed: 28/10/20]

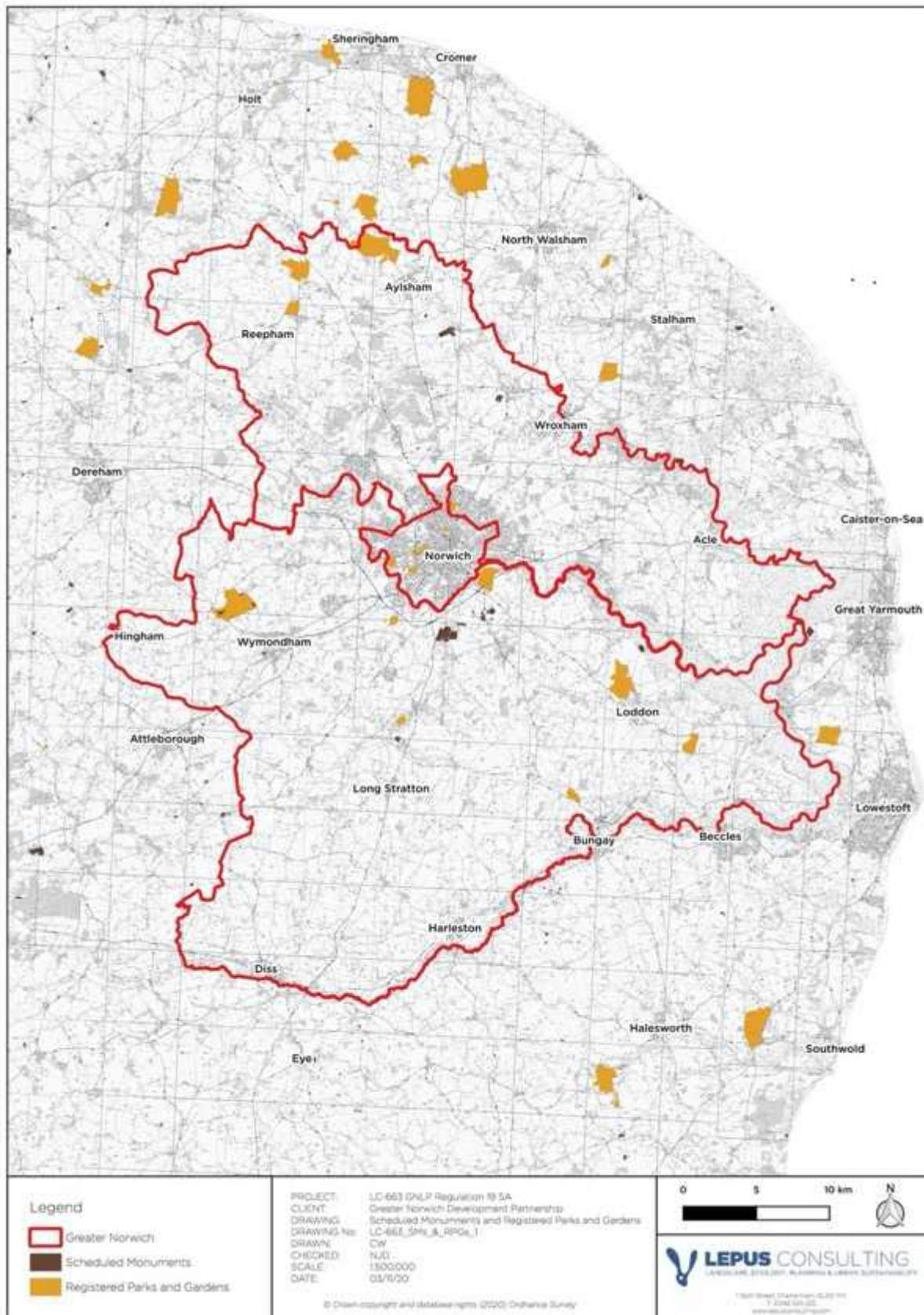


Figure 10.1: Scheduled Monuments and Registered Parks and Gardens in and around the Plan area (source: Historic England)

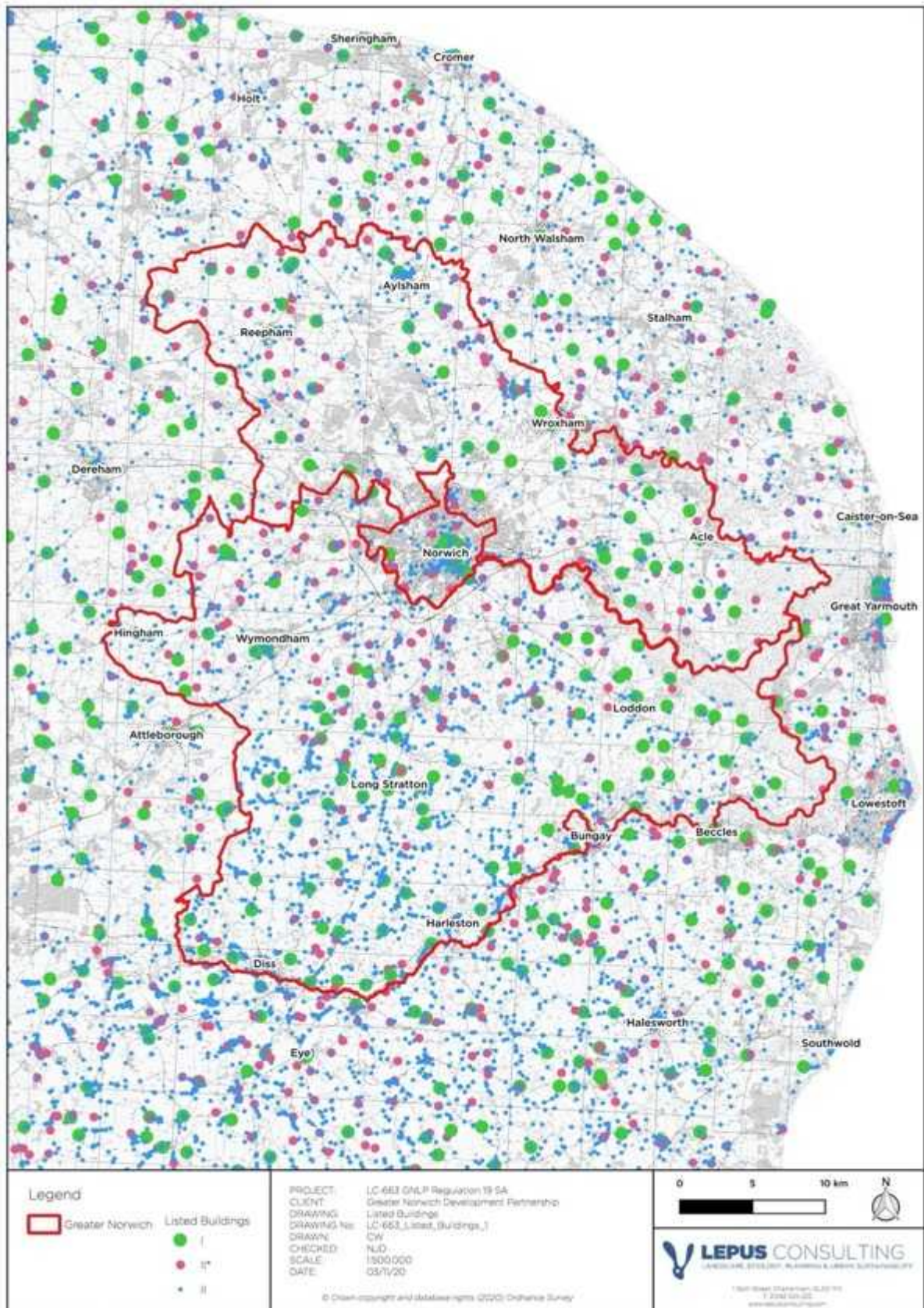


Figure 10.2: Listed Buildings in and around the Plan area (source: Historic England)

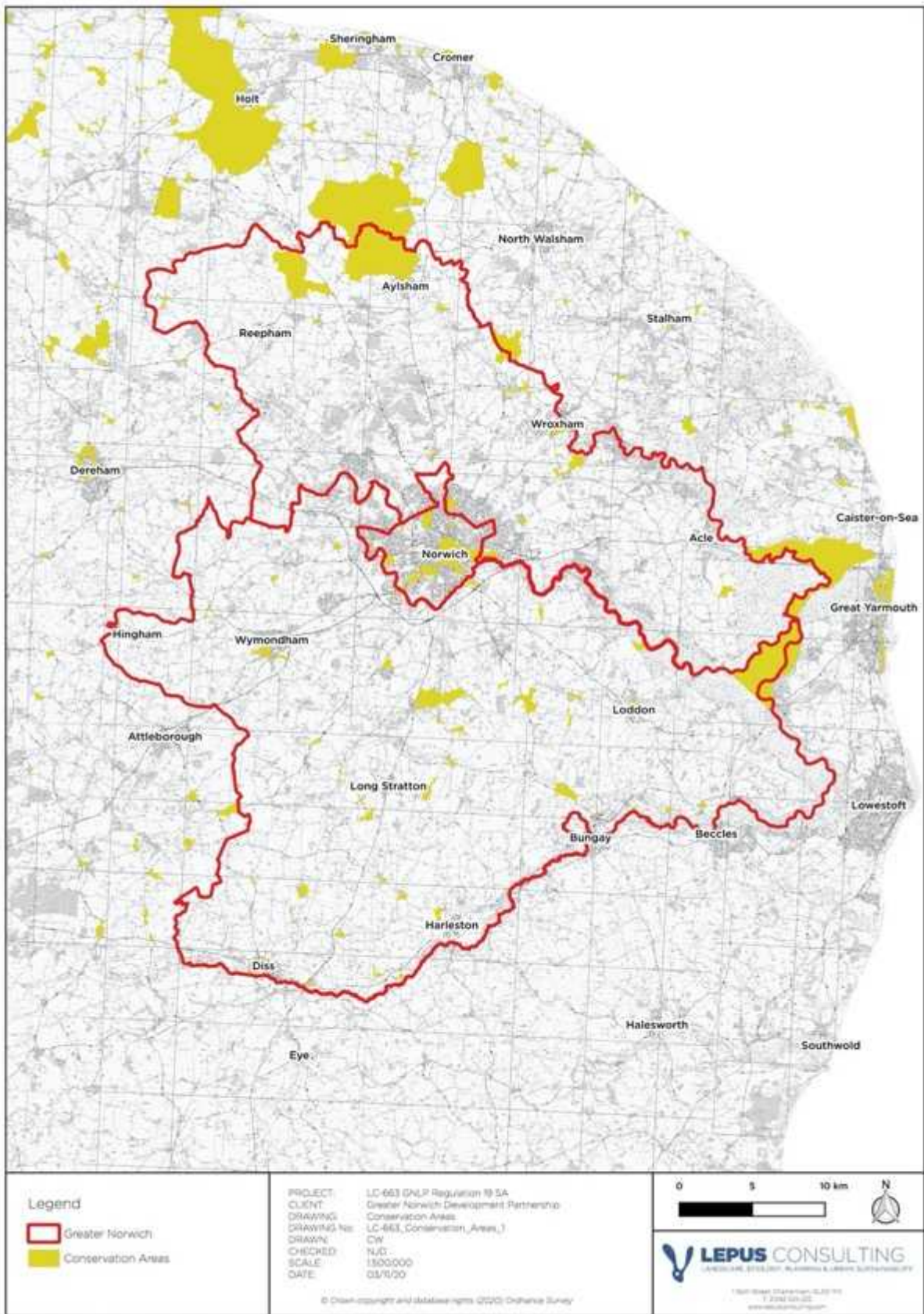


Figure 10.3: Conservation Areas in and around the Plan area (source: GNLP)

10.2 Impacts on cultural heritage

10.2.1 **Box 10.1** sets out a plan-wide summary of the likely impacts on cultural heritage that have been identified through the SA process. These impacts are those identified prior to the consideration of mitigation in the form of GNLP policies and Local Plan DM policies. **Box 10.2** lists the GNLP strategic and site policies, as well as Local Plan DM policies for the three districts which would be likely to mitigate, either fully or partially, some of the identified impacts. Policies which would improve identified impacts have also been listed. Where mitigating policies or proformas are silent, or the contents of the GNLP only partially mitigates the adverse impacts, a residual adverse effect is identified. **Box 10.3** explores the nature of these residual effects.

Box 10.1: Summary of identified impacts on cultural heritage

1	<p>Alter character and/ or setting of Scheduled Monuments (SMs)</p> <p>Any proposed development in close proximity to an SM could potentially result in substantial harm to a nationally designated asset and/or its setting. SMs comprise a variety historic features including below ground remains, burial mounds and standing stones, for example. Site GNLP0360/GNLP3053/R10 coincides with ‘Carrow Priory (ruined portions)’ SM. Other site allocations, in particular in Norwich, are located in close proximity to SMs.</p>
2	<p>Alter character and/ or setting of Registered Parks and Gardens (RPGs)</p> <p>Registered Parks and Gardens (RPGs) are designated heritage assets which Local Planning Authorities must consider within in their decision-making processes. Site GNLP0133BR coincides with ‘Earlham Park’ RPG. Other sites are located in close proximity to RPGs, including Site GNLP0463R which is located adjacent to ‘Langley Park’ RPG.</p>
3	<p>Alter character and/ or setting of Listed Buildings</p> <p>Any proposed development which is coincident with, or is located in close proximity to, a Listed Building has the potential to affect both the asset itself and its setting. Grade I and II* Listed Buildings are considered to be those of greatest historic or architectural significance. The majority of the Listed Buildings located within the Plan area are Grade II Listed. Five of the allocated sites coincide with Listed Buildings, and many of the allocated sites are located in close proximity to Listed Buildings.</p>
4	<p>Alter character and/ or setting of Conservation Areas</p> <p>Conservation Areas are identified as areas of architectural or historic interest, the characteristics of which should be preserved or enhanced. Any proposed development within or in proximity to a Conservation Area has the potential to adversely impact on the heritage asset and its setting. Sites GNLP0133BR, TROW1, GNLP0360/GNLP3053/R10, CC11, CC2, CC8, GNLP0451, CC10, CC7, CC3, CC4a, CC4b, CC24, GNLP0401, CC18, GNLP0506, CC30, GNLP0354, GNLP0068, GNLP2114, GNLP2163 and GNLP0409AR coincide with a Conservation Area and several allocated sites are located adjacent to in close proximity to Conservation Areas.</p>

10.3 Local Plan mitigation

10.3.1 The GNLP considers the cultural heritage of the Plan area closely, in particular the historic character of the centre of Norwich. GNLP Policy 3 seeks to protect and enhance the historic environment and site policies aim to ensure development does not result in adverse impacts to assets associated with the allocated site. These policies are listed in **Box 10.2**.

Box 10.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on cultural heritage

Alter character and/ or setting of Scheduled Monuments (SMs)

GNLP Policy 2 would be expected to ensure that landscaping measures are incorporated within new developments which consider local characteristics and enhance local landscape, including that of nearby SMs.

GNLP Policy 3 seeks to ensure that development proposals do not result in harm to designated heritage assets or their historic character and continued or new uses are provided for heritage assets which retain their historic significance.

Policies EN2, GC4 (Broadland), DM1.4, DM2.10, DM2.12, DM4.10 (South Norfolk), DM1, DM3, DM9, DM10 and DM12 (Norwich) would also be expected to ensure that heritage assets including SMs and their settings are preserved and enhanced in line with their significance.

Site Policies CC30, GNLP0125, GNLP0409AR, GNLP0409BR, GNLP0360/GNLP3053/R10, R13 and R31 seek to mitigate adverse impacts on Scheduled Monuments.

Alter character and/ or setting of Registered Parks and Gardens (RPGs)

GNLP Policy 2 would be expected to ensure that landscaping measures are incorporated within new developments which consider local characteristics and enhance local landscape, including that of nearby RPGs.

GNLP Policy 3 seeks to ensure that development does not result in harm to designated heritage assets or their historic character and continued or new uses are provided for heritage assets which retain their historic significance.

Policies EN2, GC4 (Broadland), DM1.4, DM2.10, DM4.10 (South Norfolk), DM1, DM3, DM9, DM10 and DM12 (Norwich) would also be expected to ensure that heritage assets including RPGs and their settings are preserved and enhanced in line with their significance.

Site Policies GNLP0133-BR, GNLP2164, GNLP0360/GNLP3053/R10 and R37 seek to mitigate adverse impacts on Registered Parks and Gardens.

Alter character and/ or setting of Listed Buildings

GNLP Policy 2 would be expected to ensure that landscaping measures are incorporated within new developments which consider local characteristics and enhance local landscape, including that of heritage assets.

GNLP Policy 3 seeks to ensure that development proposals do not result in harm to designated and non-designated heritage assets or their historic character and continued or new uses are provided for heritage assets which retain their historic significance.

Policies EN2, GC4 (Broadland), DM1.4, DM2.10, DM4.10 (South Norfolk), DM1, DM3, DM9, DM10 and DM12 (Norwich) would be expected to ensure that heritage assets including Listed Buildings and their settings are preserved and enhanced in line with their significance.

Site Policies BKE3, CC2, CC3, CC4a, CC4b, CC7, CC8, CC10, CC11, CC16, CC18, CC24, CC30, COL2, DRA1, EAS1, FRE1, GNLP0125, GNLP0133-BR, GNLP0133-DR, GNLP0133-E, GNLP0172, GNLP0253, GNLP0282, GNLP0311/0595/2060, GNLP0312, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0506, GNLP0520, GNLP0596R, GNLP0605, GNLP0608, GNLP0608R, GNLP2108, GNLP2109, GNLP2114, GNLP2143, GNLP2163, GNLP3054, HAR5, HNF1, KES2, R7, R17, R20, R31 and R37 seek to help mitigate potential adverse impacts on nearby Listed Buildings.

Alter character and/ or setting of Conservation Areas

GNLP Policy 2 would be expected to ensure that landscaping measures are incorporated within new developments which consider local characteristics and enhance local landscape, including that of heritage assets.

GNLP Policy 3 seeks to ensure that development proposals do not result in harm to designated and non-designated heritage assets or their historic character and continued or new uses are provided for heritage assets which retain their historic significance.

Box 10.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on cultural heritage

Policies EN2, GC4 (Broadland), DM1.4, DM2.10, DM4.10 (South Norfolk), DM1, DM3, DM9, DM10 and DM12 (Norwich) would help to ensure that development proposals have regard to the character and appearance of the surrounding historic environment within Conservation Areas.

Site Policies CC2, CC3, CC4a, CC4b, CC7, CC8, CC10, CC11, CC13, CC16, CC18, CC24, CC30, COL2, FOU2, GNLP0125, GNLP0133-BR, GNLP0312, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0506, GNLP0605, GNLP0608, GNLP2114, GNLP2163, GNLP2164, GNLP3054, R13, R14/R15, R20, R36, R38, R42 and TROW1 would be likely to help mitigate potential adverse impacts on nearby Conservation Areas.

10.4 Residual effects on cultural heritage

10.4.1 The GNLP policies seek to mitigate potential adverse impacts on heritage assets due to the proposed development. This is discussed in **Box 10.3**.

Box 10.3: Residual effects for cultural heritage

Identified impact	Residual effects
Alter character and/ or setting of Scheduled Monuments	GNLP Policy 3 aims to ensure that development proposals conserve and enhance the historic environment and development proposals located in close proximity to heritage assets should prepare a heritage impact assessment. Site policies also set out site-specific mitigation which would be protect and enhance heritage assets which coincide with or located in close proximity to allocated site. Overall, the GNLP would be expected to result in a negligible impact on cultural heritage.
Alter character and/ or setting of Registered Parks and Gardens	
Alter character and/ or setting of Listed Buildings	
Alter character and/ or setting of Conservation Areas	

11 Human health

11.1 Baseline

11.1.1 National and local health strategies and policies seek to promote the development of healthy communities, such as through delivering age-friendly environments for the elderly, encouraging healthier food choices and facilitating active travel. In line with the NPPF, local planning authorities should seek to promote social interaction, create communities which are safe and accessible, and ensure there is good accessibility to a range of GI, sports facilities, local shops, cultural buildings and outdoor space.

11.1.2 Public Health England's Strategy for 2020 – 2025¹⁴³ sets out priorities within the public health system and areas of focus including addressing health inequalities and narrowing the 'health gap' between poor and wealthy communities, reducing rates of infectious diseases, addressing unhealthy behaviours and ensuring the potential of new technologies is realised.

11.1.3 The COVID-19 pandemic has also highlighted issues with health inequalities, in particular the lack of access to outdoor space in some housing situations and the greater risks in terms of both physical and mental wellbeing which this presents.

Health and Wellbeing

11.1.4 The health of people in Broadland and South Norfolk is generally better than the national average, but in Norwich it is markedly worse. Broadland and South Norfolk, for example, have generally healthier and more active populations than Norwich, and life expectancy is slightly higher in these two districts in comparison to Norwich. A summary of the Public Health Profiles is shown in **Table 11.1**.

¹⁴³ Public Health England (2019) PHE Strategy 2020-25. Available at: <https://www.gov.uk/government/publications/phe-strategy-2020-to-2025> [Date Accessed: 28/10/20]

Table 11.1: Health statistics for Broadland¹⁴⁴, Norwich¹⁴⁵ and South Norfolk¹⁴⁶ in comparison to the England average

	Deprivation score (IMD 2015)	Male life expectancy (yrs)	Female life expectancy (yrs)	Suicide rate (per 100,000)	Physically active adults (%)	Overweight or obese adults (%)
Broadland	11.1	81.0	84.9	9.3	69.7	59.0
Norwich	28.8	78.1	83.2	16.6	67.1	58.8
South Norfolk	13.0	81.1	85.0	7.4	73.3	61.6
England	21.8	79.6	83.2	10.1	67.2	62.3

Health Facilities

11.1.5 To help facilitate healthy and active lifestyles, residents need to have good access to NHS hospitals with an Accident and Emergency (A&E) department and GP (General Practice) surgeries. Ideally, residents should be within an approximate ten-minute walking distance to their nearest GP surgery, whilst a hospital within 5km would be considered a sustainable distance. Where distances to important health services exceed these guidelines, sustainable transport modes such as frequent and affordable bus routes should be available to residents.

11.1.6 There is only one NHS hospital with an A&E department in the Plan area: Norfolk and Norwich University Hospital. Other hospitals in Greater Norwich include St Michaels Hospital, Hellesdon Hospital, Julian Hospital and Norwich Community Hospital (see **Figure 11.1**). There are approximately 70 GP surgeries located across the Plan area, with the surgeries more-or-less evenly distributed across the three districts.

Green spaces and natural habitats

11.1.7 Exposure to a diverse range of natural habitats is significantly beneficial for physical and mental health and well-being. Good access to green/recreational areas can reduce stress, fatigue, anxiety and depression¹⁴⁷. Good access to green spaces is associated with healthy foetal growth in pregnant women, higher birth weights, healthy microbiomes in babies and reduced rates of obesity and type 2 diabetes. Impacts of access to the natural environment are particularly significant for lower socio-economic groups.

¹⁴⁴ Public Health England (2019) Local Authority Health Profiles – Broadland. Available at: https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/gid/1938132701/pat/6/par/E12000006/ati/201/are/E07000144/iid/93014/age/298/sex/4/cid/4/page-options/ine-pt-0_ine-vo-0_ine-vo-1:2015:-1:-1_ine-ct-39_ovw-do-0 [Date Accessed: 28/10/20]

¹⁴⁵ Public Health England (2019) Local Authority Health Profiles – Norwich. Available at: https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/gid/1938132701/pat/6/par/E12000006/ati/201/are/E07000148/iid/93014/age/298/sex/4/cid/4/page-options/ine-pt-0_ine-vo-0_ine-vo-1:2015:-1:-1_ine-ct-39_ovw-do-0 [Date Accessed: 28/10/20]

¹⁴⁶ Public Health England (2019) Local Authority Health Profiles – South Norfolk. Available at: https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/gid/1938132701/pat/6/par/E12000006/ati/201/are/E07000149/iid/93014/age/298/sex/4/cid/4/page-options/ine-pt-0_ine-vo-0_ine-vo-1:2015:-1:-1_ine-ct-39_ovw-do-0 [Date Accessed: 28/10/20]

¹⁴⁷ Houlden, V., Weich, S. and Jarvis, S. (2017) A cross-sectional analysis of green space prevalence and mental wellbeing in England

- 11.1.8 Providing residents with sustainable access to a diverse range of natural habitats is an effective means of reducing health inequalities in the area. The extensive PRoW network throughout Norfolk and the nearby Broads National Park offers residents access into the countryside, which provides an open and rural landscape of natural habitats. Given the rural character of much of Broadland and South Norfolk, residents are likely to have good pedestrian access to the surrounding countryside and a good range of natural habitats.
- 11.1.9 The GNLP area supports a network of biodiversity sites, providing local residents with opportunities to visit natural outdoor spaces and view wildlife. This includes SPAs, SACs, SSSIs, LNRs and CWSs (see **Chapter 8**).
- 11.1.10 Within Greater Norwich, there are a wide variety of public green spaces (see **Figure 11.2**), including parks, playing fields, golf courses, allotments and sports facilities. All these open spaces positively contribute towards the health and wellbeing of residents, by helping to encourage physical exercise through sports, recreation and active travel.

Air Pollution

- 11.1.11 As discussed in detail in **Chapter 7**, air pollution is a significant concern internationally, nationally and locally, with an average of 4.7% of mortality in England and 5.2% of mortality across Greater Norwich being attributable to particulate air pollution¹⁴⁸.
- 11.1.12 Development proposals located in close proximity to AQMAs or main roads would expose site end users to transport associated noise and air pollution, with adverse impacts on health and wellbeing. It is widely accepted that the effects of air pollution from road transport decreases with distance from the source of pollution. The Department for Transport (DfT) in their Transport Analysis Guidance (TAG) consider that, *“beyond 200m from the link centre, the contribution of vehicle emissions to local pollution levels is not significant”*¹⁴⁹. This statement is supported by Highways England and Natural England based on evidence presented in a number of research papers^{150 151}.
- 11.1.13 There is only one AQMA in the Plan area: the Central Norwich AQMA. There are no motorways which pass across the Plan area. There is a network of A-roads which provide good road access to Norwich City and its surroundings, towards the Norfolk coastline and towards Ipswich, Cambridge and Peterborough.

¹⁴⁸ NHS England (2017) Fraction of mortality attributable to particulate air pollution. Available at: <https://data.england.nhs.uk/dataset/phe-indicator-30101/resource/5ae3ced3-1029-42d3-bdf0-b3ea81651370> [Date Accessed: 22/10/20]

¹⁴⁹ Department for Transport (2019) TAG unit A3 Environmental Impact Appraisal. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825064/tag-unit-a3-environmental-impact-appraisal.pdf [Date Accessed: 22/10/20]

¹⁵⁰ Bignal, K., Ashmore, M & Power, S. (2004) The ecological effects of diffuse air pollution from road transport. English Nature Research Report No. 580, Peterborough.

¹⁵¹ Ricardo-AEA (2016) The ecological effects of air pollution from road transport: an updated review. Natural England Commissioned Report No. 199.

11.1.14 The issue of human health is dealt with under SA Objective 8 'Health' with the aim of promoting access to health facilities and healthy lifestyles.

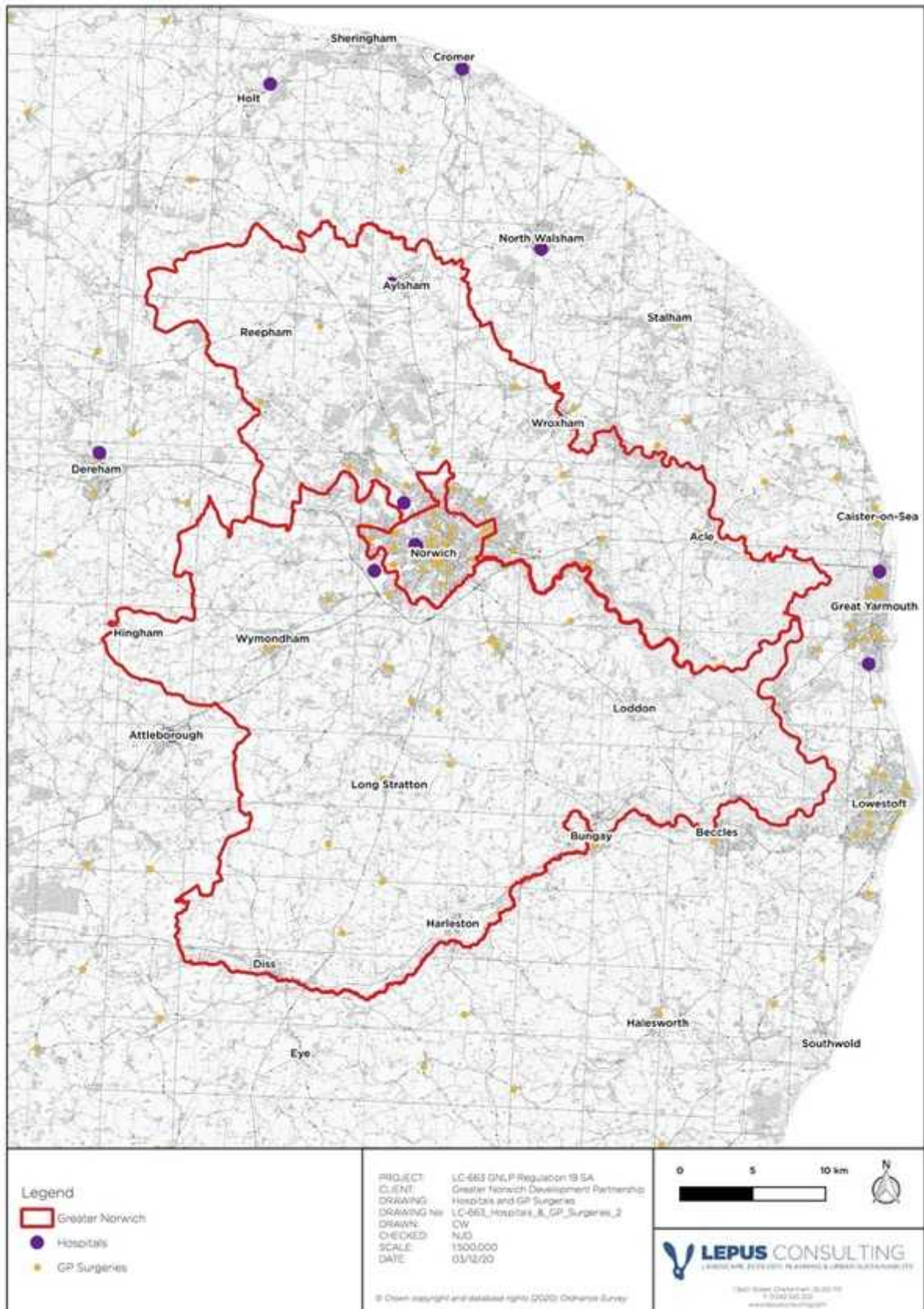


Figure 11.1: Hospitals and GP Surgeries in and around the Plan area (source: GDNP)

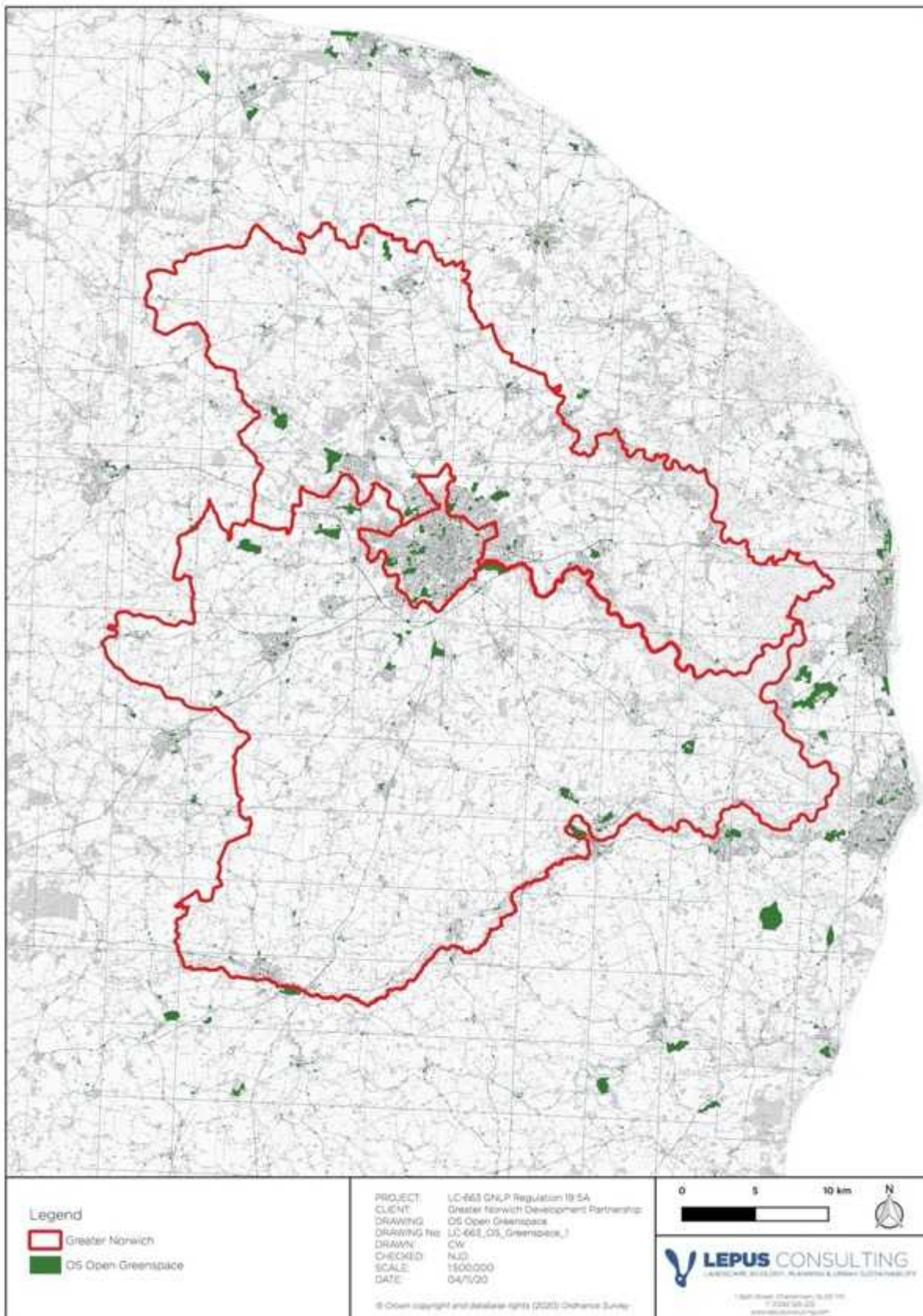


Figure 11.2: OS Open Greenspace in and around the Plan area (source: Ordnance Survey)

11.2 Impacts on human health

11.2.1 **Box 11.1** sets out a plan-wide summary of the likely impacts on human health that have been identified through the SA process. These impacts are those identified prior to the consideration of mitigation in the form of GNLP policies and Local Plan DM policies. **Box 11.2** lists the GNLP strategic and site policies, as well as Local Plan DM policies for the three districts which would be likely to mitigate, either fully or partially, some of the identified impacts. Policies which would improve identified impacts have also been listed. Where mitigating policies or proformas are silent, or the contents of the GNLP only partially mitigates the adverse impacts, a residual adverse effect is identified. **Box 11.3** explores the nature of these residual effects.

Box 11.1: Summary of identified impacts on human health

1	<p>Reduction local air quality with implications for human health</p> <p>Due to the proposed development of 49,492 dwellings within the Plan area, it would be likely that air quality within Greater Norwich would be adversely impacted by this quantum of development. Impacts would be likely to be greatest where new development increases local congestion. The long-term health of residents, in particular vulnerable groups including children and the elderly, would be likely to be adversely impacted by local reductions in air quality. This impact is considered in detail in Chapter 7.</p>
2	<p>Reduced accessibility to NHS hospitals and GP surgeries</p> <p>35 of the site allocations are located within 5km of Norfolk and Norwich University Hospital and many of the sites, in particular in Norwich, are located within 800m of a GP surgery. In such cases, it may be difficult for residents to reach essential health care services, which could potentially have detrimental impacts on human health.</p>
3	<p>Access to leisure facilities</p> <p>23 of the site allocations are located within 1.5km of a leisure centre. Local residents with limited access to these facilities could potentially be discouraged from living active and healthy lifestyles, which could potentially have adverse impacts on mental wellbeing as well as physical health.</p>
4	<p>Encouraging healthy lifestyles</p> <p>The majority of the site allocations would be expected to locate new resident in areas with good access to the surrounding countryside or public greenspaces. Good access to public green or open spaces, a diverse range of natural habitats and travelling via walking and cycling are known to have physical and mental health benefits.</p>

11.3 Local Plan mitigation

- 11.3.1 GNLP strategic policies, Local Plan DM policies and site policies seek to promote healthy and active lifestyles for residents of Greater Norwich. These policies would be expected to result in benefits to human health, improvements to pedestrian and cycling networks and improved sustainable transport to healthcare facilities. Reductions in air quality which would be expected following the proposed development of 49,492 dwellings would not be expected to be fully mitigated through GNLP policies. All mitigation is discussed further in **Box 11.2**.

Box 11.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on human health

Reduction local air quality with implications for human health

GNLP Policies 2 and 4 would help to ensure that the proposed development seeks to minimise pollution and protect air quality.

GNLP Policy 2 could potentially reduce local air pollution through the promotion of electric vehicle infrastructure, and the requirement for major developments to submit a Sustainability Statement.

GNLP Policy 4 aims to support the promotion of sustainable transport through the Transport for Norwich Strategy¹⁵², which would be expected to help reduce local air pollution by reducing personal car use.

Policies EN4 (Broadland), DM3.14 (South Norfolk), DM2 and DM11 (Norwich) seek to ensure that development proposals are adequately protected from air pollution and do not generate unacceptable levels of air pollution.

Site Policies GNLP0068, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0506, GNLP3054, CC2 and CC30 require air quality assessments to be carried out.

Site Policies CC3, CC16, GNLP0133-BR, GNLP0133-DR, GNLP0133-E, GNLP0282, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0506, GNLP0608, GNLP2114, GNLP2163, GNLP2164, GNLP3054, R7, R13, R14/R15 and R33 would be likely to reduce personal vehicle use.

Reduced accessibility to NHS hospitals and GP surgeries

GNLP Policy 2 would be expected to ensure that development provides safe and sustainable access to existing healthcare facilities and that major developments submit a Health Impact Assessment as part of their Sustainability Statement.

GNLP Policy 4 seeks to deliver improvements to healthcare infrastructure and improved public transport, which could potentially improve site end users' access to NHS hospitals and GP Surgeries.

Policies CSU2, CSU3 (Broadland), DM1.2 and DM3.16 (South Norfolk) seek to ensure community facilities including healthcare are provided and avoid the loss of existing facilities.

Policies TS1, TS2, CG4, H5 (Broadland), DM3.8, DM3.10 (South Norfolk), DM12, DM13, DM14, DM18, DM25, DM26, DM27, DM28 and DM33 (Norwich) would be expected to improve connections to public transport and incorporate travel plans where required. These policies could potentially provide improved bus links to NHS hospitals and other healthcare facilities.

Site Policies COL1 [Emp], COL2, COL3, GNLP0253, GNLP0331RB, GNLP0331RC and GNLP0337R seek to increase the provision of healthcare facilities.

Site Policies ACL1, ACL2, BAW2, BLO5, BRU2, BRU3, BUX1, CAW2, CC4a, CC4b, CC7, CC15, CC16, CC24, CC30, COL1 [Emp], COL1 [Res], COL2, COL3, COS3/GNLP2008, COS5/GNLP2074, DRA1, EAS1, GNLP0102, GNLP0125, GNLP0132, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0172, GNLP0188, GNLP0253, GNLP0264, GNLP0293, GNLP0297, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0331RB, GNLP0331RC, GNLP0337R, GNLP0351, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R,

¹⁵² Norfolk County Council (2020) About Transport for Norwich. Available at: <https://www.norfolk.gov.uk/roads-and-transport/major-projects-and-improvement-plans/norwich/city-centre-improvements/about-transport-for-norwich> [Date Accessed: 28/10/20]

Box 11.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on human health

GNLP0382, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0503, GNLP0506, GNLP0520, GNLP0581/2043, GNLP0596R, GNLP0605, GNLP0608, GNLP1001, GNLP1048R, GNLP2034, GNLP2108, GNLP2114, GNLP2136, GNLP2143, GNLP3003, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HEL1, HEL2, HEL4/GNLP1019, HET1, HETHEL2, HNF1, HNF2/GNLP0466R, KES2, R1, R2, R7, R17, R18, R19, R29, R30, R36, R37, R38, REP1, REP2 and TROW1 would be likely to improve access to NHS hospitals and GP surgeries by increasing the use of public transport or travel by walking or cycling.

Access to leisure facilities

GNLP Policies 2 and 4 would be expected to improve access to existing leisure services through provision of safe and sustainable transport links.

GNLP Policy 6 seeks to promote leisure industries including through the green infrastructure network, sustainable tourism initiatives, and additional leisure facility provision in Norwich city centre outlined in GNLP Policy 7.1.

Policy RL1 (Broadland), DM2.4, DM2.5, DM2.9, DM3.15 (South Norfolk), DM18, DM23 and DM29 (Norwich) would be expected to provide recreational space and support the development of leisure proposals in appropriate locations.

Policies TS1, TS2, CG4, H5 (Broadland), DM3.8, DM3.10 (South Norfolk), DM12, DM13, DM14, DM18, DM25, DM26, DM27, DM28 and DM33 (Norwich) would be expected to improve connections to public transport and incorporate travel plans where required. These policies could potentially provide improved bus links to leisure facilities.

Site Policies CC15, COS5/GNLP2074, GNLP0132, GNLP0360/GNLP3053/R10, GNLP0506, GNLP0581/2043, HEL2, HNF1 and REP1 seek to increase the provision of leisure facilities across the Plan area.

Site Policies ACL1, ACL2, BAW2, BLO5, BRU2, BRU3, BUX1, CAW2, CC4a, CC4b, CC7, CC15, CC16, CC24, CC30, COL1 [Emp], COL1 [Res], COL2, COL3, COS3/GNLP2008, COS5/GNLP2074, DRA1, EAS1, GNLP0102, GNLP0125, GNLP0132, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0172, GNLP0188, GNLP0253, GNLP0264, GNLP0293, GNLP0297, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0331RB, GNLP0331RC, GNLP0337R, GNLP0351, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0382, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0503, GNLP0506, GNLP0520, GNLP0581/2043, GNLP0596R, GNLP0605, GNLP0608, GNLP1001, GNLP1048R, GNLP2034, GNLP2108, GNLP2114, GNLP2136, GNLP2143, GNLP3003, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HEL1, HEL2, HEL4/GNLP1019, HET1, HETHEL2, HNF1, HNF2/GNLP0466R, KES2, R1, R2, R7, R17, R18, R19, R29, R30, R36, R37, R38, REP1, REP2 and TROW1 would be likely to improve access to leisure facilities by increasing the use of public transport or travel by walking or cycling.

Encouraging healthy lifestyles

GNLP Policy 2 seeks to ensure that all development contributes towards multi-functional green infrastructure links.

GNLP Policy 3 would be expected to ensure that developments provide, or provide funding for, significantly higher amounts of appropriate amenity green infrastructure to protect European sites identified within the HRA.

Policies EN2, EN3, RL1 (Broadland), DM1.2, DM1.4, DM3.15, DM4.4 (South Norfolk), DM2, DM3, DM8, DM26 and DM33 (Norwich) would help to ensure that all residential development proposals have good access to outdoor space, and that development would avoid the loss of existing open spaces.

Site Policies BLO1, BRU2, BRU3, CC4a, CC4b, CC15, COL1 [Res], DRA1, EAS1, GNLP0132, GNLP0133-BR, GNLP0172, GNLP0253, GNLP0337R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0581/2043, GNLP0409AR, GNLP0409BR, GNLP0463R, GNLP0506, GNLP2136, HET1, HET3, R2, R31, R37, R38, R42 and REP1 seek to increase the provision of open space across the Plan area.

Site Policies ACL3, BRU2, CC2, CC4b, CC7, CC8, CC10, CC15, CC16, CC24, COL1 [Emp], COL2, COL3, DRA1, EAS1, GNLP0102, GNLP0132, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0253, GNLP0293, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0312, GNLP0331RB, GNLP0331RC, GNLP0337R,

Box 11.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on human health

GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0506, GNLP0520, GNLP0581/2043, GNLP0596R, GNLP0608, GNLP0608R, GNLP1001, GNLP1048R, GNLP2019, GNLP2034, GNLP2109, GNLP2114, GNLP2136, GNLP2163, GNLP2164, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HET1, HIN2, HNF2/GNLP0466R, KES2, LOD3, POR3, R1, R2, R7, R13, R14/R15, R17, R18, R19, R29, R31, R33, R36, R37, R42 and REP1 would be likely to ensure proposals contribute to the multi-functional green infrastructure network.

Site Policies ACL1, ACL2, BAW2, BLO5, BRU2, BRU3, BUX1, CAW2, CC4a, CC4b, CC7, CC15, CC16, CC24, CC30, COL1 [Emp], COL1 [Res], COL2, COL2, COL3, COS3/GNLP2008, COS5/GNLP2074, DRA1, EAS1, GNLP0102, GNLP0125, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0172, GNLP0188, GNLP0253, GNLP0264, GNLP0293, GNLP0297, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0331RB, GNLP0331RC, GNLP0337R, GNLP0351, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0382, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0503, GNLP0506, GNLP0520, GNLP0581/2043, GNLP0596R, GNLP0605, GNLP0608, GNLP1001, GNLP1048R, GNLP2034, GNLP2108, GNLP2114, GNLP2136, GNLP2143, GNLP3003, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HEL1, HEL2, HEL4/GNLP1019, HET1, HETHEL2, HNF1, HNF2/GNLP0466R, KES2, R1, R2, R7, R17, R18, R19, R29, R36, R37, R38, REP1, REP2 and TROW1 seek to encourage travel by walking or cycling, facilitating healthy lifestyles.

11.4 Residual effects on human health

11.4.1 Residual adverse effects would be expected to remain in terms of human health following the implementation of the GNLP and adopted Local Plan policies in relation to air quality and access to healthcare facilities. Further details, and where applicable, potential recommendations to help mitigate or monitor these adverse impacts are presented in **Box 11.3**.

Box 11.3: Residual effects for human health

Identified impacts	Residual effects
Reduction in local air quality with implication for human health	<p>Over time, advances in technologies would be expected to help reduce the volume of pollutants released into the atmosphere from vehicles. This may be in the form of banning petrol and diesel cars or promoting the use of sustainable transport options rather than personal car use. Advances in legislation, national policy and behavioural changes would also be expected to lead to improvements in local air quality. Strategies implemented through the Local Transport Plan¹⁵³ and AQMA Air Quality Action Plan¹⁵⁴ would complement GNLP policies. The Clean Air Strategy¹⁵⁵ also sets out strategies to reduce emissions. Together, this would be expected to target specific mitigation and reduce air pollution due to development, to some extent.</p> <p>The introduction of 110,367 new residents under the GNLP would be expected to increase vehicle emissions in the Plan area. The policies outlined in Box 11.2 would be expected to reduce the likelihood of adverse impact occurring and could potentially help reduce these adverse impacts. However, due to the volume of development proposed, an increase in</p>

¹⁵³ Norfolk County Council (2011) Norfolk Local Transport Plan 2011 -2026. Available at: <https://www.norfolk.gov.uk/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/roads-and-travel-policies/local-transport-plan> [Date Accessed: 18/11/20]

¹⁵⁴ Norwich City Council (2015) Local Air Quality Management, Air Quality Action Plan. Available at: <http://aqma.defra.gov.uk/action-plans/airqualityactionplan20152.pdf> [Date Accessed: 18/11/20]

¹⁵⁵ DEFRA (2019) Clean Air Strategy 2019. Available at: <https://www.gov.uk/government/publications/clean-air-strategy-2019> [Date Accessed: 18/11/20]

Identified impacts	Residual effects
	<p>traffic flows and subsequent reduction of air quality would be expected to have residual adverse effects.</p> <p>A reduction in air quality across the Plan area would be expected to be a long-term but temporary significant effect.</p>
<p>Reduced accessibility to NHS hospitals and GP surgeries</p>	<p>A total of 105 site allocations are located over 5km from an NHS hospital and approximately half of the site allocations are located outside the target distance to a GP surgery. These policies would be expected to improve access to GP surgeries for development proposals within or in the outskirts of settlements which contain an existing GP surgery. However, these policies would not be expected to fully mitigate the restricted access to NHS Hospital or GP surgeries in many of the smaller, more rural settlements in South Norfolk and Broadland.</p> <p>Limited access to healthcare facilities would be expected to be a medium-term and temporary significant effect.</p>
<p>Reduced access to leisure facilities</p>	<p>A total of 115 site allocations are located outside the target distance to a leisure centre. The GNLP policies, Local Plan DM policies and site policies seek to improve access via walking and cycling, and some site allocations include the provision of open space or formal recreation space. The policies would be likely to improve access to leisure facilities for development proposals within or in the outskirts of settlements which contain existing leisure centres, and especially within Norwich city through the provision of a new leisure centre.</p>
<p>Encouraging active and healthy lifestyles</p>	<p>GNLP Policy 2 aims to improve the local pedestrian and cycle networks, to encourage residents to reduce reliance on personal car use. This would be expected to encourage residents to participate in physical exercise. The increased provision of open space and green infrastructure within Greater Norwich would be expected to help facilitate healthy and active lifestyles. This would be expected to increase residents' access to outdoor space for physical exercise, as well as access to natural habitats, which are known to have mental health and wellbeing benefits.</p>

12 Landscape

12.1 Baseline

12.1.1 At the European, national, regional and local levels emphasis is placed on the protection of landscape as an essential component of people's surroundings and sense of place. Landscape is described as comprising natural, cultural, social, aesthetic and perceptual elements. This includes flora, fauna, soils, land use, settlement, sight, smells and sound¹⁵⁶.

12.1.2 Greater Norwich is largely rural with high quality landscapes and countryside which is distinguished by the river valleys of the River Yare and River Wensum. Landscape policies are typically integrated with a wider range of disciplines including biodiversity, health, cultural heritage and green infrastructure. In this respect, policies advocate the provision of open space, green networks and woodland as opportunities for sport and recreation. This creates healthier communities as well as supporting and enhancing biodiversity. National Design Guidance¹⁵⁷ advocates well-designed places that are functional, attractive and provide a sense of safety, inclusion and community cohesion.

National Character Areas

12.1.3 Natural England has divided England into 159 distinct natural areas called National Character Areas (NCAs). Each is defined by a unique combination of landscape, biodiversity, geodiversity, history and cultural and economic activity. Their boundaries follow natural lines in the landscape. Greater Norwich coincides with five NCAs (see **Figure 12.1**):

- Mid Norfolk NCA;
- Central North Norfolk NCA;
- South Norfolk and High Suffolk Claylands NCA;
- The Broads NCA; and
- North East Norfolk and Flegg NCA.

¹⁵⁶ Natural England (2014) An Approach to Landscape Character Assessment. Available at: <https://www.gov.uk/government/publications/landscape-character-assessments-identify-and-describe-landscape-types> [Date Accessed: 28/10/20]

¹⁵⁷ Ministry of Housing, Communities & Local Government (2019) National Design Guide: Planning practice guidance for beautiful, enduring and successful places. Available at: <https://www.gov.uk/government/publications/national-design-guide> [Date Accessed: 28/10/20]

Landscape Character

12.1.4 The Broadland Character Assessment SPD¹⁵⁸ aims to provide guidance for the application of relevant development plan policies and other planning guidance in the consideration of development proposals. There are nine Landscape Character Types (LCTs) and 17 Landscape Character Areas (LCAs) set out in the report (see **Figure 12.2** and **Table 12.1**).

Table 12.1: Landscape Character Types and Areas in Broadland¹⁵⁹

Landscape Character Types	Landscape Character Areas
River Valley	River Wensum
	River Bure
Woodland Heath Mosaic	Horsford
Plateau Farmland	Foulsham and Reepham
	Freethorpe
Tributary Farmland	Cawston
	Weston Green
	Coltishall
	Blofield
Wooded Estatelands	Blicking and Oulton
	Marsham and Hainford
	Spixworth
	Rackheath and Salhouse
Marshes Fringe	Wroxham to Ranworth
	South Walsham to Reedham
	Reddham to Thorpe

12.1.5 The South Norfolk Landscape Character Assessment prepared in 2001¹⁶⁰ identifies seven LCTs and 20 LCAs (see **Figure 12.3** and **Table 12.2**).

Table 12.2: Landscape Character Types and Areas in South Norfolk¹⁶¹

Landscape Character Types	Landscape Character Areas
Rural River Valley	Tas Rural River Valley
	Yare/ Tiffey Rural River Valley
	Tud Rural River Valley
	Wensum Rural River Valley
	Waveney Rural River Valley
Tributary Farmland	Tas Tributary Farmland
	Tiffey Tributary Farmland
	Rockland Tributary Farmland

¹⁵⁸ Broadland District Council (2013) Landscape Character Assessment Supplementary Planning Document (SPD). Available at: https://www.broadland.gov.uk/downloads/download/167/landscape_character_assessment_supplementary_planning_document_spd [Date Accessed: 04/11/20]

¹⁵⁹ Ibid

¹⁶⁰ Land Use Consultants (2001) South Norfolk Landscape Assessment. Available at: <https://www.south-norfolk.gov.uk/residents/planning/planning-policy/landscape-character-assessments> [Date Accessed: 04/11/20]

¹⁶¹ Ibid

Landscape Character Types	Landscape Character Areas
	Waveney Tributary Farmland
	Chet Tributary Farmland
	Yare Tributary Farmland
Tributary Farmland with Parkland	Yare Tributary Farmland with Parkland Thurlton Tributary Farmland with Parkland
Settled Plateau Farmland	Wymondham Settled Plateau Farmland Poringland Settled Plateau Farmland
Plateau Farmland	Ashwellthorpe Plateau Farmland Great Moulton Plateau Farmland Hingham – Mattishal Plateau Farmland
Valley Urban Fringe	Yare Valley Urban Fringe
Fringe Farmland	Easton Fringe Farmland

National Parks

12.1.6 National Parks are run by National Park Authorities with the aim of conserving and enhancing the natural beauty, wildlife and cultural heritage and provide opportunities for enjoyment of the Park¹⁶².

12.1.7 The Broads National Park is situated in the south east of Broadland and the north east of South Norfolk districts, with a small section within Norwich (see **Figure 12.4**). The Broads was designated as a National Park in 1989 and covers approximately 300 square kilometres of gentle landscapes, lakes and rivers¹⁶³. The shallow lakes were formed during the medieval period when peat was removed for fuel purposes.

12.1.8 The Broads Plan¹⁶⁴ sets out three main principles for management of the Broads:

- Where there are likely threats of serious or irreversible damage to the environment, as a precaution, cost effective measures are taken to prevent environmental degradation in the absence of full scientific certainty of the outcome of such threats. Precautionary action is based on assessment of the costs and benefits of action, taking into account both the proportionality between the costs and benefits and the degree of certainty in their calculation, and transparency in decision making. Gaps in knowledge are addressed by research and, where feasible, precautionary measures taken while such knowledge is outstanding.
- Seek to understand and respect the complexity and biological limits of our ecosystems and conserve their structures to maintain their health and productivity. Management is at a local scale, while recognizing the direct or

¹⁶² Natural England (2020) National Parks (England). Available at: <https://data.gov.uk/dataset/334e1b27-e193-4ef5-b14e-696b58bb7e95/national-parks-england> [Date Accessed: 28/10/20]

¹⁶³ Broads Authority (2020) About the Broads. Available at: <https://www.broads-authority.gov.uk/about-the-broads> [Date Accessed: 28/10/20]

¹⁶⁴ Broads Authority (2017) Broads Plan 2017. Available at: https://www.broads-authority.gov.uk/_data/assets/pdf_file/0023/240665/Broads-Plan-2017.pdf [Date Accessed: 28/10/20]

indirect effects on wider, interconnected ecosystems and the public goods and services they provide. We manage for long-term, multiple benefits, not just for short-term or single interest gains.

- Plan and work in partnership to make the best use of shared knowledge and resources and to avoid duplication of effort. People are involved from an early stage, and throughout, in decisions that may interest or affect them. Decisions are supported with robust evidence, including scientific and local knowledge, innovation and best practice.

12.1.9 In addition, there are several guiding actions which addresses the key strategic issues:

- Managing water resources and flood risk;
- Sustaining landscapes for biodiversity and agriculture;
- Maintaining and enhancing the navigation;
- Conserving landscape character and the historic environment;
- Offering distinctive recreational experiences;
- Raising awareness and understanding;
- Connecting and inspiring people; and
- Building 'climate-smart' communities.

Country Parks

12.1.10 Many Country Parks were designated in the 1970s under the Countryside Act 1968, but more recently the parks are designated, owned and managed by Local Authorities in England¹⁶⁵. As of 2020, there are 400 County Parks in England. These spaces are usually designated to provide outdoor spaces for residents to experience nature and enjoy the outdoors.

12.1.11 There are two Country Parks within the Plan area: 'Catton Park' Country Park in Broadland and 'Whitlingham' Country Park in South Norfolk.

Area of Outstanding Natural Beauty

12.1.12 Norfolk Coast AONB is located at the northern edge of Norfolk (see **Figure 12.5**). The AONB covers approximately 450 square kilometers of intertidal, coastal and agricultural land¹⁶⁶. It is physically split into three areas:

- The western area lies to the north of King's Lynn;
- The central area runs between Old Hunstanton and Mundesley; and
- The eastern area is located between Sea Palling and Winterton-on-Sea.

12.1.13 Special qualities of the AONB include:

- The dynamic character of the coast;

¹⁶⁵ Natural England (2020) Country Parks (England). Available at: <https://data.gov.uk/dataset/e729abb9-aa6c-42c5-baec-b6673e2b3a62/country-parks-england> [Date Accessed: 28/10/20]

¹⁶⁶ Norfolk Coast Partnership (2020) Norfolk Coast AONB Management Plan 2019 – 2024. Available at: <http://www.norfolkcoastaonb.org.uk/partnership/2019-24-management-plan-consultation/377> [Date Accessed: 06/11/20]

- The strong and distinctive links between the land, rivers and sea;
- The exceptional, internationally important, varied and distinctive habitats and species;
- The nationally and internationally important geology
- The feeling of tranquillity and wildness, and the opportunity for quiet enjoyment of the area;
- The richness of archaeological heritage and the historic environment;
- The low level of development and population density, and the lack of major roads and settlements compared to much of lowland England;
- The variety, richness and interrelationships between landscapes, settlements, settlement patterns, building character and archaeology across the area;
- The strong connections between people and the landscape;
- The quiet and peaceful atmosphere and relaxed pace of life; and
- The distinctive local produce and vibrant art scene.

12.1.14 Suffolk Coast and Heaths AONB is located to the south east of Suffolk (see **Figure 12.5**). The AONB covers approximately 400 square kilometres, stretching between the River Stour to the south and Kessingland to the north¹⁶⁷. Special qualities of the AONB include:

- Condition, that is the intactness of the landscape as a coherent whole, the condition of its features, its state of repair, and the absence of incongruous elements;
- Appeal to the visual senses, for example important views, visual interest and variety, contrasting landscape patterns, and dramatic topography or scale;
- The presence of wild (or relatively wild) character in the landscape due to remoteness, and appearance of returning to nature;
- Freedom from undue disturbance. Presence in the landscape of factors such as openness, and perceived naturalness;
- Habitats, wildlife and features of geological or geomorphological interest that may contribute strongly to the naturalness of a landscape;
- Archaeological, historical and architectural characteristics or features that may contribute to the perceived beauty of the landscape; and
- Connections with particular people, artists, writers, or events in history that may contribute to perceptions of beauty in a landscape or facilitate understanding and enjoyment.

¹⁶⁷ Suffolk Coast & Heaths AONB Advisory Committee and Partnership (2018) Suffolk Coast and Heaths Area of Outstanding Natural Beauty Management Plan 2018 – 2023. Available at: <https://www.suffolkcoastandheaths.org/wp-content/uploads/2020/03/2018-23-SCH-Management-Plan.pdf> [Date Accessed: 06/11/20]

Tranquillity

- 12.1.15 The Campaign to Protect Rural England define tranquillity as “*the quality of calm experienced in places with mainly natural features and activities, free from disturbance from manmade ones*”¹⁶⁸. Within Greater Norwich, the Broads National Park is designated for its tranquillity and many other landscapes within the Plan area are likely to be perceived as tranquil. New employment, residential and retail growth can have significant effects on landscape quality, including through impacts of noise pollution, light pollution and broader effects on people’s perceptions of tranquillity. Landscape and townscape are considered under SA Objective 4 ‘Landscape’, which seeks to promote efficient use of land, while respecting the variety of landscape types in the area.

¹⁶⁸ Landscape Institute (2017) Tranquillity – An Overview. Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2017/02/Tranquillity-An-Overview-1-DH.pdf> [Date Accessed: 28/10/20]

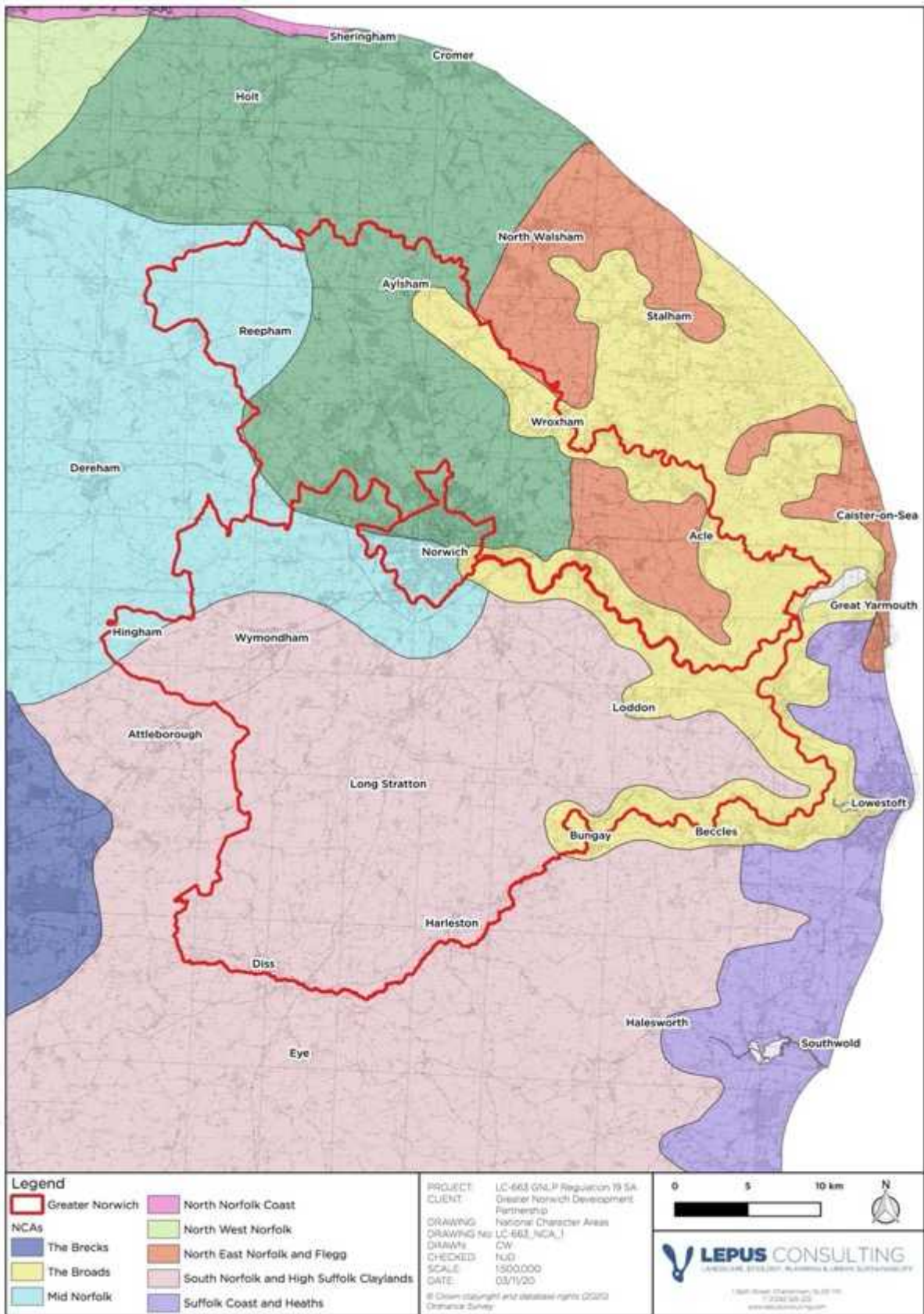


Figure 12.1: National Character Areas in and around the Plan area (source: Natural England)

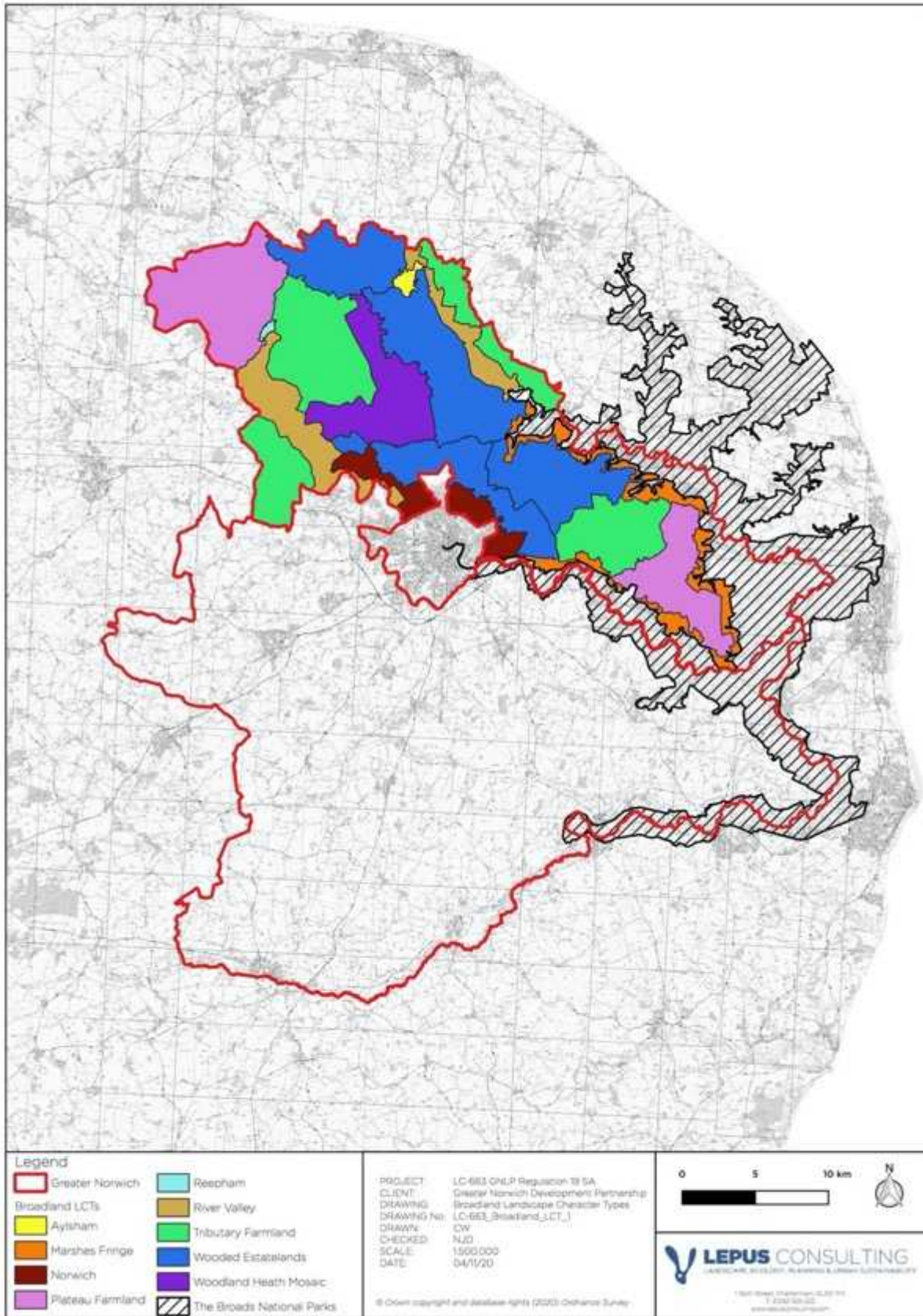


Figure 12.2: Broadland Landscape Character Types (source: GNDDP)

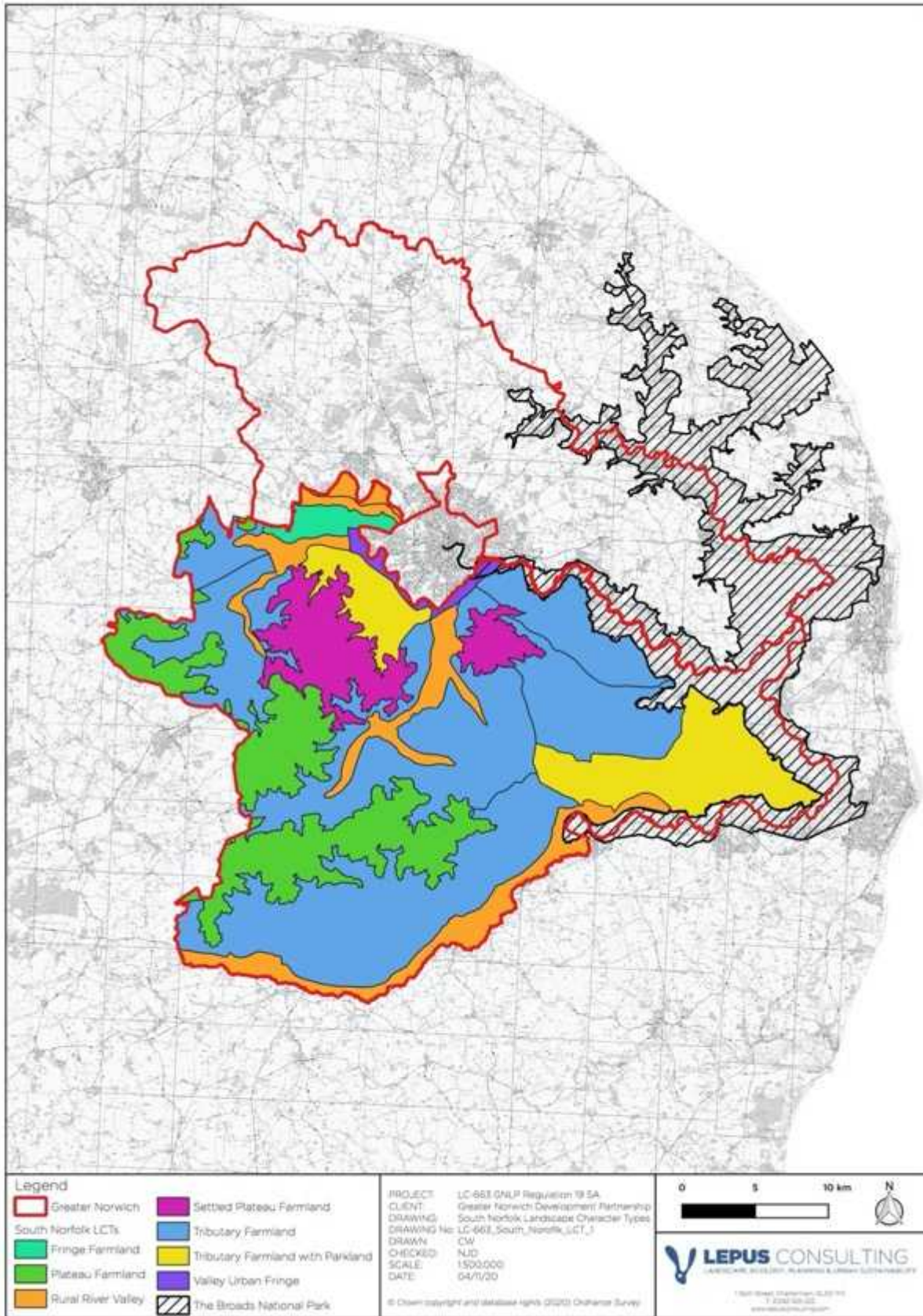


Figure 12.3: South Norfolk Landscape Character Types (source: GNDDP)

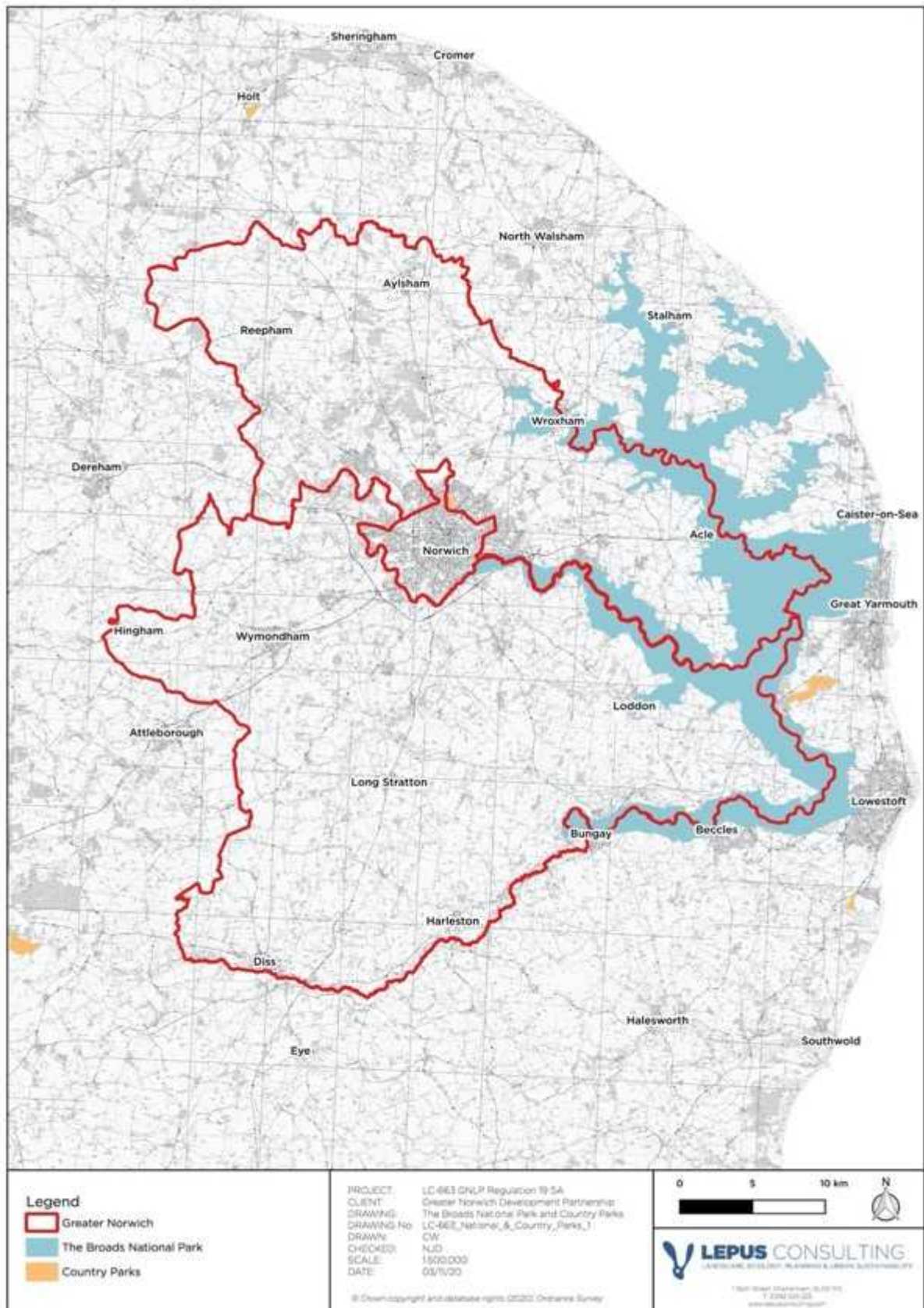


Figure 12.4: The Broads National Park and Country Parks in and around the Plan area (source: Natural England)

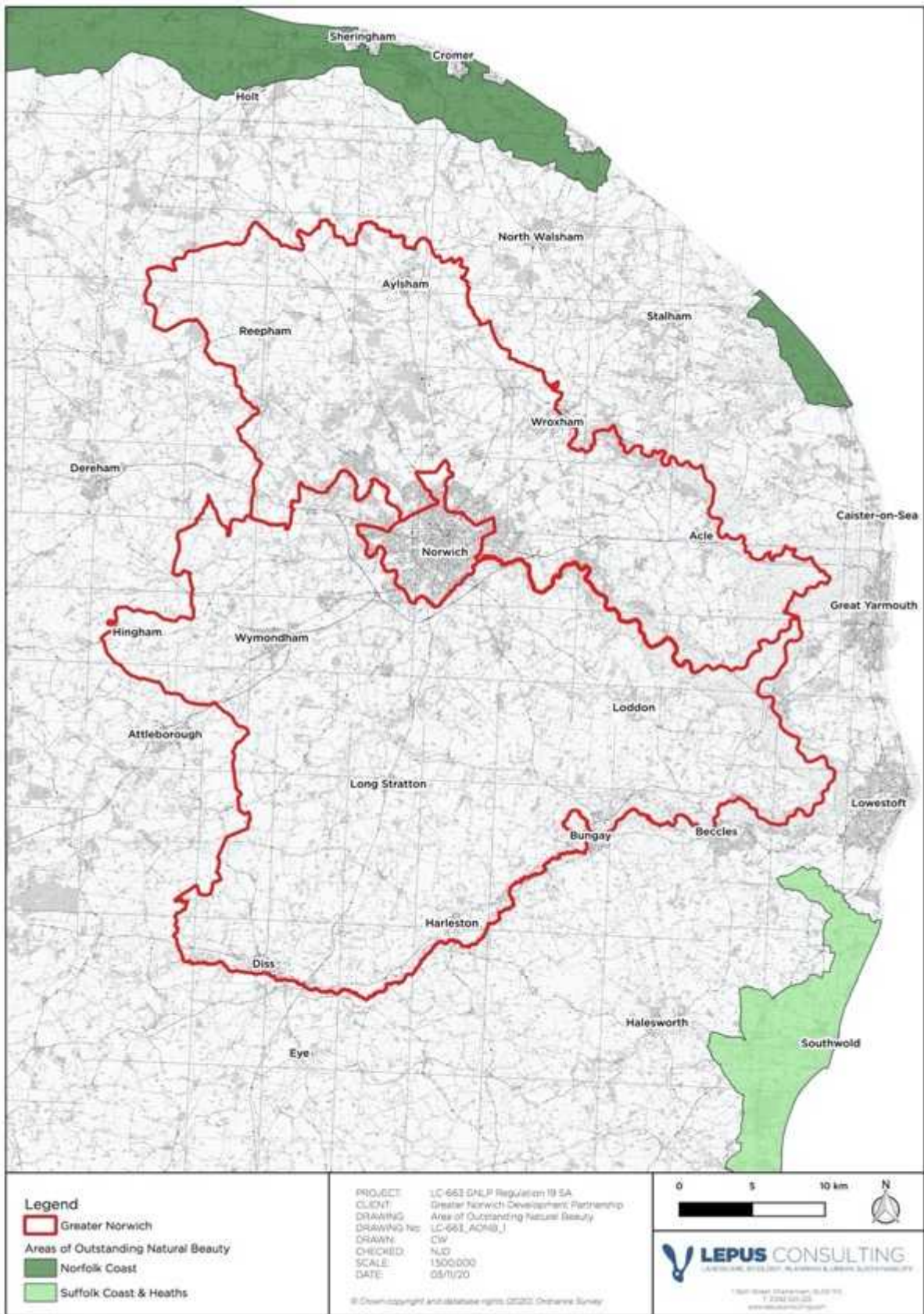


Figure 12.5: Norfolk Coast AONB and Suffolk Coast and Heaths AONB (source: Natural England)

12.2 Impacts on landscape

12.2.1 **Box 12.1** sets out a plan-wide summary of the likely impacts on landscape that have been identified through the SA process. These impacts are those identified prior to the consideration of mitigation in the form of GNLP policies and Local Plan DM policies. **Box 12.2** lists the GNLP strategic and site policies, as well as Local Plan DM policies for the three districts which would be likely to mitigate, either fully or partially, some of the identified impacts. Policies which would improve identified impacts have also been listed. Where mitigating policies or proformas are silent, or the contents of the GNLP only partially mitigates the adverse impacts, a residual adverse effect is identified. **Box 12.3** explores the nature of these residual effects.

Box 12.1: Summary of identified impacts on landscape

1	<p>Impact on the setting of the Broads National Park</p> <p>47 site allocations are located within 1km of the Broads National Park. The National Park is designated for its unique landscape, wildlife and associated cultural features. The proposed development at these 47 sites could potentially alter the setting of the Broads National Park without sufficient mitigation.</p>
2	<p>Alteration of the landscape character</p> <p>Development proposals within the GNLP could potentially result in the loss of ‘sense of place’ and have adverse impacts in the landscape character of the site allocations and their surroundings. The introduction of new built form can contradict and conflict with distinctive local character of existing landscapes and townscapes which can result in adverse impacts on the local landscape character. Some development proposals on previously undeveloped land could potentially result in the loss of locally important landscape features, such as trees and hedgerows.</p>
3	<p>Alteration of views</p> <p>As a large number of development proposals are located to the edge of settlements, the allocations within the GNLP could potentially adversely impact views experienced towards or from local footpaths or residential properties. Views experienced from users of the local Public Right of Way (PRoW) network and from local residential properties could be altered following the proposed development within the GNLP.</p>
4	<p>Increased risk of urbanisation of the countryside and coalescence</p> <p>Approximately 85 of the site allocations within the GNLP are located on previously undeveloped land. The proposed development at these sites would be likely to result in the urbanisation of the countryside, with settlement boundaries extending into the open countryside of Broadland and South Norfolk. The risk of urban sprawl and coalescence between settlements could potentially have adverse impacts on the landscape character of the Plan area.</p>
5	<p>Loss of tranquillity</p> <p>Rural landscapes are typically tranquil, a valuable attribute that once lost is often irreversible. Darkness at night is one of the key characteristics of rural areas and it represents a major difference between what is rural and what is urban. Increased light pollution levels and consequent impacts on Dark Skies¹⁶⁹ may</p>

¹⁶⁹ Campaign to Protect Rural England (no date) NightBlight: Reclaiming our dark skies. Available at: https://www.nightblight.cpre.org.uk/?qclid=Cj0KQCjwn8_mBRCLARIsAKxi0GKSp3OwhEredoviY2COBQZyTOScw_AHFipaf8-mqcXSnrCREne3FYqaAhdVEALw_wcB [Date Accessed: 23/11/20]

Box 12.1: Summary of identified impacts on landscape

arise as a consequence of the development proposed in the Plan. The introduction of both noise and night-time lighting is likely to reduce tranquillity at these locations.

12.3 Local Plan mitigation

12.3.1 The GNLP directs the majority of development towards Norwich and the urban fringe. Nevertheless, in order to meet the identified housing need in Greater Norwich, development proposals are also directed towards previously undeveloped land in rural Broadland and South Norfolk. Policies set out in the GNLP seek to protect and, where appropriate, enhance the character and setting of the local landscape. **Box 12.2** discusses these policies.

Box 12.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on landscape

Impact on the setting of The Broads National Park

GNLP Policy 2 would be expected to help protect and enhance the landscape character, including the character and setting of The Broads National Park. GNLP Policy 7.1 would be expected to reinforce GNLP Policy 2, ensuring development within Norwich city takes account of its setting adjacent to The Broads.

Policies EN2 (Broadland) and DM6 (Norwich) seek to ensure development proposals protect and enhance the setting of The Broads.

Site Policies GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0312 and GNLP0463R set out requirements for development proposals to take into consideration the setting, and views to and from, the Broads National Park.

Alteration of the landscape character

GNLP Policies 2 and 3 would be expected to contribute towards mitigating negative impacts associated with development on Greater Norwich's locally distinctive landscape character and seek to conserve and enhance the special qualities of the built, historic and natural environment.

Policies EN2, GC4 (Broadland), DM1.4, DM2.1, DM2.3, DM2.6, DM2.7, DM2.8, DM2.9, DM3.3, DM3.4, DM3.5, DM3.8, DM3.9, DM4.5, DM4.6, DM4.9 (South Norfolk), DM3, DM6, DM8, DM9, DM10, DM11, DM12, DM14, DM18, DM19 and DM20 (Norwich) seek to protect and enhance the local landscape character and distinctiveness of the surrounding environment.

Site Policies CC3, CC4a, CC4b, CC16, CC30, COL1 [Emp], COL2, COL3, EAS1, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0188, GNLP0253, GNLP0282, GNLP0293, GNLP0297, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0331RB, GNLP0331RC, GNLP0337R, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0506, GNLP0596R, GNLP0608, GNLP1061, GNLP2019, GNLP2108, GNLP2114, GNLP2136, GNLP2163, GNLP2164, GNLP3013, GNLP3054, HET1, KES2, POR3, R2, R7, R13, R14/R15, R17, R18, R19, R20, R29, R31, R33, R36, R37, R38 and R42 seek to ensure development is in-keeping with the local landscape character.

Alteration of views

GNLP Policies 2 and 3 would be expected to mitigate impacts on views experienced by users of the PRoW network and local residents, to some extent, through ensuring that development takes account of the setting and character of the local area.

Policies EN2, GC4 (Broadland), DM2.8, DM3.8, DM4.6 (South Norfolk), DM3 and DM4 (Norwich) would be expected to protect visual amenity and ensure development proposals incorporate designs which enhance appearance and retain important views.

Box 12.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on landscape

Site Policies ACL3, GNLP0133-E, GNLP0172, GNLP0312, GNLP0360/GNLP3053/R10, GNLP0380, GNLP0409AR, GNLP0409BR, GNLP0463R, GNLP2114, HAR4, HAR5, HAR6, HNF2/GNLP0466R, R38, R42 and TROW1 seek to protect existing views to or from the site.

Increased risk of urbanisation of the countryside and coalescence

GNLP Policy 3 seeks to conserve and enhance the natural environment, by ensuring that new development is located and designed to enhance local character and sense of place, taking account of local design guidance. GNLP Policy 2 would be expected to help reduce the likelihood of urbanisation of the countryside and coalescence by maintaining strategic gaps.

Policies EN2 (Broadland) and DM4.7 (South Norfolk) seek to protect strategic gaps between settlements.

Policies GC4 (Broadland), DM1.3, DM3.13, DM4.4, DM4.6 (South Norfolk), DM3, DM18, DM19, DM21 and DM22 (Norwich) would be expected to ensure that new development is of an appropriate scale and form to retain the character of the surrounding area.

Site Policies GNLP0307/GNLP0327 and HET1 seek to protect strategic gaps.

Loss of tranquillity

GNLP Policy 2 aims to contribute to the multi-functional green infrastructure network through landscaping. GNLP Policy 3 seeks to ensure development proposals create a sense of place. Both of these policies could potentially help to prevent the loss of tranquillity in the Plan area.

GNLP Policy 7.1 would help to reduce the noise pollution at sites within Norwich, helping retain tranquillity.

Policies EN4 (Broadland), DM2.9, DM3.5, DM3.13 (South Norfolk), DM2 and DM11 (Norwich) would be likely to ensure development proposals prevention of disturbance from noise and light pollution and the development does not result in unacceptable levels of noise or light pollution.

Site Policies GNLP0068, GNLP0360/GNLP3053/R10, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0506, GNLP1061, GNLP3054, CC2, CC4a, CC4b, CC13, CC15, CC16, CC30, R1, R2, R14/R15, R18, R20, R29, R30, R33, R36, HOU1, EAS1, COS5/GNLP2074, GNLP0337R, GNLP0311/0595/2060, GNLP0581/2043, GNLP0596R, GNLP2108, GNLP2136, POR3, GNLP0297, GNLP2019, COL1 [Res] and GNLP3003 seek to mitigate the impact of noise and light pollution from surrounding features or generated from the new development.

12.4 Residual effects on landscape

12.4.1 The GNLP sets out numerous policies which would be expected to help mitigate potential adverse impacts of the proposed development on the local landscape. Residual adverse effects would be expected to remain in terms of landscape following the implementation of the GNLP and adopted Local Plan policies. Further details, and where applicable, potential recommendations to help mitigate or monitor these adverse impacts are presented in **Box 12.3**.

Box 12.3: Residual effects for landscape

Identified impacts	Residual effects
Impact on the setting of The Broads National Park	<p>GNLP policies would be expected to ensure that the allocated development does not result in adverse effects on the Broads National Park, by respecting, protecting and enhancing the character and setting of the Broads. Although 50 allocated sites are located within 1km of the Broads, no sites coincide with the National Park.</p> <p>Site Policies GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R and GNLP0312 seek to “maintain ... long views toward the Broads and open countryside” and have a “design and</p>

Identified impacts	Residual effects
	<i>layout [that addresses] the topography of the site and potential impact on views, particularly to and from the Broads". Site Policy GNLP0463R seeks to provide "open space to the south to reduce leisure visits to the Broads".</i>
Alteration of the landscape character	GNLP Policy 2 seeks to ensure that future development would protect and enhance the local landscape character and Policy 3 aims to ensure all new development is informed by robust landscape assessment if significant effects may arise. The site policies seek to ensure each development proposal is in accordance with the existing landscape character.
Alteration of views	GNLP Policy 2 seeks to ensure that future development will protect and enhance the local landscape character and maintain landscape settings resulting in a negligible effect on landscape character. Site policies also seek to protect and enhance existing views.
Increased risk of urbanisation of the countryside and coalescence	<p>The need to provide housing and employment in the Plan has led to the proposed allocation of development on greenfield sites at a number of locations within the Plan area. GNLP Policy 2 aims to maintain strategic gaps and landscape settings. This would be likely to mitigate the adverse impacts associated within development in the countryside. However, due to the rural context in which much of the new development is situated, aforementioned policies would not be expected to fully mitigate these impacts.</p> <p>An increased risk of urbanisation of the countryside and coalescence is a long-term and irreversible significant effect.</p>
Loss of tranquillity	<p>The proposed development of 49,492 dwellings across Greater Norwich, with a number of developments located within rural Broadland and South Norfolk, would be likely to result in a loss of tranquillity of the rural landscape as a consequence of increases in noise and light pollution.</p> <p>The loss of tranquillity is a long-term and permanent significant effect.</p>

13 Population and material assets

13.1 Baseline

13.1.1 'Material assets' covers a variety of built and natural assets which are accounted for in a range of SA Objectives. It is a requirement of Annex 1 (f) of the SEA Directive to consider material assets, although the Directive does not define them. The SA process has considered material assets as the health centres, schools and other essential infrastructure resources required by meet the demands of the local population and development aspirations of the Local Plan.

Population size

13.1.2 The Plan area has an approximate population of 417,166¹⁷⁰, with an estimated population of 131,671 in Broadland, 142,790 in Norwich and 142,705 in South Norfolk.

13.1.3 Norwich has the highest proportion of residents aged between 16 and 64, at 68%, with Broadland and South Norfolk lower at 57.7% and 57.8% respectively¹⁷¹. These two districts have slightly lower populations aged 16 to 64 than Norfolk (58.5%) and the East of England (60.7%).

13.1.4 Population projections for the Plan area indicate that the proportion of people over 70 in the three authorities is likely to increase (see **Table 13.1**).

Table 13.1: The population projections for Broadland, Norwich and South Norfolk¹⁷²

District	Year	Age Range						All ages
		0-14	15-29	30-49	50-69	70-89	90+	
Broadland	2018	19,881	18,209	30,568	36,149	22,987	1,670	129,464
	2028	20,281	18,721	33,056	37,931	27,598	2,089	139,674
	2038	20,991	19,580	33,817	37,622	31,884	3,357	147,251
Norwich	2018	22,754	40,183	36,216	26,660	13,987	1,337	141,137
	2028	20,671	44,328	36,013	27,785	16,016	1,487	146,299
	2038	20,831	46,089	35,711	27,536	18,491	2,232	150,891
South Norfolk	2018	23,424	19,654	33,505	36,965	22,870	1,599	138,017
	2028	25,527	21,432	39,421	41,718	28,131	2,189	158,417
	2038	26,460	22,972	40,737	43,967	33,835	3,585	171,556

¹⁷⁰ Office for National Statistics (2020) Population projections for local authorities. Available at: <https://www.nomisweb.co.uk/reports/lmp/la/1946157233/report.aspx?c1=1946157237&c2=1946157238> [Date Accessed: 28/10/20]

¹⁷¹ nomis (2020) Labour market profile. Population aged 16-64 (2019). Available at: <https://www.nomisweb.co.uk/reports/lmp/la/1946157233/report.aspx?c1=1946157237&c2=1946157238> [Date Accessed: 13/07/20]

¹⁷² Office for National Statistics (2020) Population projections for local authorities. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/localauthoritiesinenglandtable2> [Date Accessed 28/10/20]

Housing

- 13.1.5 National and sub-regional objectives for housing include improvements in housing affordability; high quality housing; more stability in the housing market; improved choice; location of housing supply which supports accessibility and patterns of economic development; and an adequate supply of affordable housing. In particular, housing density should be considered carefully. High population densities can limit the accessibility of local key services and facilities such as hospitals, supermarkets and open spaces, including playgrounds and sports fields. High population densities also influence perceptions of safety, social interactions and community stability¹⁷³.
- 13.1.6 When striving for sustainable development, plans and strategies should consider the type and design of housing that is required in different areas, as well as the quality, access to services and differing needs of the population including the elderly, people with disabilities, students and young people, as well as Gypsies, Travellers and Travelling Showpeople.
- 13.1.7 The total housing stock for Norfolk in 2019 was 428,855 dwellings. Broadland contained 58,862 dwellings, Norwich contained 66,431 dwellings, and South Norfolk contained 61,926 dwellings¹⁷⁴. In 2019, the most common type of dwelling in Norfolk is terraced at 21.1%, closely followed by detached houses at 20.9%¹⁷⁵.
- 13.1.8 Across all three authority areas, the most common number of bedrooms per dwelling is three (see **Table 13.2**). Broadland and South Norfolk have a higher number of dwellings with four or more bedrooms than Norwich.

Table 13.2: Number of bedrooms in households per district in 2011¹⁷⁶

District	1 Bedroom	2 Bedrooms	3 Bedrooms	4 Bedrooms	5 Bedrooms	6+ Bedrooms
Broadland	2,692	13,282	24,134	10,675	2,045	508
Norwich	9,822	18,383	24,781	5,417	1,437	479
South Norfolk	2,955	13,330	22,652	10,735	2,371	766
East of England	256,568	633,776	1,002,547	407,633	97,643	24,868

¹⁷³ Dempsey. N., Brown. C. and Bramley. G. (2012) The key to sustainable urban development in UK cities? The influence of density on social sustainability. *Progress in Planning* 77:89-141

¹⁷⁴ Ministry of Housing, Communities and Local Government (2020) Number of dwellings by tenure and district, England. Available at: <https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants> [Date Accessed: 29/10/20]

¹⁷⁵ Norfolk Insight (2020) Dwelling Counts – Norfolk. Available at: <https://www.norfolkinsight.org.uk/housing/> [Date Accessed: 09/11/20]

¹⁷⁶ Office of National Statistics (2011) Census - Number of rooms by number of bedrooms. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/housing/adhocs/008160ct07702011censusnumberofroomsbynumberofbedroomsmergedlocalauthorities> [Date Accessed: 09/11/20]

House prices

- 13.1.9 The average UK house price was £239,000 as of August 2020¹⁷⁷, with house prices in the East of England increasing by 2.0% in the year to August 2020. In general, house prices in Norfolk are below the average for the East of England and England as a whole (see **Table 13.3**).
- 13.1.10 On average, full-time workers could expect to pay around 7.8 times their annual workplace-based earnings on purchasing a home in England in 2019¹⁷⁸.

Table 13.3: Median price of a property by type¹⁷⁹

Type of Dwelling	Norfolk	East of England	England
Detached	£295,000	£387,500	£340,000
Sem-detached	£210,000	£287,500	£215,000
Terraced	£180,000	£254,000	£189,000
Flat or maisonette	£141,094	£196,000	£216,500

Affordable housing

- 13.1.11 Affordable housing is defined as “social rented, affordable rented and intermediate housing, provided to specified eligible households whose needs are not met by the market”¹⁸⁰.
- 13.1.12 The Central Norfolk Strategic Housing Market Assessment¹⁸¹ estimates that 17,252 affordable homes are required across the region between 2015 and 2036 (an average of 830 dwellings per year).

¹⁷⁷ Office for National Statistics (2020) UK House Price Index: August 2020. Available at: <https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/housepriceindex/august2020> [Date Accessed: 29/10/20]

¹⁷⁸ Office for National Statistics (2019) Housing affordability in England and Wales: 2019. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/housing/bulletins/housingaffordabilityinenglandandwales/2019> [Date Accessed: 09/11/20]

¹⁷⁹ Norfolk Insight (2020) Dwelling Counts – Norfolk. Available at: <https://www.norfolkinsight.org.uk/housing/> [Date Accessed: 09/11/20]

¹⁸⁰ Ministry of Housing, Communities and Local Government (2019) Affordable housing supply. Available at: <https://www.gov.uk/government/collections/affordable-housing-supply> [Date Accessed: 29/10/20]

¹⁸¹ Opinion Research Services (2017) Central Norfolk Strategic Housing Market Assessment 2017. Available at: <https://www.greaternorwichgrowth.org.uk/dmsdocument/2367> [Date Accessed: 09/11/20]

Employment

13.1.13 The improvement and maintenance of high and stable levels of employment alongside economic growth are some of the key aims for growth in the UK. Other objectives include improvements to the education system to increase the skill levels of both children and adults, as well as improved productivity and innovation, particularly with regards to technology. The Industrial Strategy White Paper¹⁸² outlines the vision for the UK economy, to create prosperous communities and provide good jobs for the population, supported by upgraded infrastructure and innovative technology.

13.1.14 A greater proportion of the population of each GNLP authority is more economically active than across Great Britain as a whole (see **Table 13.4**), but lower proportions are seen in Norwich compared to Broadland and South Norfolk. The percentage of self-employed people is higher in Norwich compared to the average for Great Britain, whereas Broadland and South Norfolk are slightly lower than the average.

Table 13.4: Percentage of the working population (16-64) who are employed, self-employed or unemployed¹⁸³

Area	Broadland (%)	Norwich (%)	South Norfolk (%)	Great Britain (%)
Economically active	86.6	80.7	84.7	79.4
Employees	70.8	65.7	75.4	65.2
Self Employed	12.0	10.2	8.1	10.8
Unemployed	2.5	4.4	2.3	3.9

13.1.15 In Broadland, the sector with the highest proportion of workers is ‘associate professional and technical’, and the highest proportion of workers in Norwich and South Norfolk are in ‘professional occupations’ (see **Table 13.5**). There is a higher proportion of the working population who are ‘managers, directors and senior officials’ in South Norfolk than Broadland, Norwich and the average for Great Britain.

13.1.16 In 2020, a total of 13,360 business enterprises were operating within the GNLP area: 4,810 in Broadland; 4,685 in Norwich; and 5,825 in South Norfolk¹⁸⁴.

¹⁸² HM Government (2017) Industrial Strategy: Building a Britain fit for the future. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf [Date Accessed: 28/10/20]

¹⁸³ nomis (2020) Labour market profile. Employment and Unemployment (Jul 2019 – Jun 2020). Available at: <https://www.nomisweb.co.uk/reports/lmp/la/1946157233/report.aspx?ci=1946157237&c2=1946157238> [Date Accessed: 29/10/20]

¹⁸⁴ nomis (2020) Labour market profile. UK Business Counts (2020). Available at: <https://www.nomisweb.co.uk/reports/lmp/la/1946157233/report.aspx?ci=1946157237&c2=2092957698#tabidbr> [Date Accessed: 29/10/20]

Table 13.5: Percentage of the working population (16-64) in each major occupation¹⁸⁵

Area	Broadland (%)	Norwich (%)	South Norfolk (%)	Great Britain (%)
Managers, directors and senior officials	8.4	N/A	14.3	11.7
Professional occupations	11.0	25.4	21.7	22.2
Associate professional and technical	19.7	14.8	17.0	15.0
Administrative and secretarial	11.4	N/A	12.4	9.8
Skilled trades occupations	14.4	N/A	10.7	9.7
Caring, leisure and other service occupations	12.7	N/A	8.5	9.0
Sales and customer service occupations	12.3	N/A	N/A	6.9
Process plant and machine operatives	N/A	N/A	N/A	5.8
Elementary occupations	N/A	18.2	N/A	9.7

Employment land

13.1.17 The Greater Norwich Employment Land Assessment¹⁸⁶ identified 68 active employment sites within the GNLP area totalling approximately 700ha. The assessment estimates there is an additional need for between 11,762 and 20,487 employment opportunities in Greater Norwich, with land requirements between 46ha and 84ha until 2036.

13.1.18 The majority of the employment land in the Plan area is found in Norwich and in the urban fringe. Notable major employers include Aviva, Virgin Money, Greene King and Royal Bank of Scotland. The Cambridge-Norwich Tech Corridor stretches between Norwich and Cambridge and is predicated to be a future hotspot for economic growth. The project aims to create 10,000 new jobs, attract £905m of private investment and see up to 20,000 homes built between Norwich and Newmarket by focussing on 11 key areas along the route by 2031.

Education

13.1.19 The education sector is large in the county, with a total of 413 primary schools, 99 secondary schools and 64 colleges¹⁸⁷, as well as the University of East Anglia, Anglia Ruskin University and University Campus Suffolk.

13.1.20 Within the GNLP area there are 150 primary and 24 secondary schools (see **Figure 13.1**). There are 52 primary schools in Broadland, 34 in Norwich and 64 in South Norfolk. The secondary schools are primarily located within Norwich City and the urban fringe, with others located in Reepham, Aylsham and Acle in Broadland and Wymondham, Long Stratton, Harleston, Diss, Loddon, Hethersett and Framingham Earl in South Norfolk.

¹⁸⁵ nomis (2020) Labour market profile. Employment by occupation (Jul 2019- Jun 2020). Available at: <https://www.nomisweb.co.uk/reports/lmp/la/1946157233/report.aspx?c1=1946157237&c2=1946157238#tabempocc> [Date Accessed: 29/10/20]

¹⁸⁶ GVA (2017) Greater Norwich: Employment Land Assessment. Available at: https://gnlp.oc2.uk/docfiles/46/greater_norwich-employment_land_assessment-final_submission.pdf [Date Accessed: 09/11/20]

¹⁸⁷ National Statistics (2019) All schools and colleges in Norfolk. Available at: <https://www.compare-school-performance.service.gov.uk/schools-by-type?step=default&table=schools®ion=926&la-name=norfolk&geographic=la&for=primary> [Date Accessed: 09/11/20]

13.1.21 **Table 13.6** shows that the percentage of residents with National Vocational Qualification (NVQ) 4 and above is lower in the three districts than the average for Great Britain and the number of residents with no qualification is higher in Norwich than the average for Great Britain.

Table 13.6: Percentage of population aged 16-64 at each NVQ level in 2019¹⁸⁸

Qualification	Broadland (%)	Norwich (%)	South Norfolk (%)	Great Britain (%)
NVQ4 and above	32.9	31.8	34.6	40.3
NVQ3 and above	58.0	48.3	65.1	58.5
NVQ2 and above	77.7	68.1	77.3	75.6
NVQ1 and above	95.5	83.5	89.0	85.6
Other qualifications	N/A	5.8	N/A	6.7
No qualifications	N/A	10.6	6.6	7.7

Digital connectivity

13.1.22 Digital connectivity includes the availability of fast broadband speeds, such as fibre, as well as mobile connectivity. Good digital connectivity significantly enhances the quality of life for local residents as well as the ability for businesses to operate effectively and to compete in the global market.

13.1.23 Enhanced access to high-speed broadband will help to drive investment and employment opportunities as well as enhancing access to services and improving quality of life. Better Broadband for Norfolk is a programme which aims to transform broadband speeds across the county by installing high-speed fibre optic networks¹⁸⁹.

¹⁸⁸ nomis (2020) Labour market profile. Qualifications (Jan 2019-Dec 2019). Available at: <https://www.nomisweb.co.uk/reports/lmp/la/1946157233/report.aspx?ci=1946157237&c2=1946157238#tabquals> [Date Accessed: 09/11/20]

¹⁸⁹ Norfolk County Council (2020) Better Broadband for Norfolk. Available at: <https://www.norfolk.gov.uk/what-we-do-and-how-we-work/campaigns/digital-connectivity/better-broadband-for-norfolk> [Date Accessed: 09/11/20]

Poverty

- 13.1.24 Although the suburban and rural parts of Greater Norwich are relatively affluent, there are pockets of deprivation¹⁹⁰. The lower Index of Multiple Deprivation (IMD) average rank number relates to more deprived areas¹⁹¹. The average rank is calculated by averaging all of the Lower layer Super Output Areas (LSOA) ranks in each larger area after they have been population weighted. The ‘average rank’ scores for the larger areas are then ranked, where the rank of 1 (most deprived) is given to the area with the highest score. For the purpose of calculating the score for the larger area, LSOAs are ranked such that the most deprived LSOA is given the rank of 32,844.
- 13.1.25 Average rank is a local authority level measure which represents the population weighted average of the ranks of LSOAs in the area. The more deprived is an area, the higher the IMD score but the lower the rank. Broadland and South Norfolk have lower average ranks than Norwich (see **Table 13.7**).

Table 13.7: The IMD overall average rank for each local authority¹⁹²

District	IMD average rank*
Broadland	10,039.90
Norwich	20,374.84
South Norfolk	11,571.04

* Average Rank = population weighted average of the combined ranks for the LSOAs in a larger area

- 13.1.26 Fuel poverty is defined by the Warm Homes and Energy Conservation Act¹⁹³ as being a household “*living on a lower income in a home which cannot be kept warm at reasonable cost*”. The proportion of fuel-poor households in all three authorities is higher than the average across the East of England (see **Table 13.8**).

Table 13.8: Fuel poverty in the three districts in comparison to the East of England and England¹⁹⁴

Area	Proportion of households in fuel poverty (%)
Broadland	9.5
Norwich	11.1
South Norfolk	10.6
East of England	9.4
England	10.3

¹⁹⁰ Broadland District Council, Norwich City Council and South Norfolk Council (2020) Greater Norwich Local Plan: Draft Plan Regulation 18 Consultation. Available at: <https://www.gnlp.org.uk/assets/Uploads/Reg-18-Final-Strategy-Document-20-02.pdf> [Date Accessed: 29/10/20]

¹⁹¹ Ministry of Housing, Communities and Local Government (2019) English indices of deprivation 2019. Available at: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019> [Date Accessed: 29/10/20]

¹⁹² Ibid

¹⁹³ Warm Homes and Energy Conservation Act 2000. Available at: <https://www.legislation.gov.uk/ukpga/2000/31/contents> [Date Accessed: 29/10/20]

¹⁹⁴ Public Health England (2018) Public Health Profiles. Available at: <https://fingertips.phe.org.uk/search/fuel%20poverty#page/0/gid/1/pat/6/par/E12000006/ati/201/are/E07000200/cid/4/page-options/ovw-do-0> [Date Accessed: 29/10/20]

Crime

13.1.27 In the twelve months leading up to June 2020, the police recorded a total of 30,704 crimes in the area, the most common of which being violence without injury (see **Table 13.9**).

Table 13.9: Notable offences recorded by the police in the Plan area in year ending June 2020¹⁹⁵

Crime	Broadland	Norwich	South Norfolk
All other theft offences	418	1,118	622
Bicycle theft	60	647	46
Criminal damage and arson	811	1,805	840
Residential burglary	226	603	200
Drug offences	177	807	240
Homicide	2	1	2
Miscellaneous crimes against society	215	614	221
Non-residential burglary	112	200	124
Possession of weapons offences	37	214	32
Public order offences	541	1,972	652
Robbery	10	207	19
Sexual offences	278	694	327
Shoplifting	295	1,702	259
Stalking and harassment	678	1,608	653
Theft from the person	36	259	40
Vehicle offences	213	556	247
Violence with injury	612	2,006	702
Violence without injury	1,409	3,188	1,135
Total recorded crime (excluding fraud)	6,131	18,201	6,372

¹⁹⁵ Office for National Statistics (2020) Recorded crime data by Community Safety Partnership area. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/datasets/recordedcrimedatabycommunitysafetypartnershiparea> [Date Accessed: 29/10/20]

Waste generation and recycling

13.1.28 The average waste production per person per year was 413.6kg in 2017-18, falling slightly to 409.3kg per person in 2018-19¹⁹⁶. Household waste generation and recycling rates for the Plan area are presented in **Table 13.10**. The figures show a slight increase in household waste generation between 2017-18 and 2018-19 in Broadland but a decrease in Norwich and South Norfolk. Apart from in Norwich, the percentage of household waste being recycled in Broadland, South Norfolk and Norfolk has decreased between 2017-18 and 2018-19.

Table 13.10: Household waste and recycling percentages for the three districts during the financial years 2017-18 and 2018-19¹⁹⁷

Local Authority	Financial Year	Total Local Authority collected waste (tonnes)	Household total waste (tonnes)	Household waste sent for recycling/ composting/ reuse (tonnes)	Percentage of household waste being recycled
Broadland	2017-18	49,151	48,699	24,327	49.95%
	2018-19	49,729	49,233	23,751	48.24%
Norwich	2017-18	46,388	45,301	17,063	37.67%
	2018-19	44,892	43,529	16,656	38.26%
South Norfolk	2017-18	54,284	51,898	22,251	42.87%
	2018-19	53,427	50,762	20,988	41.35%
Norfolk	2017-18	422,672	399,888	183,341	45.85%
	2018-19	401,855	386,201	167,770	43.44%

13.1.29 'Population' and 'Material Assets' are broad matters and have been considered under several SA Objectives: 5 'Housing'; 6 'Population and Communities' 7 'Deprivation'; 9 'Crime'; 10 'Education'; 11 'Economy'; 12 'Transport and Access to Services'; and 14 'Natural Resources, Waste and Contaminated Land'. These combined objectives seek to create places where residents live a high quality of life for longer, are well educated and have the necessary skills to gain employment and succeed in modern society. Indicators for these objectives include the proximity of development proposals to schools, accessibility to employment land and proximity to services and amenities.

¹⁹⁶ Department for Environment Food and Rural Affairs (2020) Statistics on waste managed by local authorities in England in 2018/19. Available at: <https://www.gov.uk/government/statistics/local-authority-collected-waste-management-annual-results> [Date Accessed: 03/11/20]

¹⁹⁷ Ibid

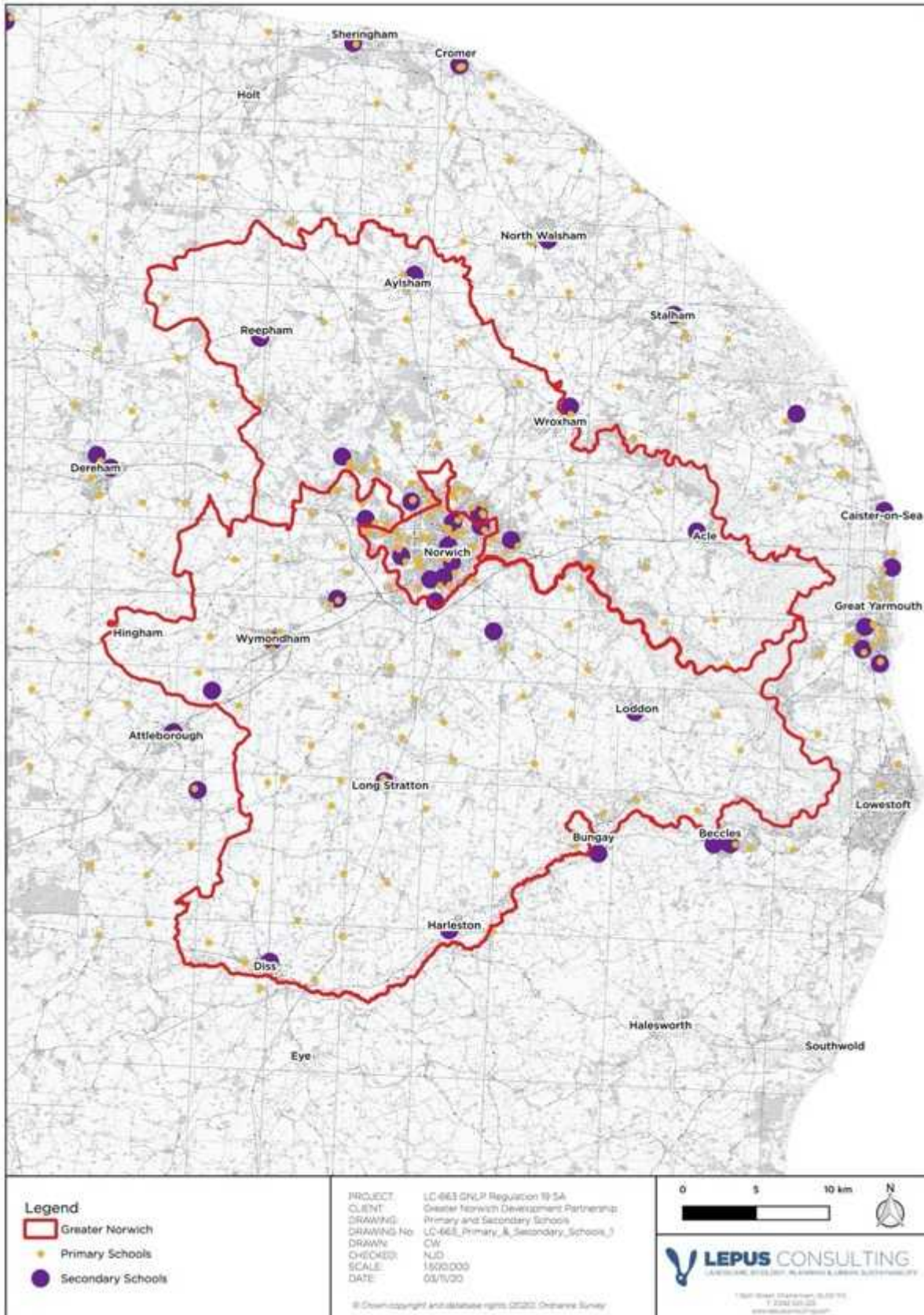


Figure 13.1: Primary and Secondary schools in and around the Plan area (source: GNLP)

13.2 Impacts on population and material assets

13.2.1 **Box 13.1** sets out a plan-wide summary of the likely impacts on population and material assets that have been identified through the SA process. These impacts are those identified prior to the consideration of mitigation in the form of GNLP policies and Local Plan DM policies. **Box 13.2** lists the GNLP strategic and site policies, as well as Local Plan DM policies for the three districts which would be likely to mitigate, either fully or partially, some of the identified impacts. Policies which would improve identified impacts have also been listed. Where mitigating policies or proformas are silent, or the contents of the GNLP only partially mitigates the adverse impacts, a residual adverse effect is identified. **Box 13.3** explores the nature of these residual effects.

Box 13.1: Summary of identified impacts on population and material assets

1	<p>Provision of housing to meet local need</p> <p>The GNLP proposes the development of 49,492 dwellings across the Plan period. This would be expected to meet the locally identified housing need and have a positive impact on Greater Norwich's housing provision. The degree to which residents from vulnerable groups, such as those on low incomes and the elderly, would benefit from the increased housing provision would be dependent upon the size, type and tenure of housing provided.</p>
2	<p>Provision of employment opportunities</p> <p>The GNLP proposes the development sites for employment floorspace, providing at least 33,000 new employment opportunities. This increase of employment floorspace would be expected to meet the identified local need and have a positive impact on the local economy, as well as the wellbeing of residents. The degree to which residents from vulnerable groups would benefit from increase employment floorspace would be dependent on the use class of the development.</p>
3	<p>Reduced access to services and facilities</p> <p>Some site allocations in Broadland and South Norfolk would be situated outside of the sustainable distance to essential services, such as healthcare facilities, local convenience stores and the local PRoW or cycle network. Good access to these services is essential to reduce reliance on personal car use, encourage healthy and active lifestyles, and provide accessibility to spaces which could potentially have benefits to mental wellbeing and community cohesion. Approximately half of the site allocations are located outside of the sustainable distance to primary and secondary education facilities.</p>
4	<p>Increased pressure on local services and facilities</p> <p>The proposed development within the GNLP would be expected to increase population density across Greater Norwich. This would be likely to place greater pressures on the capacity of services within the Plan area, including schools, GP surgeries, leisure centres and open spaces. This pressure would be likely to be higher in some of the Key Service Centres.</p>
5	<p>Improved community cohesion</p> <p>Community cohesion is important to help ensure residents are living happy and healthy lifestyles. Interactive and vibrant communities often benefit from a strong sense of place, a reduced fear of crime and have economic benefits.</p>
6	<p>Increased household waste generation</p> <p>The proposed development of 49,492 new dwellings within the GNLP would be expected to increase household waste generation within the Plan area. There is little scope for policies within the GNLP to reduce the volume of waste produced by households.</p>

13.3 Local Plan mitigation

- 13.3.1 The proposed development within the GNLP meets the identified housing and employment needs of Greater Norwich. The GNLP also aims to ensure that residents are located in close proximity to essential services and facilities, have adequate access to employment opportunities and improve transport linkages. Policies which would be expected to mitigate or enhance the impact of development on the local population and material assets are discussed in **Box 13.2**.

Box 13.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on population and material assets

Provision of housing to meet local need

GNLP Policy 5 seeks to provide a diverse range of homes for all sectors of the community, in a variety of tenure and cost. This includes affordable housing, accessible and specialist housing, gypsy, traveller and travelling showpeople, student accommodation, and self/ custom build homes.

Policies H5, H6 (Broadland), DM3.1, DM3.2, DM3.3 (south Norfolk), DM12, DM13 and DM14 (Norwich) seek to ensure a range of types and tenures of residential development is delivered across the three authorities.

Numerous site policies set out allocations for housing, specialist care and older persons housing and student accommodation.

Provision of employment opportunities

GNLP Policy 6 seeks to improve employment opportunities across the Plan area in order to meet the identified need. It would be anticipated that this would mitigate any loss of employment floorspace as a result of residential development proposed with the GNLP, through the retention of a range of existing small and medium scale employment sites and encouraging provision of small-scale business opportunities in residential and commercial developments.

GNLP Policy 2 could help to provide opportunities for working at home through allowing the delivery of broadband and fibre optic networks.

Policies E1, E2, H4 (Broadland), DM2.1, DM2.2, DM2.3 (South Norfolk), DM16, DM18 and DM19 (Norwich) would be expected to ensure that existing employment sites are protected and that new employment opportunities are provided in line with local needs, including the promotion of home working.

Numerous site policies set out allocations for employment opportunities, including the development of retail, tourism, a Science Park, hospital expansion and other employment uses.

Reduced access to services and facilities

GNLP Policy 2 would be expected to provide improved safe and sustainable access to local shops, healthcare services and schools across the Plan area. The policy also seeks to ensure that all development contributes towards multi-functional green infrastructure links.

GNLP Policy 4 would be expected to provide improved safe accessibility and infrastructure links to key employment areas including the Cambridge Norwich Tech Corridor and town centres and promote the growth of Norwich International Airport.

GNLP Policy 7.1 would support the development of a new primary school in Norwich and would be expected to ensure school capacity is increased throughout the Plan area in order to meet the identified needs.

Policies TS1, TS2, CG4, H5 (Broadland), DM3.8, DM3.10 (South Norfolk), DM12, DM13, DM14, DM18, DM25, DM26, DM27, DM28 and DM33 (Norwich) would be expected to improve connections to public transport and incorporate travel plans where required.

Box 13.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on population and material assets

Policies EN2, EN3, RL1 (Broadland), DM1.2, DM1.4, DM3.15, DM4.4 (South Norfolk), DM2, DM3, DM8, DM26 and DM33 (Norwich) would help to ensure that all residential development proposals have good access to outdoor space, and that development would avoid the loss of existing open spaces.

Site Policies ACL1, ACL2, BAW2, BLO5, BRU2, BRU3, BUX1, CAW2, CC4a, CC4b, CC7, CC15, CC16, CC24, CC30, COL1 [Emp], COL1 [Res], COL2, COL3, COS3/GNLP2008, COS5/GNLP2074, DRA1, EAS1, GNLP0102, GNLP0125, GNLP0132, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0172, GNLP0188, GNLP0253, GNLP0264, GNLP0293, GNLP0297, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0331RB, GNLP0331RC, GNLP0337R, GNLP0351, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0382, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0503, GNLP0506, GNLP0520, GNLP0581/2043, GNLP0596R, GNLP0605, GNLP0608, GNLP1001, GNLP1048R, GNLP2034, GNLP2108, GNLP2114, GNLP2136, GNLP2143, GNLP3003, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HEL1, HEL2, HEL4/GNLP1019, HET1, HETHEL2, HNF1, HNF2/GNLP0466R, KES2, R1, R2, R7, R17, R18, R19, R29, R30, R36, R37, R38, REP1, REP2 and TROW1 would be likely to improve access to leisure facilities and open space by increasing the use of public transport or travel by walking or cycling.

Increased pressure on local services and facilities

GNLP Policy 4 seeks to increase capacity at energy substations, improvements to water supply and sewerage networks, increase school capacities and the provision of new schools as required. Development proposals will provide on-site services and facilities and support local infrastructure capacity improvements through on-site provision.

Policies RL1, CSU1, CSU2, CSU3 (Broadland), DM3.15, DM3.16 (South Norfolk), DM8, DM21 and DM22 (Norwich) would help to ensure existing community facilities are protected and where appropriate, new services and facilities are provided.

Site Policies EAS1, GNLP0132, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0337R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0581/2043, HEL2, HET1 and TROW1 would be expected to increase the provision of educational facilities across the Plan area.

Site Policies GNLP0337R, GNLP0360/GNLP3053/R10, GNLP0506 and GNLP0581/2043 would be likely to increase the provision of local shops across the Plan area.

Site Policies COL1 [Emp], COL2, COL3, GNLP0253, GNLP0331RB, GNLP0331RC and GNLP0337R seek to increase the provision of healthcare facilities.

Site Policies CC15, COS5/GNLP2074, GNLP0132, GNLP0360/GNLP3053/R10, GNLP0506, GNLP0581/2043, HEL2, HNF1 and REP1 seek to increase the provision of leisure facilities across the Plan area.

Improved community cohesion

GNLP Policy 2 seeks to provide safe and sustainable access to on-site and local services including schools, healthcare, shops, leisure/community facilities and libraries. This policy also would be expected to help promote inclusive and safe communities, through providing access to these services and opportunities for social interaction.

Policies CSU2, CSU3, R1 (Broadland), DM1.2, DM2.4, DM2.5, DM3.16 (South Norfolk), DM1, DM14, DM21 and DM22 (Norwich) seek to protect existing community facilities from loss and encourage the development of new shops and facilities in local centres.

Site Policies EAS1, GNLP0337R, GNLP0360/GNLP3053/R10, GNLP0506, GNLP0581/2043, GNLP2136 and HET1 would be expected to increase the provision and protect existing community facilities.

Increased household waste generation

GNLP Policy 2 promotes resource efficiency and sustainable waste management within Greater Norwich. This would be likely to contribute towards a reduction in household waste generation attributed to new development.

Box 13.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on population and material assets

Policies CSU4 (Broadland), DM1.4, DM4.3 (South Norfolk) and DM31 (Norwich) could potentially help to improve the uptake of recycling and facilitate sustainable waste management.

13.4 Residual effects on population and material assets

13.4.1 Residual adverse effects would be expected in terms of population and material assets following the implementation of the GNLP and adopted Local Plan policies. Many of the policies (see **Box 13.2**) would be likely to have positive residual effects in relation to housing provision and the economy. A residual adverse effect would be expected in relation to household waste generation over the Plan period. Further details, and where applicable, potential recommendations to help mitigate or monitor these adverse impacts are presented in **Box 13.3**.

Box 13.3: Residual effects for population and material assets

Residual effects	Further details of the residual effect
Provision of housing to meet local need	The proposed development of 49,492 dwellings across the Plan area would be expected to make a positive contribution towards meeting the identified local housing need. Policies within the GNLP would be expected to ensure that residential developments meet the needs of the local community, including affordable housing and gypsy and traveller accommodation.
Provision of employment opportunities	The proposed development of 33,000 new employment opportunities over 360ha of employment land through the GNLP would be expected to make a positive contribution to meeting the employment needs of residents. Policies within the GNLP help to ensure that a range of types and sizes of employment land are available.
Reduced access to services and facilities	Policies within the GNLP would be anticipated to help improve residents' accessibility via sustainable transport options, including improvements to the bus network and enhanced pedestrian and cycle networks. This would be likely to help improve access to existing local services and facilities for new and current residents. Nevertheless, some residents in more rural areas of Broadland and South Norfolk may still have somewhat limited access to some services, in particular, limited access to railway stations. Reduced access to services and facilities, in particular railway services, is a medium-term and temporary significant effect.
Increased demand on local services and facilities	Numerous site allocations are located outside a sustainable distance to local services such as a convenience store or school. Some of the site allocations within the GNLP are allocated for the provision of community services. An increased number of services and community facilities across the Plan area would help to reduce the demand on other services in the area. This would be anticipated to mitigate the increased demand for services but would only be expected provide services to new residents, not result in a net increase in service provision.
Increased household waste generation	It is difficult for the GNLP to specifically reduce waste generation within the Plan area. The introduction of 110,367 new residents would be expected to increase waste production, regardless of recycling rates across the Plan area. Household waste

Residual effects	Further details of the residual effect
	<p>generation has been estimated to increase by approximately 31.5%¹⁹⁸. Behavioural changes would be required to reduce waste generation, which can only be encouraged through the influence Local Plan policies. GNLP Policy 2 seeks to “<i>support sustainable waste management</i>”. In accordance with the NPPF, development proposals are required to “minimise waste” and make sufficient provision for “waste management”, which would be expected to ensure the construction phase of development takes into consideration waste generation and uses recycled material where appropriate. The GNLP policies would not be expected to fully mitigate this impact and are unlikely to facilitate reductions in household waste production in line with objectives set out under the 2018 Resources and Waste Strategy¹⁹⁹ (at least 65% of household waste to be recycled by 2035).</p> <p>An increase in household waste generation is a long-term and permanent significant effect.</p>

¹⁹⁸ See paragraph C.1.15.3 of Appendix C for full calculation.

¹⁹⁹ HM Government (2018) Our Waste, Our Resources: A Strategy for England. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-waste-strategy-dec-2018.pdf [Date Accessed: 29/10/20]

14 Soil

14.1 Baseline

14.1.1 Soil is an essential and non-renewable resource that provides a wide range of ecosystem services. It filters air, stores and cycles water and nutrients, decomposes and cycles organic matter, supports plant growth and provides medicines²⁰⁰. Soil is also one of the most important natural carbon sinks globally and its protection is vital in efforts to mitigate anthropogenic climate change. It can reduce flood risk, alleviate flood damage and improve local water and air quality to the benefit of ecosystem and human health.

14.1.2 In accordance with the core planning principles of the NPPF²⁰¹, development on previously developed land will be recognised as an efficient use of land. Development on previously undeveloped land is not considered to be an efficient use of land.

14.1.3 For development to be sustainable, decision makers must make best efforts to conserve soil resources. Development such as that proposed in the Local Plan can potentially adversely impact soil stocks, such as by direct loss of soil (e.g. excavation during construction), contamination, increased erosion, breakdown of structure and loss of nutrients. In recent years, soils in the UK have rapidly degraded, predominantly due to intensive agricultural production and industrial pollution. The UK's soil continues to face three main threats, each of which will be exacerbated by climate change²⁰²:

- Soil erosion by wind and rain (it is estimated that the UK loses 2.2 million tonnes of topsoil every year due to wind and water erosion);
- Compaction; and
- Organic matter decline.

14.1.4 Construction on land has the potential to exacerbate compaction of soils and the decline in organic matter, whilst all three of the above threats are expected to be exacerbated by climate change.

14.1.5 Soils across Greater Norwich are varied (see **Table 14.1**). Most of the areas support arable habitats. The soil across the Plan area ranges between low and high fertile soils and low and high carbon storage.

²⁰⁰ Food and Agriculture Organization of the United Nations (2020) Soil ecosystem services. Available at: <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/spi/soil-biodiversity/soil-ecosystems-services/en/> [Date Accessed: 29/10/20]

²⁰¹ Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Date Accessed: 29/10/20]

²⁰² Department for Environment, Food & Rural Affairs (2009) Safeguarding our soils – A strategy for England. Available at: <https://www.gov.uk/government/publications/safeguarding-our-soils-a-strategy-for-england> [Date Accessed: 29/10/20]

Table 14.1: Most prominent soils across Greater Norwich²⁰³

Soil	Texture	Permeability	Fertility	Carbon storage	Landcover
Freely draining slightly acid loamy soils	Loamy	Freely draining	Low	Low	Arable and grassland
Freely draining slightly acid sandy soils	Sandy	Freely draining	Low	Low	Arable
Fen peat soils	Peaty	Naturally wet	Mixed, very low to lime-rich	Medium/High	Arable and horticulture
Slightly acid loamy and clayey soils with impeded drainage	Loamy some clayey	Slightly impeded drainage	Moderate to high	Low	Arable and grassland
Naturally wet very acid sandy and loamy soils	Sandy and loamy	Naturally wet	Very low	Medium	Arable and horticulture some wet lowland heath
Loamy and sandy soils with naturally high groundwater and a peaty surface	Peaty	Naturally wet	Low to high	Medium/High	Mostly arable
Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Loamy and clayey	Impeded drainage	Moderate	Low	Grassland and arable some woodland
Slowly permeable seasonally wet acid loamy and clayey soils	Loamy and clayey	Impeded drainage	Low	Medium	Grassland with some arable and forestry
Lime-rich loamy and clayey soils with impeded drainage	Clayey, some loamy	Slightly impeded drainage	High	Low	Arable some grassland

Agricultural Land Classification

14.1.6 The Agricultural Land Classification (ALC) system classifies land into five categories according to versatility and suitability for growing crops. The top three grades, Grades 1, 2 and Subgrade 3a, are referred to as the ‘best and most versatile’ (BMV) land²⁰⁴. Where site-specific ALC studies have not been completed, it is not possible to identify Subgrade 3a and 3b land. Therefore, a precautionary approach is taken, and potential BMV land is assessed as Grades 1, 2 and 3. The grades are as follows:

- Grade 1 – excellent quality agricultural land
- Grade 2 – very good quality agricultural land
- Grade 3 – good to moderate quality agricultural land
 - Subgrade 3a – good quality agricultural land
 - Subgrade 3b – moderate quality agricultural land
- Grade 4 – poor quality agricultural land

²⁰³ Cranfield Soil and Agrifood Institute (no date) Soilscales, available at: <http://www.landis.org.uk/soilscales/> [Date Accessed: 29/10/20]

²⁰⁴ Natural England (2019) Agricultural Land Classification (ALC) (England). Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/5d2477d8d04b41d4bbc9a8742f858f4d_0?geometry=-3.131%2C52.513%2C-0.667%2C53.094 [Date Accessed: 27/01/20]

- Grade 5 – very poor quality agricultural land

14.1.7 The majority of the Plan area is located on land classified as Grade 3 ALC land (see **Figure 14.1**). The majority of the Grades 1 and 2 ALC soils are in Broadband and almost the entirety of Norwich is ‘Urban’ ALC land.

14.1.8 Paragraph 170 of the NPPF states “*planning policies and decisions should contribute to and enhance the natural and local environment by ... recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land*”.

14.1.9 The issue of soil was primarily taken into consideration under SA Objective 14 ‘Natural Resources, waste and Contaminated Land’ which aims to minimise waste generation, promote recycling, avoid the sterilisation of mineral resources, remediate contaminated land and minimise the use of the best and most versatile agricultural land. Soils have been considered to some extent under SA Objectives 2 ‘Climate Change Mitigation and Adaptation’ and 3 ‘Biodiversity, Geodiversity and Green Infrastructure’.

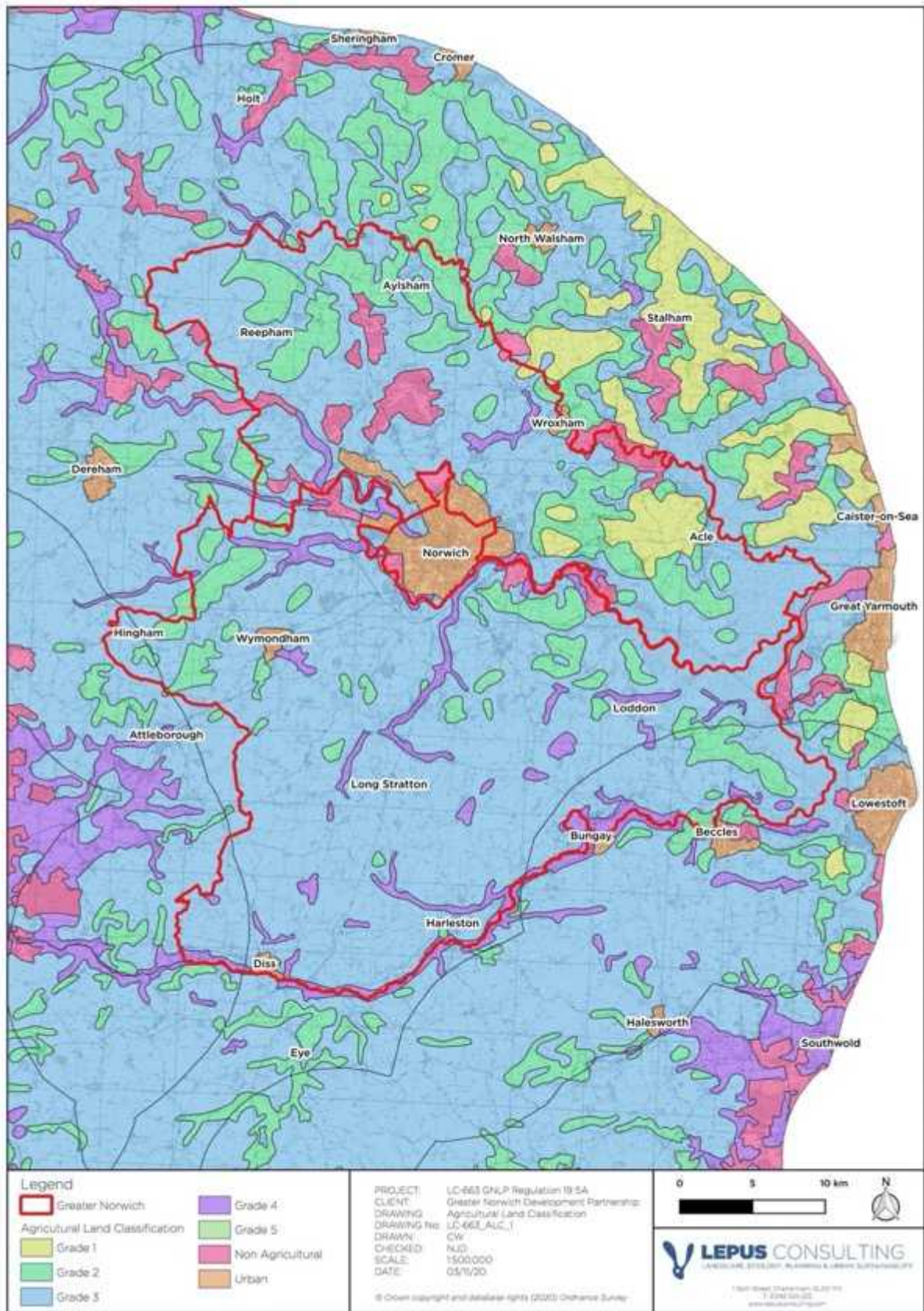


Figure 14.1: Agricultural Land Classification in and around the Plan area (source: Natural England)

14.2 Impacts on soil

14.2.1 **Box 14.1** sets out a plan-wide summary of the likely impacts on soil that have been identified through the SA process. These impacts are those identified prior to the consideration of mitigation in the form of GNLP policies and Local Plan DM policies. **Box 14.2** lists the GNLP strategic and site policies, as well as Local Plan DM policies for the three districts which would be likely to mitigate, either fully or partially, some of the identified impacts. Policies which would improve identified impacts have also been listed. Where mitigating policies or proformas are silent, or the contents of the GNLP only partially mitigates the adverse impacts, a residual adverse effect is identified. **Box 14.3** explores the nature of these residual effects and, where applicable.

Box 14.1: Summary of identified impacts on soil

Loss of soil resources and BMV land

1

The GNLP proposes the development of 138 allocations delivering 49,492 dwellings across the Plan area. Of these 138 sites, 44 allocations are wholly located on previously developed land. Of the remaining 94, the proposed use on nine of the allocations would not be expected to result in the loss of land, and therefore, 85 of the allocated sites would result in the loss of previously undeveloped land to some extent. The GNLP would result in the loss of approximately 1,019ha of previously undeveloped land. The development of new buildings on previously undeveloped land would be expected to result in a direct loss of soil resource, with little or no scope for mitigation.

BMV land is defined through the Agricultural Land Classification system as Grades 1, 2 and 3a (soil which is most flexible, productive and efficient in response to inputs and which can best deliver food and non-food crops for future generations). Approximately 912ha of BMV land would be lost as a result of the development proposed in the GNLP.

Impact on ecosystem services

2

Soil provides a range of essential services to the local area, including nutrient cycling, abating flood risk, filtering water, filtering air, carbon storage and providing the basis for vegetation to flourish. In order for soil to continue providing each service, careful consideration should be given to its structure and stability. Where construction occurs, soil could potentially be compacted by heavy vehicles on-site. During the occupation or operation phase of development, soil, in some circumstances, could potentially be paved over, become subject to increased footfall or be subject to increased volumes of fertilisers and other chemicals.

14.3 Local Plan mitigation

- 14.3.1 GNLP policies seek to protect soil resource, in particular agriculturally important land. These policies are set out in **Box 14.2**.

Box 14.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on soil

Loss of soil resources and BMV land

GNLP Policy 2 promotes resource efficiency, and GNLP Policy 3 seeks to protect high quality agricultural land.

GNLP Policy 7.1 aims to promote brownfield development by allocating a significant proportion of the housing requirements within Norwich City.

Policies GC4 (Broadland), DM1.4, DM3.3 (South Norfolk), DM3 and DM29 (Norwich) seek to encourage the efficient use of land and environmental resources, including prioritising development on previously developed land.

Policies DM2.8, DM2.9 and DM2.12 (South Norfolk) seek to ensure that high quality agricultural land is protected.

Impact on ecosystem services

GNLP Policy 2 would contribute towards the protection and enhancement of the multi-functional green infrastructure network.

GNLP Policy 3 aims to conserve and enhance the natural environment, protected habitats/species, and ensure development proposals result in biodiversity net gain.

Policies EN1, EN3 (Broadland), DM1.4, DM4.4 (South Norfolk), DM3 and DM6 (Norwich) would be expected to ensure proposals contribute to the multi-functional green infrastructure network and protect ecosystem services.

Site Policies ACL3, BRU2, CC2, CC4b, CC7, CC8, CC10, CC15, CC16, CC24, COL1 [Emp], COL2, COL3, DRA1, EAS1, GNLP0102, GNLP0132, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0253, GNLP0293, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0312, GNLP0331RB, GNLP0331RC, GNLP0337R, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0506, GNLP0520, GNLP0581/2043, GNLP0596R, GNLP0608, GNLP0608R, GNLP1001, GNLP1048R, GNLP2019, GNLP2034, GNLP2109, GNLP2114, GNLP2136, GNLP2163, GNLP2164, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HET1, HIN2, HNF2/GNLP0466R, KES2, LOD3, POR3, R1, R2, R7, R13, R14/R15, R17, R18, R19, R29, R31, R33, R36, R37, R42 and REP1 would be likely to ensure proposals contribute to the multi-functional green infrastructure network.

14.4 Residual effects on soil

- 14.4.1 Policies within the GNLP seek to mitigate some of the adverse impacts identified, by conserving “*high quality agricultural land and soils*”. However, due to the nature of the land across Greater Norwich, a number of allocated sites are located on previously undeveloped land. GNLP policies cannot fully mitigate the adverse impacts of development on ecologically and agriculturally important soils. Residual adverse effects would be expected to remain in terms of soil following the implementation of the GNLP and adopted Local Plan policies. Further details and potential recommendations to help monitor these adverse impacts are presented in **Box 14.3**.

Box 14.3: Residual effects for soil

Residual effects	Further details of the residual effect
<p>Loss of soil resources and BMV land</p>	<p>85 allocated sites in Greater Norwich wholly or partially comprise previously undeveloped land, and therefore the GNLP would be expected to result in the loss of 1,019ha of previously undeveloped land. The loss of permeable soils could potentially increase the risk of flooding and result in a loss of biodiversity across the Plan area. Loss of soil can also result in an increase in soil erosion and have subsequent impacts on air quality and agricultural yield.</p> <p>The loss of approximately 1,019ha of previously undeveloped land, including approximately 912ha of BMV land, would be expected to be a long-term and permanent significant effect.</p>
<p>Impact on ecosystem services</p>	<p>Paragraph 170(b) of the NPPF requires planning policies and decisions to enhance the natural environment by <i>“recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services”</i>. Policies 2 and 3 the GNLP aim to increase provision of green infrastructure across the Plan area, which would be expected to mitigate potential adverse impacts due to the proposed development, however, the proposed development would be expected to reduce the ability of the local soil biome to effectively provide ecosystem services.</p> <p>The loss of ecosystem services would be likely to be a long-term and permanent significant effect.</p>

15 Water

15.1 Baseline

Flood risk

- 15.1.1 The frequency of extreme weather events is likely to increase during the plan period, and beyond, due to the changing climate. In Norfolk, increased risk of fluvial and pluvial flooding is of primary concern. The main watercourses that pass through Great Norwich include the River Wensum and the River Yare. A complex network of waterways course through the GNLP area (see **Figure 15.1**).
- 15.1.2 The majority of the GNLP area is within Flood Zone 1 (see **Figure 15.2**). Along the River Yare, Wensum, Tiffey, Waveney and Tas, large expanses of land are situated in Flood Zone 3. These areas have a risk of fluvial flooding which is greater than 3.3% each year. Approximately 17,500ha of the Plan area is in Flood Zone 3. In line with the NPPF, careful consideration should be given to the level of flood risk new residents are exposed to, as well as the impacts of development on risk.
- 15.1.3 Flood risk is also associated with groundwater: in particular when there is a surcharge of the underground sewer system or increase in the groundwater level into basements and cellars.
- 15.1.4 Areas of high, medium and low surface water flood risk are present across the Plan area (see **Figure 15.3**). Surface water flood risk typically follows roads and natural watercourses.
- 15.1.5 Flood risk is exacerbated by loss of vegetation, soil erosion, climate change, extreme weather and urbanisation.
- 15.1.6 It is good practice to make allowances for climate change in flood risk assessments²⁰⁵. Allowing for the impacts of climate change help to minimise vulnerability whilst providing greater resilience to flooding by anticipating changes to peak river flows, peak rainfall intensities, sea level rise and offshore wind speeds. Climate change allowances are based on climate change projections under different CO₂ scenarios.

²⁰⁵ Environment Agency (2020) Flood risk assessments: climate change allowances. Available at: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> [Date Accessed: 29/10/20]

Green Infrastructure

- 15.1.7 GI is 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 communities²⁰⁶. GI has many benefits including human health, climate change adaptation and wildlife value²⁰⁷. GI can play an important role in helping urban areas adapt to climate change by filtering airborne pollutants, providing shade and local cooling and reducing surface water runoff²⁰⁸.

Water resources

- 15.1.8 The draft Water Cycle Study (WCS) assesses development proposals in Greater Norwich in regard to water supply capacity, wastewater capacity and environmental capacity. The study then seeks to provide demonstratable solutions to the key constraints, including policy recommendations.
- 15.1.9 The WCS identifies that there are Water Recycling Centres within the Plan area that have no capacity to treat additional wastewater flows from the proposed level of growth. In other cases, there may be capacity, but using this capacity could potentially result in adverse impacts on the water quality and ecology of watercourses. Upgrades to Water Recycling Centres will be required particularly in Rackheath, Long Stratton, Wymondham and Whitlingham.
- 15.1.10 The WCS also states that *“the provision of SuDS will need to be fully explored at all new sites to ensure no increase in sewer flood risk across the study area”*.
- 15.1.11 The vulnerability of groundwater to pollution is determined by the physical, chemical and biological properties of the soil and rocks. The Environment Agency (EA) has published details about how they manage and protect groundwater²⁰⁹. Groundwater Source Protection Zones (SPZs) indicate the risk to groundwater supplies from potentially polluting activities and accidental releases of pollutants.

²⁰⁶ MHCLG (2019) National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Date Accessed: 29/10/20]

²⁰⁷ Forest Research (2010) Benefits of green infrastructure. Available at: <https://www.forestresearch.gov.uk/research/benefits-of-green-infrastructure/> [Date Accessed: 29/10/20]

²⁰⁸ Landscape Institute (no date) Green Infrastructure (GI). Available at: <https://www.landscapeinstitute.org/policy/green-infrastructure/> [Date Accessed: 29/10/20]

²⁰⁹ Environment Agency (2018) The Environment Agency’s approach to groundwater protection, February 2018, Version 1.2 . Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692989/Environment-Agency-approach-to-groundwater-protection.pdf [Date Accessed: 29/10/20]

- 15.1.12 There are three SPZs²¹⁰ in the plan area:
- SPZ 1 – Inner Protection Zone: the 50-day travel time from any point below the water table to the source;
 - SPZ 2 – Outer Protection Zone: the 400-day travel time from a point below the water table, with a minimum radius of 250-500m; and
 - SPZ 3 – Source Catchment Protection Zone: area around source within which all groundwater recharge is discharged at the source.
- 15.1.13 The majority of Greater Norwich is located within SPZ 3 (see **Figure 15.4**). The south east of Norwich is located within SPZ 1 and the east of Broadland and South Norfolk districts are not located within an SPZ.
- 15.1.14 The main water service provider for Greater Norwich is Anglian Water²¹¹. Anglian Water provides water to over six million people. The Water Resources Management Plan (WRMP)²¹² states that there is currently significant pressure from population growth, climate change, sustainability reductions and the need to increase resilience to severe drought.
- 15.1.15 The Anglian Water WRMP sets out potential and known challenges that are expected in the future. The planning objectives of the WRMP are to:
- Ensure our system is resilient to the combined effects of severe drought (defined as an event with an approximate one in 200-year return period) and climate change, so that none of our household and non-household customers are exposed to an unacceptable risk of standpipes and rota-cuts;
 - Provide enough water to meet local authority growth targets;
 - Meet all of our statutory environmental obligations. These include restoring abstraction to sustainable levels and preventing deterioration in water body status;
 - Make best use of available water resources, before developing new ones. This includes prioritising cost-beneficial demand management and trading to share any available surpluses;
 - Ensure that solutions for the WRMP 2019 are flexible enough to be adapted to meet unknown AMP8 needs, including possible future exports to Affinity Water (Central) and future sustainability reductions;
 - Ensure the economic evidence used to develop our investment strategy is robust and transparent;
 - Clearly set out the bill implications of our investment strategy and ensure they are supported by customers

²¹⁰ Environment Agency (2013) Groundwater Source Protection Zones. Available at: <http://apps.environment-agency.gov.uk/wiyby/37833.aspx> [Date Accessed: 29/10/20]

²¹¹ Anglian Water. Available at: <https://www.anglianwater.co.uk/> [Date Accessed: 09/11/20]

²¹² Anglian Water (2019) Water Resource Management Plan 2019. Available at: <https://www.anglianwater.co.uk/siteassets/household/about-us/wrmp-report-2019.pdf> [Date Accessed: 09/11/20]

- Ensure our Preferred Plan represents ‘best value’ for customers over the long-term; and
- Minimise the risk of delivering assets that become stranded or under-utilised in the longer term.

15.1.16 Catchment Area Management Strategies (CAMS) are six-year strategies developed by the Environment Agency for managing water resources at the local level. CAMS are to be produced for every river catchment area in England and Wales. All new licences within a CAMS area have a common end date so they can be reviewed simultaneously.

15.1.17 The GNLP area is primarily affected by the Broadland abstraction licensing strategy²¹³ and a very small section to the south west of South Norfolk affected by the Cam and Ely Ouse abstraction licensing strategy²¹⁴ (see **Figure 15.5**). The strategy sets out how water resources are used in the area, indicating areas where water is available for further abstraction. Surface water flow is assessed at 17 assessment points in both the Broadland and Cam and Ely Ouse catchments

15.1.18 Water use and quality is considered under SA Objective 15 ‘Water’, which seeks to maintain and enhance water quality and ensure the most efficient use of water. Flooding has been taken into account under SA Objective 2 ‘Climate Change Mitigation and Adaptation’, which seeks to reduce the number of people at risk of fluvial and pluvial flooding. River ecology is also considered under SA Objective 3 ‘Biodiversity, Geodiversity and Green Infrastructure’.

²¹³ Environment Agency (2017) Broadland abstraction licensing strategy.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/636600/ALS_2017_Broadland.pdf
[Date Accessed: 29/10/20]

²¹⁴ Environment Agency (2017) Cam and Ely Ouse abstraction licensing strategy. Available at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/637563/ALS_2017_Cam_and_Ely_Ouse.pdf [Date Accessed: 29/10/20]

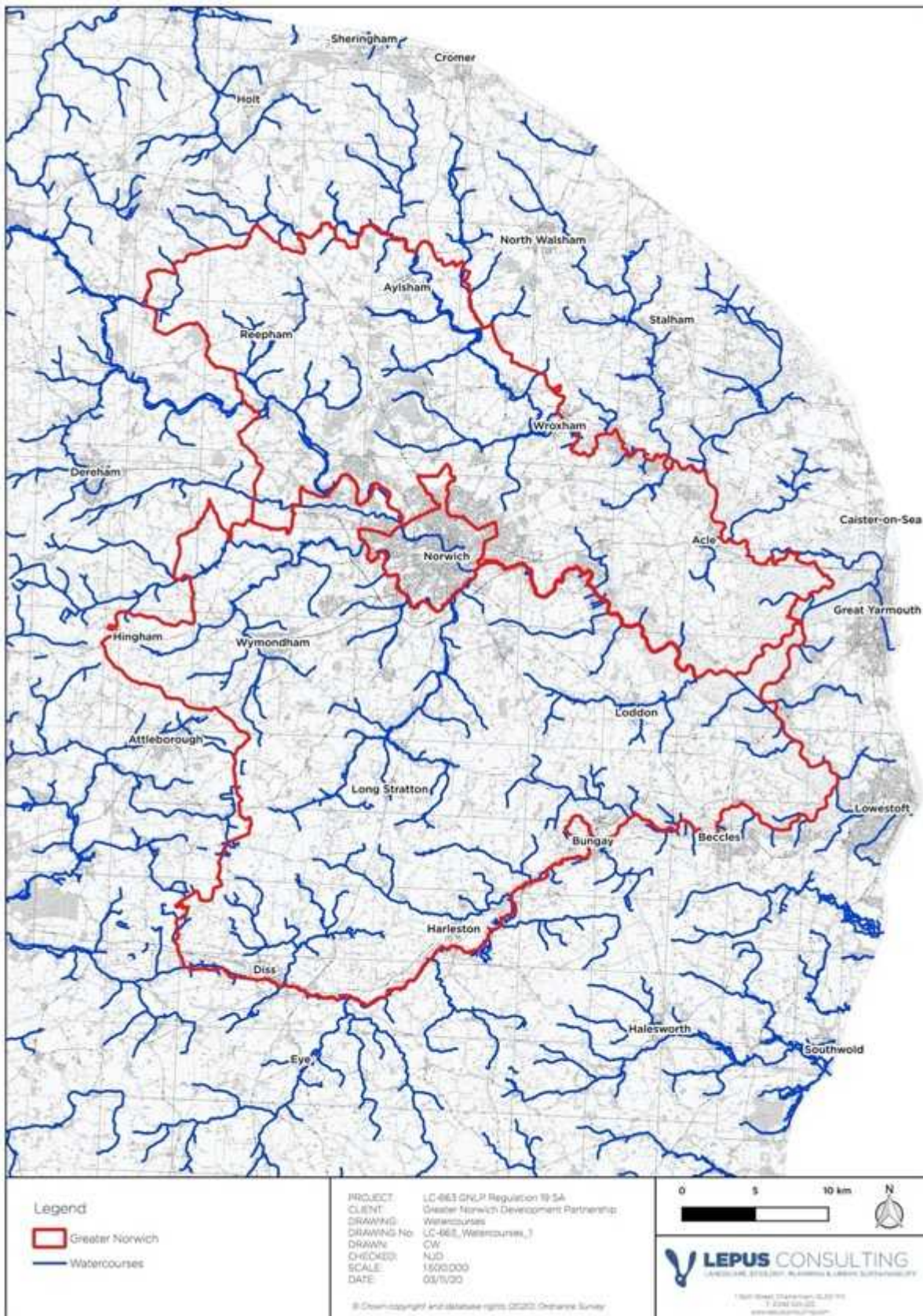


Figure 15.1: Watercourses in and around the Plan area (source: Ordnance Survey)

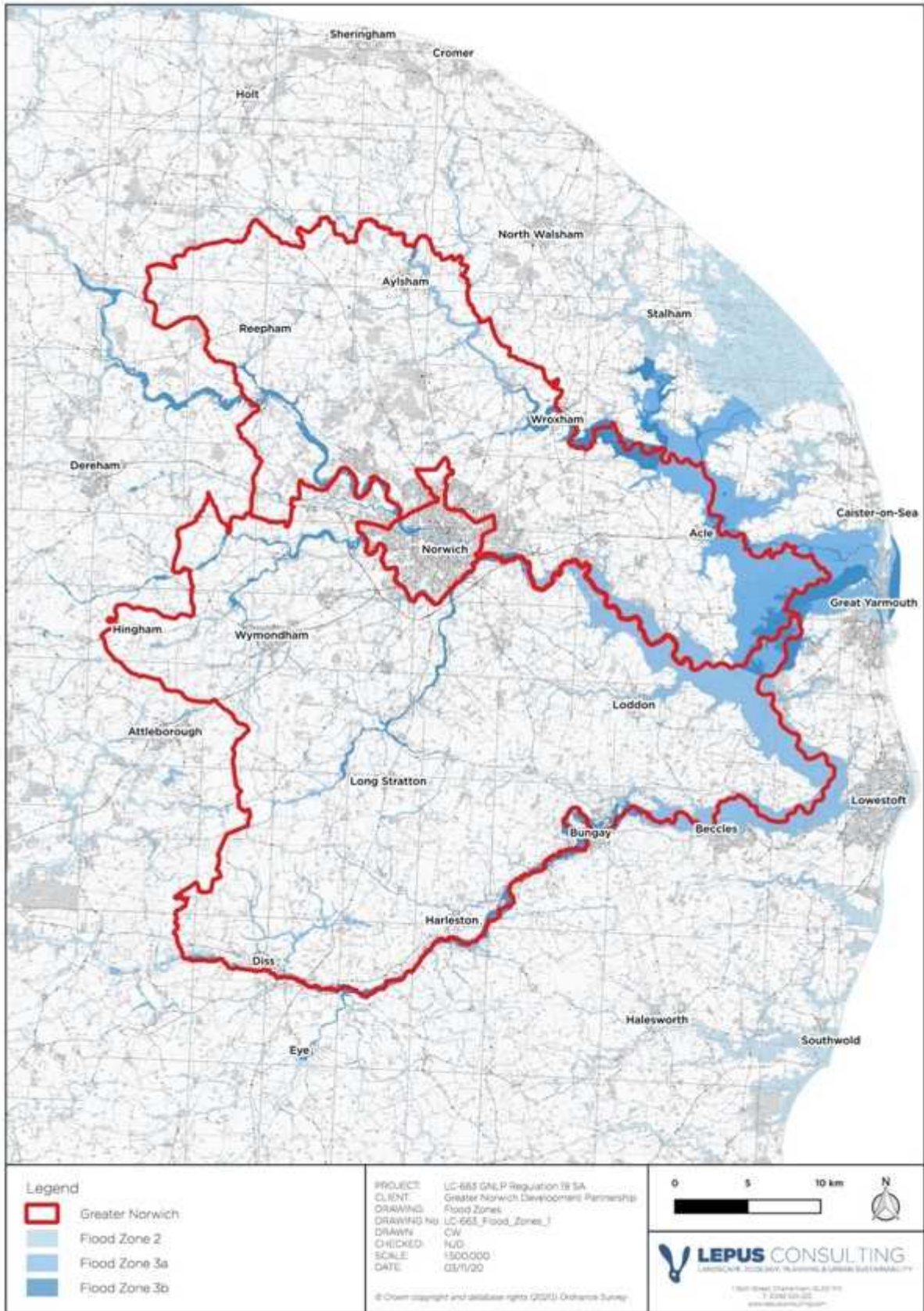


Figure 15.2: Flood Zones in and around the Plan area (source: Environment Agency)

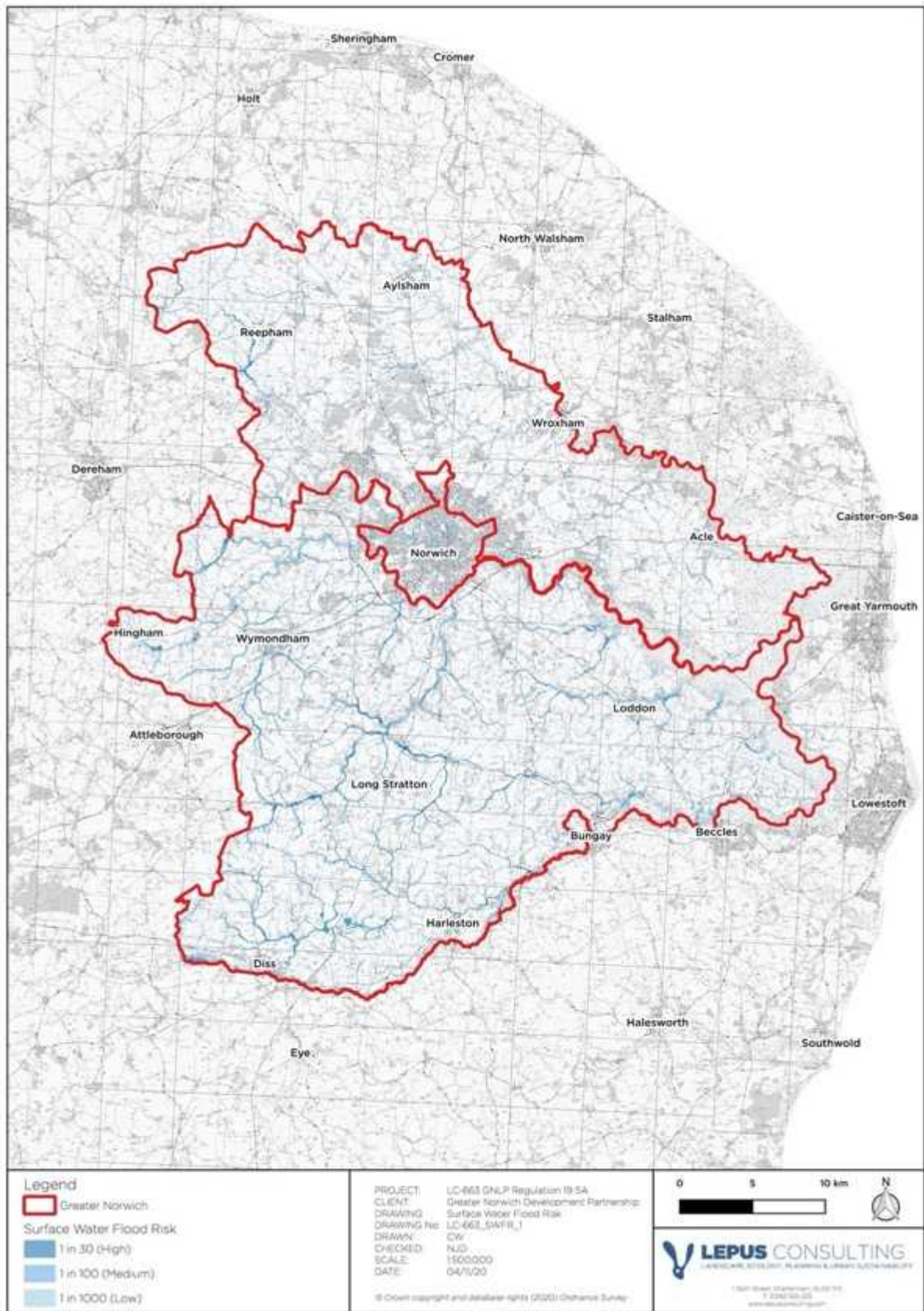


Figure 15.3: Surface water flood risk within the Plan area (source: Environment Agency)

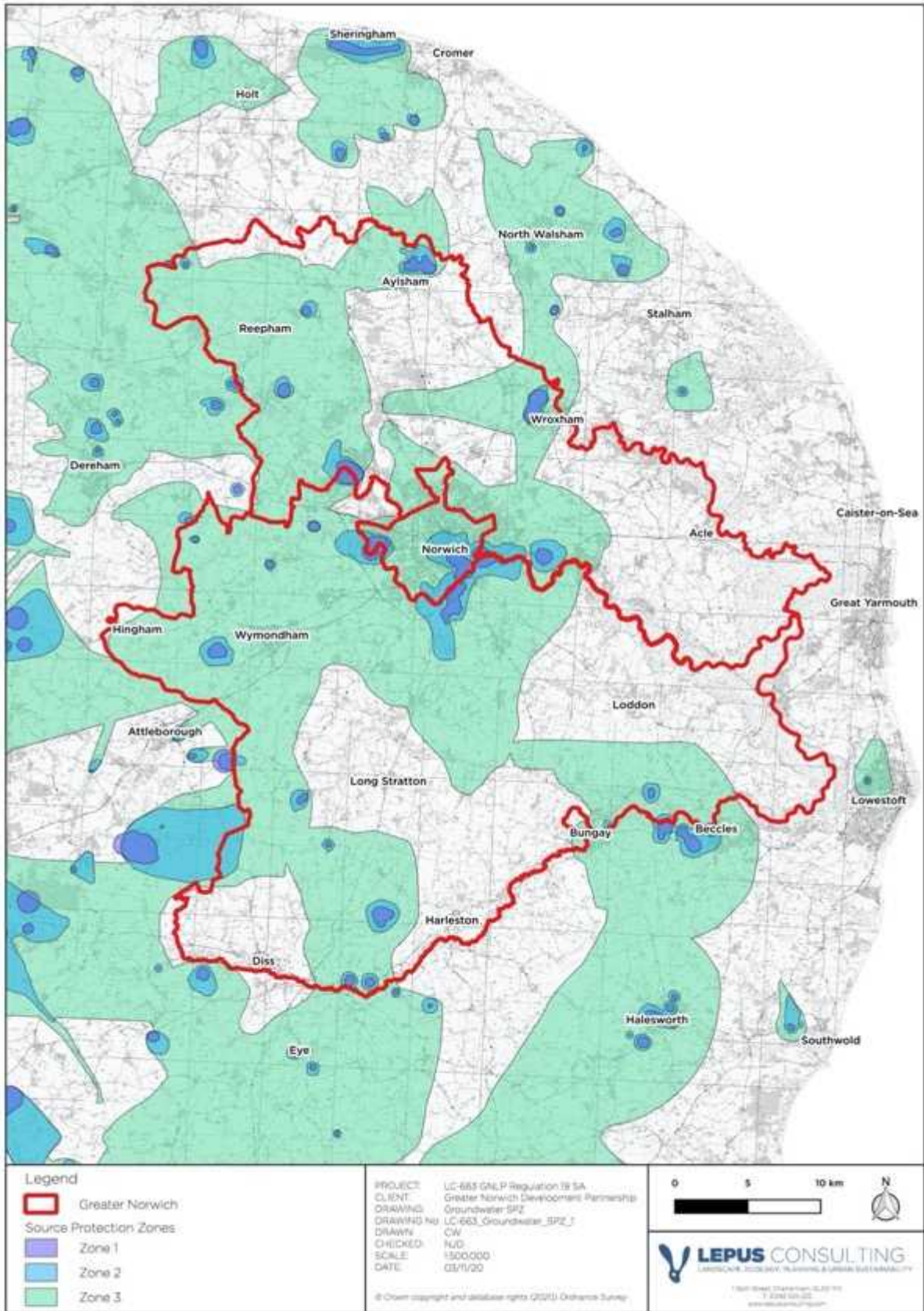


Figure 15.4: Groundwater Source Protection Zones in and around the Plan area (source: Environment Agency)

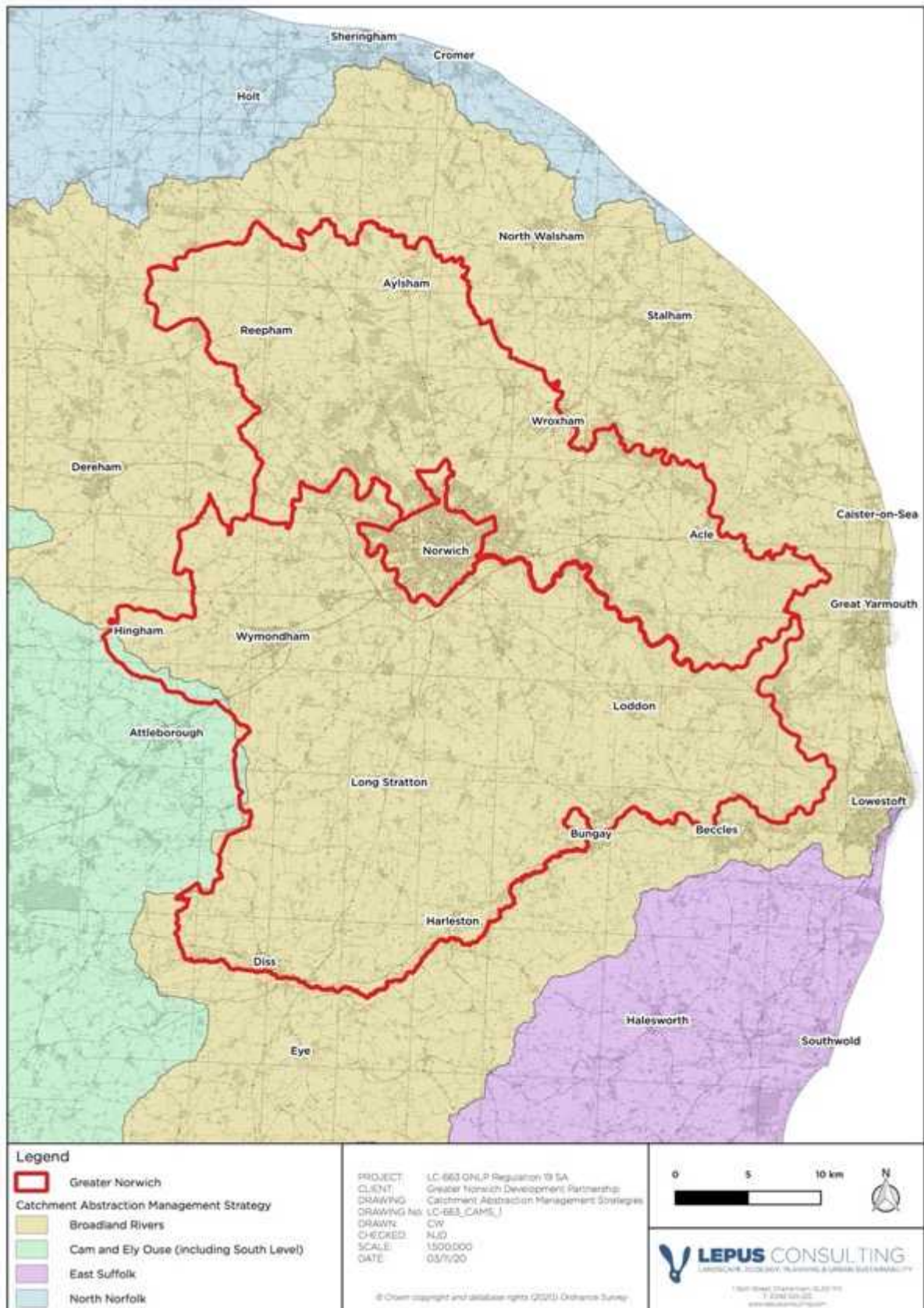


Figure 15.5: Catchment Abstraction Management Strategy boundaries in and around the Plan area (source: Environment Agency)

15.2 Impacts on water

15.2.1 **Box 15.1** sets out a plan-wide summary of the likely impacts on water that have been identified through the SA process. These impacts are those identified prior to the consideration of mitigation in the form of GNLP policies and Local Plan DM policies. **Box 15.2** lists the GNLP strategic and site policies, as well as Local Plan DM policies for the three districts which would be likely to mitigate, either fully or partially, some of the identified impacts. Policies which would improve identified impacts have also been listed. Where mitigating policies or proformas are silent, or the contents of the GNLP only partially mitigates the adverse impacts, a residual adverse effect is identified. **Box 15.3** explores the nature of these residual effects.

Box 15.1: Summary of identified impacts on water

1	<p>Fluvial Flood Risk</p> <p>The majority of sites are located in Flood Zone 1; however, 20 allocated sites partially coincide with Flood Zones 2, 3a or 3b. Any proposed development within Flood Zones 2, 3a or 3b could potentially increase the risk of flooding, resulting in damage to properties and implications for human health and safety in the immediate area. Development within Flood Zones 2, 3a and 3b would also be likely to exacerbate flood risk in the surrounding areas.</p>
2	<p>Pluvial Flood Risk</p> <p>A number of the allocated sites in the GNLP are located in areas determined to be at low, medium and high risk of pluvial (surface water) flooding. Any proposed development in areas of pluvial flood risk could potentially locate site end users in areas at risk of flooding, with safety implications, and further exacerbate flood risk in the surrounding areas.</p>
3	<p>Reduction in water quality and ecosystem services</p> <p>Approximately half of development proposed within the GNLP is located on previously undeveloped land. The construction and occupation of these developments would be likely to increase the risk of contamination and pollution of waterways, primarily due to the potential loss of soil and potential disruption to the groundwater sources. Site allocations that are located in close proximity to local watercourses could potentially increase the risk of decreasing local water quality.</p> <p>The majority of the Plan area, in particular to the west, is within a groundwater Source Protection Zone (SPZ). These zones indicate the potential risks of different types of development for groundwater quality. With the majority of development in the GNLP being proposed at a location within an SPZ, there could potentially be an overall increase in the risk of groundwater contamination or pollution in the Plan area.</p> <p>Water provides a range of essential ecosystem services, including filtering water pollutants, providing the basis for vegetation to flourish, and supporting biodiversity. In order for water to continue providing each service, careful consideration should be given to development proposals which could potentially have an adverse impact on water quality.</p>
4	<p>Increased water demand</p> <p>The proposed development of 49,492 dwellings within the GNLP would be expected to increase the local population by 110,367 new residents, and subsequently, increase water demand across the Plan area. It is uncertain the extent to which demand per capita will change over the Plan period, however, development proposed in the GNLP would be likely to increase total water consumption in some locations.</p>

15.3 Local Plan mitigation

- 15.3.1 Policies within the GNLP and DM policies within the Local Plans aim to reduce flood risk, prevent the worsening of water quality and improve water efficiency in new developments within the Plan area. Contribution to the green infrastructure network would be expected to slow infiltration and help alleviate flood risk to some extent. The policies are discussed in detail in **Box 15.2**.

Box 15.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on water

Fluvial Flood Risk

GNLP Policy 2 would be anticipated to reduce the risk of fluvial flooding that may arise as a result of development, through the requirement to carry out flood risk assessments, and incorporate sustainable drainage measures.

Policies CSU5 (Broadland), DM1.4, DM4.2 (South Norfolk), DM3, DM5 and DM6 (Norwich) would help to reduce the risk of flooding through incorporating sustainable drainage systems and green infrastructure.

Site Policies GNLP0068, GNLP0133-E, GNLP0360/GNLP3053/R10, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP3054, CC4b, CC7, CC8, CC13, CC16, CC24, CC30, R31, R36, R38, GNLP0253, GNLP0331RB, GNLP0331RC, COL1 [Emp], COL2, COL3, GNLP0311/0595/2060, GNLP0596R, GNLP2109, GNLP0378R/GNLP2139R, POR3, COL1 [Res], FOU2 and BKE3 seek to mitigate identified the risk of fluvial flooding on site.

Pluvial Flood Risk

GNLP Policy 2 would be anticipated to mitigate the risk of surface water flooding that may arise as a result of development, through the requirement for development to incorporate sustainable drainage measures and contribute to the green infrastructure cover.

Policies CSU5, EN1, EN3 (Broadland), DM1.4, DM4.2, DM4.4 (South Norfolk), DM3, DM5 and DM6 (Norwich) would be expected to ensure development proposals alleviate the risk of surface water flooding.

Site Policies GNLP0068, GNLP0282, GNLP0360/GNLP3053/R10, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP2164, GNLP3054, CC4, CC4b, CC16, CC30, R13, R17, R18, R19, R20, R29, R31, R38, DRA1, GNLP0337R, HOU1, GNLP2108, GNLP2136, GNLP2109, GNLP3013, GNLP0378R/GNLP2139R, HET1, HET2, GNLP0503, GNLP0520, HIN2, GNLP0312, GNLP0463R, LOD3, REP1, GNLP0581/2043, GNLP0608R and SWA1 seek to mitigate identified the risk of surface water flooding on site.

Reduction in water quality and ecosystem services

GNLP Policy 2 seeks to protect water quality and support a catchment approach to water management, including the use of sustainable drainage in order to meet high water efficiency requirements. The policy also seeks to contribute towards the protection and enhancement of the multi-functional green infrastructure network.

GNLP Policy 3 seeks to conserve and enhance the natural environments, including increasing the provision of green infrastructure, which could potentially help to protect the quality of watercourses, and reduce the likelihood of pollutants entering watercourses.

Policies EN1, EN4, CSU5 (Broadland), DM1.4, DM2.9, DM3.14 (South Norfolk), DM3, DM5, DM11 and DM28 (Norwich) would be expected to ensure that all new developments include sustainable drainage, and that groundwater quality and aquifers are protected from pollution and would be anticipated to ensure that development proposals do not result in a deterioration of water quality.

Policies EN1, EN3 (Broadland), DM1.4, DM4.4 (South Norfolk), DM3 and DM6 (Norwich) would be expected to ensure proposals contribute to the multi-functional green infrastructure network and protect ecosystem services.

Site Policies GNLP0068, GNLP0133-DR, GNLP0133-E, GNLP0360/GNLP3053/R10, GNLP2164, CC3, CC4a, CC7, CC8, CC10, CC11, CC13, CC16, CC18, R13, R14/R15, R33, AYL3, AYL4, HAR4, HAR5, HAR6, HAR7, ACL1, ACL2, ACL3, GNLP2161, BLO1, HET1, HET2, GNLP0503, GNLP0520, GNLP0581/2043, HIN2, REP1, REP2, CAW1, COL1 [Res],

Box 15.2: GNLP policy and Local Plan DM policy mitigation for identified impacts on water

FOU2, FRE1, GNLP0264, HNF1, HNF2/ GNLP0466R and SWA1 seek to ensure development proposals do not result in adverse effects to water quality.

Site Policy R31 currently comprises water treatment works which is proposed to be converted to dwellings and accommodate 60 dwellings.

Site Policies ACL3, BRU2, CC2, CC4b, CC7, CC8, CC10, CC15, CC16, CC24, COL1 [Emp], COL2, COL3, DRA1, EAS1, GNLP0102, GNLP0132, GNLP0133-BR, GNLP0133-C, GNLP0133-DR, GNLP0133-E, GNLP0159R, GNLP0253, GNLP0293, GNLP0307/GNLP0327, GNLP0311/0595/2060, GNLP0312, GNLP0331RB, GNLP0331RC, GNLP0337R, GNLP0354R, GNLP0360/GNLP3053/R10, GNLP0378R/GNLP2139R, GNLP0401, GNLP0409AR, GNLP0409BR, GNLP0451, GNLP0463R, GNLP0506, GNLP0520, GNLP0596R, GNLP0608, GNLP0608R, GNLP1001, GNLP1048R, GNLP2019, GNLP2034, GNLP0581/2043, GNLP2109, GNLP2114, GNLP2136, GNLP2163, GNLP2164, GNLP3013, GNLP3054, HAR4, HAR6, HAR7, HET1, HIN2, HNF2/GNLP0466R, KES2, LOD3, POR3, R1, R2, R7, R13, R14/R15, R17, R18, R19, R29, R31, R33, R36, R37, R42 and REP1 would be likely to ensure proposals contribute to the multi-functional green infrastructure network.

Increased water demand

GNLP Policy 2 aims to support water efficiency management, by ensuring housing development meet Building Regulations Part G higher optional requirement of 110litres per person per day and non-housing development meet BREEAM ‘very good’ water efficient standard or equivalent.

Policy DM1.4 (South Norfolk) seeks to ensure development proposals take opportunities to deliver infrastructure improvements including water network upgrades.

Site Policies GNLP2108, GNLP2136 and ACL3 seek to ensure there is sufficient water supply for future residents at each proposed site. Site Policies GNLP0297 and GNLP2143 require upgrades to be made to Aylsham Water Recycling Centre prior to development on site and Site Policy GNLP0234 requires capacity of Freethorpe Water Recycling Centre to be upgraded prior to development.

15.4 Residual effects on water

15.4.1 Residual adverse effects would be expected in terms of water following the implementation of the GNLP and adopted Local Plan policies. Further details are presented in **Box 15.3**.

Box 15.3: Residual effects for water

Identified impacts	Residual effects
Fluvial flood risk	The majority of sites are located in Flood Zone 1, however, 20 allocated sites in the GNLP partially coincide with Flood Zones 2, 3a or 3b. Policy 2 of the GNLP seeks to ensure development proposals are directed towards areas of Flood Zone 1 on site. Site policies also seek to ensure flooding is taken into consideration where areas of flood risk are identified on site. Therefore, a residual negligible impact on fluvial flooding would be expected.
Pluvial flood risk	The majority of the allocated sites in the GNLP are located in areas determined to be at low, medium and high risk of pluvial flooding. Policy 2 of the GNLP seeks to ensure development proposals are directed towards areas of no surface water flood risk on site and include SuDS to help manage surface water flooding. Site policies also seek to ensure flooding is taken into consideration where areas of flood risk are identified on site. Therefore, a residual negligible impact on pluvial flooding would be expected.

Identified impacts	Residual effects
<p>Reduction in water quality and ecosystem services</p>	<p>A total of 85 of the sites allocated within the GNLP are located on previously undeveloped land, resulting in the loss of approximately 1,019ha of soil. The construction and occupation/operation of residential or employment development at these locations could potentially increase the risk of contamination and pollution of waterways to some extent. However, Policy 2 of the GNLP would be expected to ensure the proposed development would not result in adverse impacts on water quality, and Policy 3 seeks to increase the provision of green infrastructure within the Plan area, with potential benefits water quality. Nevertheless, the introduction of 49,492 new homes, with several located adjacent to watercourse including the River Wensum, a reduction in water quality as a result of the GNLP cannot be ruled out.</p> <p>The proposed development within the GNLP could potentially reduce the ability of the aquatic ecosystem to effectively filter water, provide the basis for vegetation to flourish, have benefits in regard to mental and physical wellbeing, and support biodiversity. Policies 2 and 3 the GNLP aim to increase provision of green infrastructure across the Plan area, which would help to mitigate potential adverse impacts arising due to the proposed development, however, adverse impacts on the Plan area’s ecosystem services cannot be ruled out.</p> <p>Increased pressures on water sources would be likely to result in a long-term but temporary significant effect.</p>
<p>Increased water demand</p>	<p>The increased population within the Plan area would be expected to increase pressures on water demand, such as drinking water supply and wastewater treatment. Policy 2 of the GNLP seeks to ensure residential development meet the Building Regulations Part G²¹⁵ optional standard of 110 litres per person per day. Behavioural changes would be expected to help reduce water demand in the future to some extent. However, the introduction of 110,367 new residents would increase the demand on already pressurised water resources.</p> <p>Increased pressures on water resources would be likely to be long-term and potentially permanent significant effect.</p>

²¹⁵ MHCLG (2016) Sanitation, hot water safety and water efficiency: Approved Document G. Available at: <https://www.gov.uk/government/publications/sanitation-hot-water-safety-and-water-efficiency-approved-document-g> [Date Accessed: 18/11/20]

16 Cumulative effects assessment

16.1 About this chapter

16.1.1 Cumulative effects assessment is the process of identifying and evaluating the effects that arise when the total significant effects of the GNLP and assessed alongside known existing underlying trends and other plan and programmes.

16.1.2 Cumulative effects are different from effects that occur alone. Alone, the GNLP may not result in residual adverse effects for a particular topic e.g. effects of urban sprawl on landscape character, but when considered cumulatively, may result in significant effects that require mitigation or monitoring. **Tables 16.1 to 16.9** present the likely cumulative effects of the GNLP in consideration with other plan and programmes as well as national trends.

Table 16.1: Cumulative effects assessment of the GNLP on air

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect
Reduction in air quality	<ul style="list-style-type: none"> Traffic and congestion is likely to increase with population growth, in some locations of the GNLP area with implications, in particular, for air quality, residents and wildlife. The Government is committed to ensuring that nearly all cars and vans in the UK will be zero emission vehicles by 2050, meaning all car and van sales need to be zero emission vehicles by 2040. Consequently, there is expected to be an increasing uptake of ultra-low emission vehicles during the lifetime of the GNLP. The Air Quality Action Plan for Norwich will continue to review and assess the status of the Central Norwich AQMA. 	<p>Nationally, measures to improve air quality are in place and continue to be prioritised by the government, which includes proposals to ban sales of petrol and diesel cars by 2030.</p> <p>Local and national policy (including the Transport for Norwich strategy) promotes the improvement of public transport, pedestrian and cycle networks, which would be likely to help reduce reliance on personal car use. Despite this, many residents in more rural areas of South Norfolk and Broadland are likely to rely on personal cars for travel to some extent.</p> <p>Additionally, there are traffic congestion issues within Greater Norwich which are expected to remain, and may be exacerbated, by the estimated population increase in the Plan area.</p> <p>Overall, the GNLP would be expected to result in a cumulative negative impact on air quality.</p>
Increased pollutant emissions		

Table 16.2: Cumulative effects assessment of the GNLP on biodiversity, flora and fauna

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect
Threats or pressures to European designated biodiversity sites	<ul style="list-style-type: none"> Sites designated for their national and international biodiversity and/or geodiversity value will continue to benefit from legislative protection. Long term prospects for protecting and enhancing the wealth of habitats and species in the area, and for further developing the existing green infrastructure network, would be reduced without a strong policy framework being established in the GNLP. It is uncertain if development will be placed near locally designated sites without the introduction of the Plan. Without the GNLP, it may be difficult to help ensure that development is not of a type, scale and location that could potentially have a major 	<p>There are numerous biodiversity sites within the Plan area, however, the integrity of the wider ecological network (which is composed of terrestrial and aquatic habitats) is subject to cumulative incremental loss of features and in some cases loss of quality and function. Such effects are subtle and only become clear through trend data. Although the GNLP aims to maintain</p>
Threats or pressures to nationally designated biodiversity sites		
Threats or pressures to locally designated biodiversity sites		

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect
Impacts on priority habitats and ancient woodland	adverse impact on either a biodiversity or geodiversity designation (of international, national or local significance) or on the functioning ecological network of the Plan area and the various essential ecosystem services this provides.	and enhance biodiversity sites, it is uncertain if the proposed development within the GNLP would adversely impact some biodiversity features when considered together at a landscape scale. Site-based approaches to nature conservation can fail to identify landscape ecological considerations. The background trends indicate an overall picture of habitat losses and reduction in species diversity.
Fragmentation of the multi-functional green infrastructure network		
Fragmentation of the ecological network		

Table 16.3: Cumulative effects assessment of the GNLP on climatic factors

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect
Increased carbon emissions	<ul style="list-style-type: none"> The risk of flooding will be likely to increase over time due to the changing climate increasing the occurrence of extreme weather events as well as the increasing urbanisation of the Plan area. Total carbon emissions are expected to continue to decrease over time without the Plan as renewable energy becomes an increasingly competitive force in the UK energy market. CO₂ emissions in the transport sector may be likely to rise in line with local trends. An increasing uptake of electric vehicles, a trend seen across the UK, may help to alleviate these issues. 	Climate change is an international issue. The proposed development within the GNLP and subsequent increase in population would be expected to result in a net increase in greenhouse gas emissions. Despite the numerous policies in the GNLP, it is unlikely that net-zero carbon emissions will be achieved within the Plan period resulting in a cumulative negative impact which affects flood risk, health and safety of residents and possibly the supply of water across the plan area. This issue requires careful monitoring, and the preparation of a climate change mitigation plan is recommended.
Loss of multi-functional green infrastructure		

Table 16.4: Cumulative effects assessment of the GNLP on cultural heritage

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect
Alter character and/ or setting of Scheduled Monuments	<ul style="list-style-type: none"> Nationally designated heritage assets will continue to benefit from legislative protection. It is uncertain how the historic assets on the Heritage at Risk Register will be affected without the Plan and if more may be added to the list. Further heritage assets are likely to be identified in the future. 	Greater Norwich has a rich cultural heritage. Development proposed within the GNLP would not be expected to cause significant harm to these assets and includes a number of policies to conserve and enhance the historic environment.
Alter character and/ or setting of Registered Parks and Gardens		
Alter character and/ or setting of Listed Buildings		
Alter character and/ or setting of Conservation Areas		

Table 16.5: Cumulative effects assessment of the GNLP on human health

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect
Reduction in local air quality with implications for human health	<ul style="list-style-type: none"> The population across the three districts is expected to continue to increase. This is likely to place greater pressure on the capacity of key services and amenities, including health and leisure facilities and housing. The life expectancy of men and women is anticipated to rise over time, leading to an increasingly aging population. Some residents will continue to need to travel relatively far, likely by driving, to reach important health facilities and services. Dependent on behavioural patterns in society and the future policy approach to concentration of late night activities, the spatial patterns of higher crime in eastern parts of the city centre seem likely to continue. There could potentially be a rise in homelessness due to an unmet housing need. Noise pollution from Norwich International Airport and existing and new main roads is likely to remain a long term issue. 	The health of residents within Greater Norwich is generally good. The GNLP aims to promote walking and cycling, increase provision of green and open spaces and improve access to community facilities and healthcare. However, many of the smaller, more rural settlements in South Norfolk and Broadland are situated in areas with restricted access to healthcare including NHS hospitals and GP surgeries. In line with national trends, air pollution within the Plan area would be likely to decrease in the long term. Short term adverse effects are likely to remain within the Plan period. The nature of the impact on air quality is essentially cumulative since allocations alone are less likely to cause significant adverse effects on air quality.
Reduced accessibility to NHS hospitals and GP surgeries		
Reduced access to leisure facilities		
Encouraging active and healthy lifestyles		

Table 16.6: Cumulative effects assessment of the GNLP on landscape

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect
Impact on the setting of The Broads National Park	<ul style="list-style-type: none"> The Broads National Park will continue to benefit from legislative protection. The districts of Broadland and South Norfolk will continue to remain predominantly rural and agricultural landscapes. Pressure is likely to increase for development on the open countryside without the Plan. The quality and distinctiveness of some rural views and landscape features may potentially be compromised in the absence of Plan-led development. It is uncertain the extent to which development would seek to conserve and enhance the character of local landscape and townscapes. In the absence of Plan-led development, there could potentially be a rise in the quantity of new development which discords with the local character by altering the style, scale or rural/urban divide. 	<p>The National Design Guide²¹⁶ sets out key components for good design which would be likely to help reduce potential impact on the landscape.</p> <p>Approximately 1,019ha of development in the GNLP will take place on previously undeveloped land, leading to a likely negative cumulative effect on landscape character as it is likely to be significantly altered in some cases.</p> <p>The majority of the proposed development within the GNLP is directed towards the main urban area of Norwich City and the urban fringe, and the main towns within Broadland and South Norfolk. However, the development proposed particularly within more rural settlements could result in a loss of tranquillity in the surrounding landscape as a consequence of increases in noise and lighting. This is a cumulative effect since single, small allocations would be unlikely to significantly impact tranquillity.</p>
Alteration of the landscape character		
Alteration of views		
Increased risk of urbanisation of the countryside and coalescence		
Loss of tranquillity		

216 MHCLG (2019) National Design Guide, Planning practice guidance for beautiful, enduring and successful places. Available at: <https://www.gov.uk/government/publications/national-design-guide> [Date Accessed: 17/12/20]

Table 16.7: Cumulative effects assessment of the GNLP on population and material assets

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect	
Provision of housing to meet local need	<ul style="list-style-type: none"> House prices are expected to increase. Without the GNLP, it is uncertain if future housing provision would satisfy local needs in terms of type cost and location. There could potentially be less control over location of future housing which may result in increased quantity of development being placed in areas of open countryside, reduced opportunity to enhance community benefits associated with plan-led housing proposals, and a reduced ability to refine the housing stock to meet the changing demands of existing residents such as the provision of elderly specific housing accommodation. It is expected the number of businesses within Broadland, Norwich City and South Norfolk will continue to increase without the Plan. Access to schools in rural communities is unlikely to change without the Plan. Planned growth in the tertiary sector, particularly at the University of East Anglia, should increase Norwich's role as a "learning city". Education is likely to remain a key element of the local economy. Congestion issues around Norwich could potentially be exacerbated due to a rising population. There is likely to be an increase in the composition of the road transport fleet which are electric or hybrid vehicles. There is the potential both for the required infrastructure to support further growth not being delivered and for more dispersed patterns of development which could occur without a plan increasing the proportion of the population with poor access to services. 	<p>The GNLP would be expected to have a positive cumulative impact on population, due to the provision of new community facilities and improved local accessibility. The average house price in Greater Norwich is less than England's average. The GNLP aims to provide a variety of type, tenure and size of homes, as well as affordable homes, to meet different needs across the area.</p> <p>However, issues with the affordability of homes are likely to remain.</p> <p>There is a relatively strong economy within GNLP. This would be expected to improve and grow following the implementation of the GNLP.</p>	
Provision of employment opportunities			<p>Local and national policy (including the Transport for Norwich strategy) promotes the improvement and integration of public transport. However, the GNLP would be expected to result in a negative cumulative impact in terms of accessibility, due to the restricted access of many of the more rural settlements in Broadland and South Norfolk to train stations and limited bus services.</p>
Accessibility to services and facilities		<p>Increased population in Greater Norwich over the Plan period would be expected to increase waste generation to some extent, leading to a cumulative impact in terms of waste generation. Although nationally, recycling rates are increasing, it is uncertain if this would help decrease waste generation within the Plan area.</p>	
Increased demand on local services and facilities			
Increased household waste generation			

Table 16.8: Cumulative effects assessment of the GNLP on soils

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect
Loss of soil resources, including BMV land	<ul style="list-style-type: none"> Rates of soil erosion and loss of soil fertility will be likely to continue to rise due to the impacts of agriculture and climate change. 	Nationally, rates of soil erosion are increasing. The GNLP would be expected to result in the loss of approximately 1,019ha of previously undeveloped land including approximately 912ha of potential BMV land. Together, this would be expected to have adverse cumulative effect on soil resources.
Impact on ecosystem services		

Table 16.9: Cumulative effects assessment of the GNLP on water

Identified impacts of the GNLP	Likely evolution without the plan	Cumulative effect
Fluvial flood risk	<ul style="list-style-type: none"> The risk of flooding will be likely to increase over time due to the changing climate increasing the occurrence of extreme weather events as well as the increasing urbanisation of the Plan area. The population in the Plan area will be likely to rise and water demand will subsequently be likely to rise also. In the absence of plan-led development, the efficiency and sustainability of water consumption may be unlikely to improve. There could potentially be new developments that result in over-capacity issues at wastewater treatment works (either cumulatively or individually). Water abstraction, consumption and treatment in the local area will continue to be managed by the Environment Agency and water companies through the RBMP, WRMP and CAMS in line with the EU Water Framework Directive. 	A proportion of Greater Norwich is located within Flood Zones 2, 3a or 3b, especially in the east of the Plan area close to the Broads. National policies and guidance and GNLP policies would help to ensure development proposals do not exacerbate flood risk in the Plan area. The increased population in the Plan area would be expected to increase demand on water supply, in an area where there is already serious water stress. The emerging WCS will provide further detail on the likely cumulative effects of the Plan.
Pluvial flood risk		
Reduction in water quality and ecosystem service		
Increased water demand		

17 Monitoring

17.1.1 Article 10 (1) of the SEA Directive states, “member States shall monitor the significant environmental effects of the implementation of plans and programmes in order, inter alia, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action”.

17.1.2 The purpose of monitoring is to measure the environmental effects of the Plan as well as its success against its objectives. However, monitoring can place a heavy burden on financial and human resources, and it may therefore be practical to focus on monitoring residual adverse effects and to build on existing monitoring systems.

17.1.3 Monitoring the impacts of the GNLP should seek to answer:

- Was the likelihood of sustainability impacts identified in the SA process accurate?
- Is the GNLP successful in achieving its desired sustainability objectives?
- Are mitigation measures performing as expected?
- Are there any unforeseen adverse impacts of the GNLP, and are these within acceptable limits or is remedial action required?

17.1.4 Monitoring proposals are set out in **Table 17.1**.

Table 17.1: Proposals for monitoring adverse sustainability impacts of the GNLP

Theme/ SEA Directive	Indicator	Scale and frequency	Target
Air	Concentration of NO ₂ and PM ₁₀	Annually, Plan area wide	Decrease
	Traffic flows on main roads	Bi-annually, Plan area wide	Decrease
	Rates of public transport uptake	Annually, Plan area wide	Increase
Biodiversity, flora and fauna	Percentage of SSSIs in favourable condition	Annually, Plan area wide	Increase
	Number of Planning Approvals granted contrary to the advice of Natural England or Norfolk Wildlife Trust or the Broads Authority	Annually, Plan area wide	Zero
	Percentage loss of the ecological network	Annually, Plan area wide	Zero
Climatic factors	CO ₂ emissions per capita	Annually, Plan area wide	Decrease
	Renewable energy generation	Annually, Plan area wide	Increase
Cultural heritage	Number of Conservation Area appraisals	Annually, Plan area wide	Increase
	Number of heritage assets identified as ‘heritage at risk’	Annually, Plan area wide	Decrease
Human health	Percentage of physically active adults	Bi-annually, Plan area wide	Increase
	Number of GP Surgeries	Annually, Plan area wide	Increase
Landscape	Number of Planning Approvals granted contrary to the advice of the Broads Authority on the basis of adverse impact on the Broads Landscape	Annually, Plan area wide	Zero
	Quantity of development in the open countryside	Annually, Plan area wide	Zero
	Change in tranquillity in the open countryside	Annually, Plan area wide	Zero

Theme/ SEA Directive	Indicator	Scale and frequency	Target
Population and material assets	Number of affordable housing completions	Annually, Plan area wide	Increase
	Percentage of economically active residents	Annually, Plan area wide	Increase
	LSOAs in Greater Norwich within the 10% most deprived in Great Britain	Every 3 to 4 years, Plan area wide	Decrease
	Quantity of household waste generation	Annually, Plan area wide	Decrease
Soil	Number of dwellings built on PDL	Annually, Plan area wide	Increase
	Number of dwellings built on BMV land (Grades 1, 2 or 3a ALC)	Annually, Plan area wide	Decrease
Water quality/ flood	Number of planning permissions granted contrary to EA advice	Annually, Plan area wide	Zero
	Quality of watercourses	Annually, Plan area wide	Increase
	Water efficiency in new homes	Annually, Plan area wide	Increase

18 How has the SA influenced the Plan?

18.1 How the SA has influenced the Plan

- 18.1.1 The SA has been an influential tool throughout the plan making process to date. It works on an iterative basis. The plan makers identify various options at different stages of the plan making process which are subsequently appraised through the SA process using the methodology in **Chapter 4**.
- 18.1.2 The process of appraisal is sequential in nature: an assessment of impacts is made, the mitigation hierarchy is applied, and the assessment of effects is revisited, leading to the identification of residual effects. The mitigation hierarchy is an important element of the assessment process. It considers firstly if the identified adverse effect can be avoided and if not, can it be adequately mitigated to reduce the effect.
- 18.1.3 SA is necessarily a high-level assessment process, often using secondary data at a scale which is plan-based to make assessments about smaller-scale sites. This can introduce uncertainty to the process (see assumptions in **Boxes 4.1 to 4.15**). The application of the precautionary principle means that when doubt prevails, a worst-case scenario is identified.
- 18.1.4 The general picture of how development takes place in the UK is either through what is loosely known as (1) an appeal-led system (unplanned development for which permission is secured on appeal to the Planning Inspectorate) or (2) a plan-led system. Paragraph 15 of the NPPF is clear that *'the planning system should be genuinely plan-led'*.
- 18.1.5 The predicted evolution of the baseline without the Plan (see **Table 3.2**) shows that there are already a number of important trends, some of which are negative in nature. These include matters such as air quality, greenhouse gas emissions and flood risk; events associated with a changing climate. The table suggests that these are likely to continue without the Plan, which, for the purposes of the assessment, is the so-called 'appeal-led' system.
- 18.1.6 The GNLP offers a means of structured planning which facilitates sustainable development. It has been prepared to comply with paragraph 16 of the NPPF which states that *"plans should be prepared with the objective of contributing to the achievement of sustainable development"* which is also a legal requirement placed on local planning authorities when exercising their plan making functions under section 39(2) of the Planning and Compulsory Purchase Act 2004.
- 18.1.7 Whilst the Plan proposes a development strategy which includes the provision of at least 49,574 new homes, it also includes a comprehensive suite of measures in the form of planning policies which aim to reduce and manage some of the identified adverse effects associated with development at this scale. In particular, the GNLP plays an important role in introducing mitigation. The SA has helped suggest mitigation which has subsequently been incorporated into the Plan.

18.1.8 Sustainability performance has been enhanced as a result of revising policies through a process of continual improvement to help reduce identified adverse effects. Recommendations for mitigation or enhancement measures have been considered throughout the plan making and SA process. Suggestions for amendments to policies within the GNLP have been made to the Councils through the consideration of mitigation at the Regulation 18C stage and in **Appendix E**. The recommendations set out measures to mitigate some of the potential adverse impacts that had been identified during the SA process. These recommendations were incorporated into the final versions of the policies.

18.2 Residual effects following mitigation

18.2.1 The SA has assessed the site allocations and policies proposed in the GNLP using the methodology in **Chapter 4**. A number of residual effects have been identified and these are discussed in **Chapters 7 to 15**. Proposals in the GNLP vary in terms of their sustainability performance with likely positive impacts expected on some SA Objectives and adverse impacts on others.

18.2.2 The SA has identified likely sustainability impacts of GNLP proposals alone and in-combination. The GNLP is anticipated to result in a range of positive impacts on sustainability, which are highlighted throughout the strategic policy and site allocation assessments in **Appendices C and F** and are summarised in **Table 18.1**.

18.2.3 The mitigation proposals presented in the GNLP provide positive planning mechanisms for delivering sustainable development where the Plan is able to reasonably address the issue. It is recognised that the Plan cannot fully address the sustainability effects of national and international trends such as increased frequency of storm events associated with climate change.

18.2.4 The identified residual adverse effects (see **Table 18.2**) are generally minor, but some are associated with greater levels of uncertainty and potentially could be considered to be greater in magnitude, for example residual adverse effects associated with air quality and climate change. These require careful attention outside of and beyond the GNLP; notwithstanding such uncertainties, these aspects are included in the recommendations for monitoring. Whilst the Plan includes positive mitigation measures, the Plan alone cannot address these matters in their entirety; these are effects that are predicted to happen with or without the Plan. The Plan includes measures to reduce these effects, however, when considered cumulatively, a residual adverse effect would still be likely to occur.

Table 18.1: Likely residual positive sustainability effects of the GNLP

Residual positive effects	
	Housing provision
1	The proposed development of 49,492 dwellings across the Plan area would be expected to make a significant and positive contribution towards meeting the identified local housing need. Policies within the GNLP would be expected to ensure that residential developments meet the needs of the local community, including affordable housing.
2	Employment opportunities

Residual positive effects	
	The proposed development of 33,000 new employment opportunities through development allocations within the GNLP, would be expected to make a significant and positive contribution to the employment needs of residents and to the local economy.
3	<p>Multi-Functional Green Infrastructure Network</p> <p>The GNLP aims to ensure that development proposals incorporate multi-functional green infrastructure where possible and result in 10% biodiversity net gain. Although the proposed development would be expected to result in the loss of greenfield land to some extent, GNLP policies help to ensure that here are improvements to and the increased provision of the multi-functional green infrastructure networks across the Plan area.</p>
4	<p>Physical and Mental Health</p> <p>The increased provision of open space and multi-functional green infrastructure within Greater Norwich would be expected to help facilitate healthy and active lifestyles, increasing access to space for physical exercise as well as areas with mental wellbeing benefits.</p>
5	<p>Community Cohesion</p> <p>The site allocations and policies within the GNLP would be likely to increase the provision of community facilities within the Plan area. This would be expected to help facilitate vibrant and interactive communities, and lead to a greater sense of place within settlements.</p>

Table 18.2: Likely residual adverse sustainability effects of the GNLP

Residual adverse effects	
1	<p>Reduction in air quality</p> <p>Due to the volume of development proposed, an increase in traffic flows and subsequent reduction of air quality would be expected to have residual adverse effects on human health. In addition, many new residents could potentially be located within 200m of a main road. Cumulatively, this would be expected to result in a reduction of local air quality.</p>
2	<p>Increased pollutant emissions, including greenhouse gases</p> <p>An increase in pollutants including greenhouse gases would be expected following the development proposed within the GNLP. The introduction of 110,367 residents would be expected to increase traffic volumes and energy demand, which would be expected to result in an increase of pollutant emissions.</p>
3	<p>Increased greenhouse gas emissions</p> <p>The proposed development of 49,492 dwellings within the GNLP would be expected to increase carbon emissions in the Plan area by 565,079 tonnes (based on 2018 estimates). This increase would be expected to exacerbate the impacts of climate change within Greater Norwich.</p>
4	<p>Fragmentation of the ecological network</p> <p>The GNLP would be expected to result in the loss of approximately 1,019ha of previously undeveloped land. This loss of land would be expected to include habitats and ecological links between designated biodiversity assets ultimately affecting the integrity of the wider ecological network.</p>
5	<p>Reduced access to healthcare facilities</p> <p>A total of 105 site allocations are located over 5km from an NHS hospital. Residents in some of the rural settlements of Broadland and South Norfolk would be expected to have limited access to emergency healthcare, which could potentially have detrimental impacts on human health.</p>
6	<p>Increased risk of urbanisation of the open countryside and coalescence</p>

Residual adverse effects

	<p>A total of 85 allocated sites are located on previously developed land in the open countryside of Greater Norwich. The proposed development within the GNLP in these locations would be expected to increase the risk of urbanisation of the countryside and coalescence.</p>
7	<p>Loss of tranquillity</p> <p>The proposed development of 49,492 dwellings across Greater Norwich, with a number of developments located within rural Broadland and South Norfolk, would be likely to result in a loss of tranquillity of the rural landscape as a consequence of increases in noise and light pollution.</p>
8	<p>Reduced access to facilities and services</p> <p>The majority of new residents would be located in areas with good access to services and facilities, including convenience stores and bus services. Nevertheless, large areas of Broadland and South Norfolk have limited access to rail services.</p>
9	<p>Increased household waste generation</p> <p>The proposed development within the GNLP would be expected to increase household waste generation within the Plan area by approximately 31.5%. Although GNLP Policy 2 seeks to support sustainable waste management, there is little scope to reduce the quantity of waste generated per household.</p>
10	<p>Loss of soil resources, including BMV land</p> <p>Approximately 1,019ha of development allocated within the GNLP is located on previously undeveloped land. This would be expected to result in the permanent and irreversible loss of ecologically, and potentially agriculturally, important soil resources.</p>
11	<p>Impact on soil ecosystem services</p> <p>Soil provides a range of essential services to the local area, including nutrient cycling, abating flood risk, filtering water, filtering air, carbon storage and providing the basis for vegetation to flourish. The scale of development proposed within the GNLP would be expected to increase pressure on essential ecosystem services.</p>
12	<p>Reduction of water quality and ecosystem services</p> <p>A total of 85 allocated sites are located on previously undeveloped land. The proposed development at these sites could potentially result in the contamination of nearby surface waterbodies or groundwater. The proposed development within the GNLP could also reduce the ability of the aquatic ecosystem to effectively filter water, provide the basis for vegetation to flourish, have benefits in regard to mental and physical wellbeing, and support biodiversity.</p>
13	<p>Increased demand for water</p> <p>The introduction of 110,367 new residents would be expected to result in increased pressure on the local water resource. A WCS has been prepared, which sets out a number of recommendations to ensure that identified risks to the water environment and water services infrastructure as a result of this significant increase in pressure are addressed. Whilst the draft WCS concludes no adverse effect, the recommendations made lie largely outside of the GNLP's control, and as such, in line with the precautionary principle it is considered that the proposed development within the GNLP could result in an adverse impact on water resources.</p>

19 Consultation and next steps

- 19.1.1 As per Regulation 13 of 'The Environmental Assessment of Plans and Programmes Regulations 2004', this Regulation 19 SA Report will be published alongside the Plan for consultation. Consultation findings will be used to inform subsequent stages of the SA process.
- 19.1.2 All responses on this consultation exercise should be made via the GNLP website.
- 19.1.3 Following this round of consultation, all comments will be analysed by the plan makers as part of the ongoing plan making process.
- 19.1.4 Further stages of SA will be prepared if and when necessary as per **Figure 2.1**.

Glossary

Accessibility	This is the ability for people to travel around an area and reach facilities or locations. This includes the elderly, young, disabled or those carrying luggage.
Agricultural Land Classification (ALC)	The Department for Environment, Food and Rural Affairs (DEFRA's) system of classifying agricultural land quality. Soil is graded from best to worst, numbered 1 to 5, with Grade 3 divided into two sub-grades (3a and 3b).
Air Quality Management Area (AQMA)	An area which is declared by a Local Authority where it is unlikely that Air Quality Objectives will be achieved.
Amenity	Positive elements that contribute to the character and sense of place of a location.
Ancient Woodland	Woodland that has existed in a consistent state since 1600 or earlier in England, Wales and Northern Ireland (1750 in Scotland).
Area of Outstanding Natural Beauty (AONB)	Sites in England, Wales and Northern Ireland designated to conserve and enhance the natural beauty of the area which comprises the area's distinctive landscape character, biodiversity, geodiversity, historic and cultural environment.
Baseline Conditions	The conditions that would pertain in the absence of the proposed project at the time that the project would be constructed/operated/decommissioned.
Best and Most Versatile Land (BMV)	Land in Grades 1, 2 and 3a of the Agricultural Land Classification.
Biodiversity	The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part. It includes diversity within and between species, and between ecosystems.
Buffer Zone	An area or zone that helps to protect a habitat from damage, disturbance or pollution.
Carbon Sink	A natural or artificial reservoir viewed in terms of its ability to absorb carbon-containing compounds, such as carbon dioxide.
Character	Relating to the appurtenance of a location in terms of its landscape, layout of streets or open spaces, or historic environment.
Climate Change	A change in the climate of a region over time due to natural forces or human activity. In the context of the UN Framework Convention on Climate Change, it is the change in climate caused by higher levels of greenhouse gases in the atmosphere due to human activities as well as natural climate changes.
Climate Change Adaptation	Changes to natural or human systems in response to actual or estimated climatic factors or their effects, such as increased rainfall and temperatures.
Climate Change Mitigation	Actions used to reduce the impact of human activity on the climate, such as reducing greenhouse gas emissions.
Coalescence	The merging of separate towns or villages due to development.
Conservation Area	Areas of special architectural or historic interest, the character of which should be preserved. These are designated by the local planning authority.

Contaminated Land	Land that has been polluted and is therefore unsafe for development unless the contamination is removed.
Country Park	Country Parks are statutorily declared and managed by local authorities in England and Wales under the Countryside Act. They are primarily intended for recreation and leisure opportunities close to population centres and do not necessarily have any nature conservation importance.
Cumulative Impact	Impacts caused either by a number of separate developments in the same area or continuous activity over time that may have an increased impact on the local environment.
Cycle Network	A network located both on and off roads to facilitate safer travel by bicycle.
Density	In terms of residential development, the number of dwellings (or rooms) per hectare.
Ecological Network	Linkages between biodiversity features and habitats.
Ecosystem Services	Benefits that people obtain from ecosystems or their direct and indirect contributions to human well-being.
Emissions	In the context of the atmosphere, gases or particles released into the air that can contribute to global warming or poor air quality.
Energy Efficiency	Actions to save fuels, for example better building design, changing production processes, developing better transport policies, using better road vehicles and improving insulation and double glazing in homes.
Flood Plain	Where water flows in times of flood or would flow but for the presence of flood defences.
Fragmentation	The breaking up of a habitat or ecosystem into smaller parcels with a consequent impairment of functioning.
Geodiversity	The range of rocks, minerals, fossils, soils and landforms.
Green Belt	An area of land, largely rural in character, which is adjacent to the main urban areas and which is protected from development by permanent restrictions on building.
Green Infrastructure (GI)	A strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services.
Green Network	The linking together of natural, semi-natural and man-made open spaces to create an interconnected network. This may include (but is not limited to) designated biodiversity sites, Local Green Spaces, waterways, and public greenspaces.
Green Space	A patch of vegetated land within the urban fabric for predominantly recreational use.
Greenfield	Land on which no development has previously taken place unless the previous development was for agriculture or forestry purpose or, the remains of any structure or activity have blended into the landscape.
Greenhouse Gas (GHG)	A gas in an atmosphere that absorbs and emits radiation within the thermal infrared range, usually water vapour, carbon dioxide, methane, nitrous oxide, ozone chlorophluorocarbons and hydrophluorocarbons.
Groundwater	Water which is below the surface of the ground and in direct contact with the ground or subsoil.

Habitat Regulations Assessment (HRA)	A Habitats Regulations Assessment (HRA) refers to the several distinct stages of Assessment which must be undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) to determine if a plan or project may affect the protected features of a habitats site before deciding whether to undertake, permit or authorise it.
Heritage Asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing).
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.
Infrastructure	Basic services necessary for development, such as, roads, electricity, sewerage, water, education and healthcare facilities.
Land Use	Describes the social and economic purposes for which land is managed.
Landscape	The traits, patterns and structure of a specific geographic area, including its biological composition, its physical environment and its anthropogenic or social patterns. An area where interacting ecosystems are grouped and repeated in a similar form.
Landscape Character	The recognisable and consistent pattern of features in a certain landscape, distinguishing one landscape from another, giving a locality its sense of place.
Listed Building	A protected structure recorded on the Statutory List of Buildings of Special Architectural or Historic Interest. Graded I (highest quality), II* or II, which are listed in a national register.
Local Nature Reserve (LNR)	Local Nature Reserves (LNRs) are a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949 by principal local authorities. Parish and Town Councils can also declare LNRs, but they must have the powers to do so delegated to them by a principal local authority.
Local Plan	Local plans are prepared by the Local Planning Authority (LPA), usually the Council or the national park authority for the area. 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. 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.
Local Planning Authority (LPA)	The body responsible for carrying out statutory planning functions.
Local Wildlife Site (LWS)	Sites which have a local designation for their nature conservation value.
Mineral Safeguarding Area (MSA)	Areas designated by Minerals Planning Authorities which cover known deposits of minerals which are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development.
Mitigation	Measures taken to reduce adverse impacts, e.g. the provision of suitable planting to screen a development.
National Nature Reserve (NNR)	A National Nature Reserve (NNR) is the land declared under the National Parks and Access to the Countryside Act 1949 or Wildlife and Countryside Act (1981)

	as amended. These are protected and managed areas which are nationally designated as key places for wildlife and natural features.
National Park	Areas of relatively undeveloped and scenic landscape that are designated under the National Parks and Access to the Countryside Act (2016).
National Planning Policy Statement (NPPF)	Updated in June 2019, this document sets out the government's planning policy guidance on various topics that can constitute a material consideration in determining planning applications.
National Trail	Long distance routes for walking, cycling and horse riding.
Natural Resources	Materials or substances occurring in nature which can be exploited for economic gain
Open Space	An area of undeveloped land or water that may offer important opportunities for sport and recreation and can act as a visual amenity.
Plan area	The geographic area covered by the plan. This generally covers local government jurisdictional boundaries.
Planning Practice Guidance (PPG)	The National Planning Practice Guidance adds further context to NPPF, and it is intended that the two documents should be read together.
Pollution	The introduction of contaminants into the natural environment that cause adverse change.
Precautionary Principle	Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
Previously Developed Land (PDL)	Land which is, or has been, occupied by a permanent (non-agricultural) structure and associated infrastructure, including the area of land attached to a structure as well as the structure itself.
Public Greenspace	Areas of undeveloped landscape within a settlement, that are partially or wholly covered with grass, trees, shrubs or other vegetation.
Public Rights of Way (PROW)	Paths within England and Wales on which the public have a legally protected right to pass and re-pass.
Ramsar Sites	Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. Originally intended to protect sites of importance especially as waterfowl habitat, the Convention has broadened its scope over the years to cover all aspects of wetland conservation and wise use, recognising wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities.
Registered Parks and Gardens	A national designation by Historic England of a park or garden of special historic interest. Graded I (highest quality), II* or II, which are listed in a national register.
Scheduled Monument (SM)	Archaeological remains of national importance which are legally protected by the Ancient Monuments and Archaeological Areas Act 1979 and listed on a schedule.
Secondary impacts	Impacts that could potentially occur indirectly following the implementation of the Local Plan.
Setting	The place in which something is set, particularly in terms of the surroundings of a Listed Building.

Site of Special Scientific Interest (SSSI)	A conservation designation denoting a protected area of land in the UK. Sites can be protected for their biological/ecological interest (Biological SSSIs) and/or their geological interest (Geological SSSIs).
Source Protection Zone (SPZ)	The Environment Agency identifies Source Protection Zones to protect groundwater (especially public water supply) from developments that may damage its quality.
Special Area of Conservation (SAC)	SACs are designated under the EC Habitats Directive. SACs are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive.
Special Protected Area (SPA)	SPAs are classified by the UK Government under the EC Birds Directive. SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.
Stakeholder or Interested Party	Any person, group or business that has an interest or will potentially be affected by a particular activity, plan or project.
Statutory Body	A government-appointed body set up to give advice and be consulted for comment upon development plans and planning applications affecting matters of public interest. This includes Historic England, Environment Agency and Natural England.
Strategic Environmental Assessment (SEA)	A process that is a requirement under certain plans and programmes under the SEA Directive and associated Environmental Assessment of Plans and Programmes Regulations 2004. The Directive seeks to ensure that environmental considerations are taken into account alongside economic and social considerations in the development of a plan / programme.
Submission	When a Development Plan Document, such as a Local Plan, is submitted to the Secretary of State for independent examination.
Surface Water (Pluvial) Flooding	Flooding caused by rainfall which occurs due to water ponding on, or flowing over, the surface before it reaches a drain or watercourse
Sustainability Appraisal (SA)	A systematic process required by the Planning and Compulsory Purchase Act 2004 and incorporating the requirements of the SEA Directive, aimed at appraising the social, environmental and economic effects of plan strategies and policies and ensuring that they accord with the objectives of sustainable development.
Sustainable Drainage Systems (SuDS)	A sequence of management practices and control measures designed to mimic natural drainage processes by allowing rainfall to infiltrate, and by attenuating and conveying surface water runoff slowly at peak times.
Synergistic impacts	When two separate impacts combine to form a third impact. These may be greater than the sum of the individual impacts.
Tranquillity	Remote from the visual or audible intrusion of development and/or traffic and unspoilt by urban surroundings.
Urban Sprawl	The unplanned and uncontrolled growth of urban areas into the surrounding countryside.

Habitat Regulations Assessments

Sustainability Appraisals

Strategic Environmental Assessments

Landscape Character Assessments

Landscape and Visual Impact Assessments

Green Belt Reviews

Expert Witness

Ecological Impact Assessments

Habitat and Ecology Surveys



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