Norfolk County Council

SUSTAINABILITY APPRAISAL

Norfolk Local Transport Plan Draft Strategy, Transport for Norwich, King's Lynn and Great Yarmouth Transport Strategies

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WSP

Kings Orchard
1 Queen Street
Bristol
BS2 0HQ

Phone: +44 117 930 6200

WSP.com

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1 NON-TECHNICAL SUMMARY

1.1 INTRODUCTION

1.1.1. Norfolk County Council (NCC) has commissioned WSP to undertake a Sustainability Appraisal (SA) that incorporates the requirement of a Strategic Environmental Assessment (SEA) of the Draft Norfolk Local Transport Plan 4 Strategy (LTP4).

1.1.2. The SA also includes the assessment of the King's Lynn Transport Strategy and, the Great Yarmouth Transport Strategy. Once available, the assessment of the Transport for Norwich Strategy will be appended to the SA.

1.1.3. The SA is a systematic process that is undertaken during the preparation of a plan. Its role is to promote sustainable development by assessing environmental, social and economic impacts, as well as mitigating any potential adverse effects that the plan might otherwise have.

1.2 DRAFT NORFOLK LTP4 STRATEGY

1.2.1. Since the existing Local Transport Plan (LTP3) was produced, there have been many changes to travel patterns including the frequency of travel and methods used. The Local Transport Plan is therefore being updated to respond to the changes in economic, societal, technological, environmental, political and legal circumstances.

1.2.2. There are seven strategic objectives which underpin the vision:

- Embracing the Future
- Delivering a sustainable Norfolk;
- Enhancing connectivity;
- Enhancing Norfolk's quality of life;
- Increasing accessibility
- Improving transport safety; and
- A well-managed and maintained transport network.

1.2.3. There are 22 strategic policies and 27 policy alternatives, which formed the basis of the SA assessment.

1.3 SUSTAINABILITY APPRAISAL METHODOLOGY

1.3.1. SA is an iterative process of gathering data and evidence, assessment of environmental effects, developing mitigation measures and making recommendations to refine plans or programmes in view of the predicted environmental effects. The effects predicted at this stage will remain at a strategic level.

1.3.2. The key stages of the SA process are the following:

- Stage A: Setting the context and objectives, establishing the baseline and deciding on scope;
- Stage B: Developing and refining strategic alternatives and assessing their effects;
- Stage C: Preparing the SA Environmental Report;
- Stage D: Consultation on the draft revised LTP and the draft SA; and
- Stage E: Monitoring the significant effects of implementing the revised LTP.

1.3.3. In addition to the SA a Health Impact Assessment (HIA) and Equalities Impact Assessment (EqIA) have been prepared. The findings of these assessments have informed the SA.

1.4 IDENTIFYING SUSTAINABILITY ISSUES AND OPPORTUNITIES

1.4.1. The 2019 Scoping Report identified the key issues for sustainability in relation to transport, using the sustainability policy context, baseline and future trends occurring without implementation of the Transport Plan.

1.4.2. Following the findings identified at scoping a Sustainability Appraisal Framework has been produced, which was used to guide the assessment process of the plans and strategies. The framework summarises the main sustainability issues in Norfolk across each environmental topic, and the subsequent sustainability objectives.

Table NTS 1 – SA Framework

Topic	Sustainability Objective
Air Quality	SA1 - To improve air quality, particularly in areas affected by poor air quality.
Biodiversity	SA 2 - To maintain and protect and biodiversity and geodiversity
Climate Change, Soils and Resources and Water Resources and Flooding	SA 3 - To reduce carbon emissions SA 4 - To maintain and improve water, soil and mineral quality and resources SA 5 - Adapt to the effects of climate change
Community and Access	SA6 - To improve the quality and safety of where people live SA7 - To reduce poverty and social exclusion, improving access to key services for all sectors of the population SA8 - To improve accessibility and provide an infrastructure which will enable sustained economic growth.
Cultural Heritage and the Historic Environment	SA9 - To protect and enhance the historic environment, including heritage assets (designated and non-designated) and their settings where this contributes to their significance, and / or allows their significance to be appreciated
Economy and Employment	SA10 - To encourage indigenous and inward investment, fuelling economic growth in key sectors including agriculture and food processing, tech/digital industries and offshore energy SA11 - To enable access to employment centres, such as town centres, ports and other hubs
Health and Population**	SA12 - To reduce death and injury SA13 - To encourage healthy lifestyles and wellbeing
Landscape and Townscape (including seascape)	SA14 - To protect and maintain townscapes and landscapes of visual importance, including the rural environment and town centres.
Noise	SA15 - To minimise the effects of noise in the identified NIAs

1.5 SUSTAINABILITY APPRAISAL

SA ASSESSMENT

1.5.1. The assessment of included the assessment of both LTP4 policies and policy alternatives

1.5.2. In general, LTP4 policies performed well against most SA objectives, with no significant negative effects being identified. Some uncertain effects were identified for air quality, noise, biodiversity and geodiversity, water, soils and mineral resources, landscape and townscape and cultural heritage and the historic environment.

1.5.3. LTP4 policies have generally resulted in more positive effects and less uncertainties than their policy alternatives. A summary for each SA Topic has been provided below.

- Air Quality: Policies have resulted in predominantly significant positive effects on air quality.
- Biodiversity and Geodiversity: Policies have generally resulted in both positive and negative effects on biodiversity and geodiversity.
- Climate Change, Soils and Resources and Water Resources and Flooding: Polices have resulted in predominantly significant positive effects on climate change (SA5) and carbon emissions (SA3) and neutral and uncertain effects on water, soil and mineral quality and resource (SA4).
- Community Access: Policies have predominantly resulted in significant positive and minor positive effects on the quality and safety of where people live (SA6), reduce poverty and social exclusion, improving access (SA7) and economic growth (SA8).
- Cultural Heritage and the Historic Environment: Policies have predominantly resulted in effects that are either both positive and negative or negligible.
- Economy and Employment: The policies have resulted in both significant positive and minor positive effects on economic growth (SA10) and access to employment (SA11).
- Health and Population: The policies have resulted in both significant positive and minor positive effects on reductions on death and injury (SA12) and encouragement of healthy lifestyles (SA13).
- Landscape and Townscape: Policies have predominantly resulted in effects that are either both positive and negative or negligible.
- Noise: Policies have result in a mixture of minor and significant positive and both negative and positive effects.

CUMULATIVE EFFECTS

1.5.4. An assessment of the potential cumulative effects on LTP4 with the local transport plans of neighbouring authorities was completed, looking at the potential impacts at a strategic level.

1.5.5. The following plans were considered:

- Cambridge-Norwich Tech Corridor
- East-West Rail (Eastern Section)
- England's Economic Heartland Regional Transport Strategy
- Neighbouring local transport plans (Suffolk, Cambridgeshire and Lincolnshire);
- Norfolk local plans (Breckland, Broadland, Norwich and South Norfolk, Great Yarmouth and North Norfolk); and
- Norfolk transport strategies (King's Lyn, Great Yarmouth and Transport for Norwich Strategies).

1.5.6. Potential positive cumulative effects were identified for population and health, economy and employment, community access and air quality. Potential uncertain/negative cumulative effects were identified for noise, biodiversity, cultural heritage, landscape and townscape and soils, water resources and flooding.

MITIGATION

1.5.7. Mitigation has been proposed for negative and uncertain impacts to contribute towards three sustainability objectives; to enhance biodiversity and geodiversity, to protect and maintain townscapes and landscapes of visual importance and to maintain and improve water, soil and mineral quality and resources. A list of further mitigation has been recommended to ensure sustainability objectives are met.

MONITORING

1.5.8. Following mitigation, some residual uncertain effects remained, therefore, monitoring measures were proposed. These have been set out in Table NTS 2 below.

Tale NTS 2 – Proposed Monitoring Measures

Potential Uncertain effect	What needs to be monitored?
Potential negative effects on biodiversity and geodiversity	The number of biodiversity enhancement schemes implemented through LTP4 schemes
Potential loss of important agricultural land	Total area (ha) of permitted loss of best and most versatile (grades 1-3a) agricultural land
Increase in noise in NIAs	The number of developments located within NIAs Noise assessments submitted with planning applications within NIAs

1.6 NEXT STEPS

1.6.1. This SA Report will be issued to consultees in September 2020 for a 6-week consultation period, alongside the Transport Strategy.

1.6.2. A SA Statement will be prepared following the consultation period to summarise how responses to consultation and the SA have influenced the development of the Transport Strategy.

2 INTRODUCTION

2.1 INTRODUCTION

2.1.1. Norfolk County Council (NCC) has commissioned WSP to undertake a Sustainability Appraisal (SA) that incorporates the requirement of a Strategic Environmental Assessment (SEA) of the Draft Norfolk Local Transport Plan 4 Strategy (LTP4).

2.1.2. The SA also includes the assessment of the King's Lynn Transport Strategy and, the Great Yarmouth Transport Strategy. Once available, the assessment of the Transport for Norwich Strategy will be appended to the SA.

2.1.3. This document comprises the Environmental Report produced as part of the SA process. More information on the SA methodology and steps are provided in Chapter 4.

2.2 STRATEGIC ENVIRONMENTAL ASSESSMENT AND SUSTAINABILITY APPRAISAL

2.2.1. The SEA/SA process is carried out during the preparation of local plans and spatial development strategies. Its role is to promote sustainable development by assessing the extent to which emerging plans will help to achieve relevant environmental, economic and social objectives.

2.2.2. SEA is used to describe the application of environmental assessment to plans and programmes in accordance with European Council Directive 2001/42/EC. The SEA Directive is enacted in England through the "Environmental Assessment of Plans and Programmes Regulations" (SI 2004/1633, known as the SEA Regulations)[1].

2.2.3. An SEA is mandatory for plans and programmes which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste or water management, telecommunications, tourism, town and country planning or land use, and which set the framework for future development consent of projects listed in the Environmental Impact Assessment Directive (85/337/EEC)[2] and the Town and Country Planning (Environmental Impact Assessment) Regulations[3].

2.2.4. SEA only considers the environmental effects of a plan, whilst SAs consider a plan's wider economic and social effects in addition to its potential environmental impacts, however, it is obligatory that SAs meet all of the requirements of the SEA Regulations.

[1] SI 2004 No. 1633, The Environmental Assessment of Plans and Programmes Regulations 2004. Available at: http://www.legislation.gov.uk/uksi/2004/1633/pdfs/uksi_20041633_en.pdf
[2] Environmental Impact Assessment Directive (85/337/EEC) 2014 Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052&from=EN
[3] The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 Available at: http://www.legislation.gov.uk/uksi/2017/571/introduction/made

3 NORFOLK LOCAL TRANSPORT PLAN STRATEGY

3.1 BACKGROUND

3.1.1. Norfolk is situated in the east of England, bordered with Suffolk, Cambridgeshire and Lincolnshire. Norwich is the only county town and city in Norfolk. Outside Norwich much of Norfolk is rural, with a large number of small, dispersed villages and market towns. Public services such as GP surgeries and schools tend to be within the larger villages, market towns or urban areas, requiring significant numbers of people to travel relatively long distances to access everyday facilities.

3.1.2. Norfolk has one of the largest highway networks in the country which presents challenges in terms of travel and maintenance. Norfolk's road network is largely rural, restricting journey times and leading to congestion on some corridors. Furthermore, the public transport servicing the county can be of varying quality.

3.1.3. The existing Norfolk's 3rd Local Transport Plan (LTP), which sets out the strategy and policy framework for transport up to 2026, was agreed in 2011.

3.1.4. Since the adoption of the current Local Transport Plan, several schemes have been delivered, most notably the Broadland Northway (Norwich Northern Distributor Road (NNDR)), A11 dualling and Norwich to London in 90 minutes rail services. There has been a commitment to improvements and funding for the Great Yarmouth Third River Crossing, A47 Great Yarmouth Junctions, Blofield to Burlingham dualling, Thickthorn Roundabout and Easton to Tuddenham dualling. Significant improvements to walking and cycling have also been made.

3.2 THE DRAFT NORFOLK LOCAL TRANSPORT PLAN (LTP4) STRATEGY

VISION

3.2.1. Since the existing Local Transport Plan was produced, there have been many changes to travel patterns including the frequency of travel and methods used. Technology has had an increasing role in facilitating lower levels of travel, for example, through enabling greater working from home and internet shopping. The Local Transport Plan is therefore being updated to respond to the changes in economic, societal, technological, environmental, political and legal circumstances.

3.2.2. The draft plan contains a transport strategy that looks towards 2036 with the key issues explored being how to:

- Achieve the policy aim to work towards carbon neutrality by 2030 as agreed in the environmental policy recently adopted;
- Improve air quality in urban areas;
- Meet the challenge of technology and innovation in the transport system and the ways in which people work; and
- Support the economy of the county by ensuring that people can make the connections they need.

OBJECTIVES

3.2.3. There are seven strategic objectives which underpin the vision and will have a number of strategic policies. The objectives are:

- Embracing the future;
- Delivering a sustainable Norfolk;

- Enhancing connectivity;
- Enhancing Norfolk's quality of life;
- Increasing accessibility
- Improving transport safety; and
- A well-managed and maintained transport network.

3.2.4. These strategic objectives are briefly described below:

- Objective 1 – Embracing the Future
  Rapid advances in technology bring opportunities to be more innovative and agile in delivering an efficient and effective transport network. At the same time, there is a need to make sure that everyone benefits from the advances that technology can bring.

- Objective 2 - Delivering a Sustainable Norfolk
  Delivering sustainable development is highly important, especially with the planned housing growth. The LTP4 will take into account the sustainability of new developments to ensure these are beneficial to Norfolk's society, economy and environment.

- Objective 3 – Enhancing Connectivity
  It is Norfolk County Council's priority to maintain and enhance important connections to enable movement into and around the county and increase our attractiveness as a location both for businesses and people.
  Good connectivity is highly important for getting from A to B easily whether for work, education, visiting family and friends, and deliveries.

- Objective 4 – Enhancing Norfolk's Quality of Life
  Enhancing the quality of life for Norfolk's residents is very important to Norfolk County Council. The Council wants to improve the health of the residents by improving air quality and encouraging active travel options to improve health and fitness and also helping reduce greenhouse gas emissions.

- Objective 5 - Increasing Accessibility
  Increasing accessibility is important so that everyone has access to the services and opportunities they require. The LTP4 aims to increase the accessibility of Norfolk and address the challenges such a rural county faces and also to adapt to accessibility requirements in the future.

- Objective 6 – Improving Transport Safety
  The LTP4 aims to improve the safety of Norfolk's transport network in order to both reduce casualties and help residents feel safe on the network when using any mode of transport. Norfolk County Council aim to overcome the various challenges on the network and to create a network which encourages safe usage of their roads and to protect vulnerable transport users.

- Objective 7 - A Well Managed and Maintained Transport Network
  Norfolk County Council is responsible for the management and maintenance of 6,000 miles of Norfolk's roads and 2,400 miles of Norfolk's footpaths and other public rights of way. Through the use of innovative Technology to provide real-time information the county council is aiming to improve the management and maintenance of the network to keep Norfolk moving.

POLICIES

3.2.5. A series of policies sit within each of the strategic objectives above. There are presented (as written in the draft LTP4 document) from Table 3.1 to Table 3.7 below and form the basis of the SA Assessment.

Table 3.1 – Embracing the Future

Proposed Policy
1. We will plan and prepare the county for future changes and challenges to ensure the best for our society, environment and economy
2. The priority for reducing emissions should be to support a shift to more sustainable modes and more efficient vehicles, including lower carbon technology and cleaner fuels; this includes the facilitation of necessary infrastructure.
3. Innovation and new technologies will be embraced in order to respond to the new targets set by the recently adopted environmental policy
4. Behaviour change and interventions that can help to increase the use of sustainable transport will be implemented.

Table 3-2 – Delivering a Sustainable Norfolk

Proposed Policy
5. New development should be well located and connected to maximise use of sustainable and active transport options, making them more attractive places to live, thus supporting a strong sense of the public realm.
6. We will seek to ensure that any adverse effects of new development on the transport network are mitigated through developer contributions.
7. In air quality management areas development will need to demonstrate its positive contribution to tackling the air quality problem

Table 3.3 - Enhancing Connectivity

Proposed Policy
8. Our priority will be to improve major road and rail connections between larger places in the county, and to major ports, airports and cities in the rest of the UK.
9. Our priority for improved connectivity will be for it to be via clean transport modes.
10. We will seek to improve connectivity between rural areas and services in urban centres.

Table 3.4 - Enhancing Norfolk's Quality of Life

Proposed Policy
11. Action will be taken to improve air quality in urban centres, including investigating vehicular restrictions or charging, in order for air quality to fall below the threshold for Air Quality Management Areas.
12. We will change our transport network to work towards carbon neutrality by 2030.
13. Quality of place will be improved through improving the transport network.

Table 3.5 - Increasing Accessibility

Proposed Policy
14. Agencies in Norfolk should tackle accessibility problems in partnership, targeting those communities most in need. Accessibility should be planned as part of service delivery
15. Priority on some routes should be given to sustainable and active modes of transport.
16. We will work towards providing a network where transport and movement provision is accessible to all.

Table 3.6 - Improving Transport Safety

Proposed Policy
17. The number of killed and serious injured on the road network will be reduced by adopting a safe systems approach and working with partners to achieve this vision

Table 3.7 –A Well Managed and Maintained Transport Network

Proposed Policy
18. To bring about an improvement in the condition of Norfolk's highway network, maintaining the current asset should be a key priority for funding. Works should be targeted to ensure A and urban / inter-urban routes are in good condition.
19. In market towns and urban areas, we will focus maintenance of routes for sustainable transport used by walkers and cyclists.
20. We will focus on measures to improve public transport in urban areas, and elsewhere we will focus on reliable journeys for all users
21. The likely impacts of climate change on the highway network should be addressed, with a risk-based approach taken to determining the priority for action.
22. New and innovative technology to collect data about the network, inform decisions, assess where to target funding on the network and share information with the public will be embraced.

3.2.6. The policies for the King's Lyn[4] and Great Yarmouth[5] Strategies and their assessment are reported in Appendices C and D respectively.

3.2.7. The assessment of the Transport for Norwich strategy policies will be reported on separately, once it becomes available, and will be appended to this SA Report.

[4] Norfolk County Council & Borough Council of King's Lynn & West Norfolk (December 2019). King's Lynn Transport Strategy. Draft for Consultation. https://www.west-norfolk.gov.uk/info/20010/regeneration/696/kings_lynn_transport_study_and_strategy#:~:text=Summary,bettering%20air%20quality

[5] Great Yarmouth Borough Council, Norfolk County Council, WSP (August 2019) Great Yarmouth Transport Strategy. Draft for Consultation https://norfolk.citizenspace.com/consultation/great-yarmouth-transport-strategy/user_uploads/2019-09-16-gyts-draft.pdf

4 SUSTAINABILITY APPRAISAL METHODOLOGY

4.1 INTRODUCTION

4.1.1. SA is an iterative process of gathering data and evidence, assessment of environmental effects, developing mitigation and monitoring measures and making recommendations to refine plans or programmes in view of the predicted environmental effects.

4.1.2. The approach adopted for the SA of the Draft LTP4 Strategy follows that set out in the Practical Guide to SEA[6] and the Planning Practice Guidance to SEA and SA[7]. It involves the development of an assessment framework comprising a series of sustainability objectives, assessment criteria and indicators. This framework is developed from an understanding of environmental problems and opportunities identified through a review of existing baseline information and a review of other plans, programmes and environmental protection objectives relevant to the plan area (i.e. Norfolk) and subject matter (transport).

4.1.3. The key stages of the SEA process are the following:

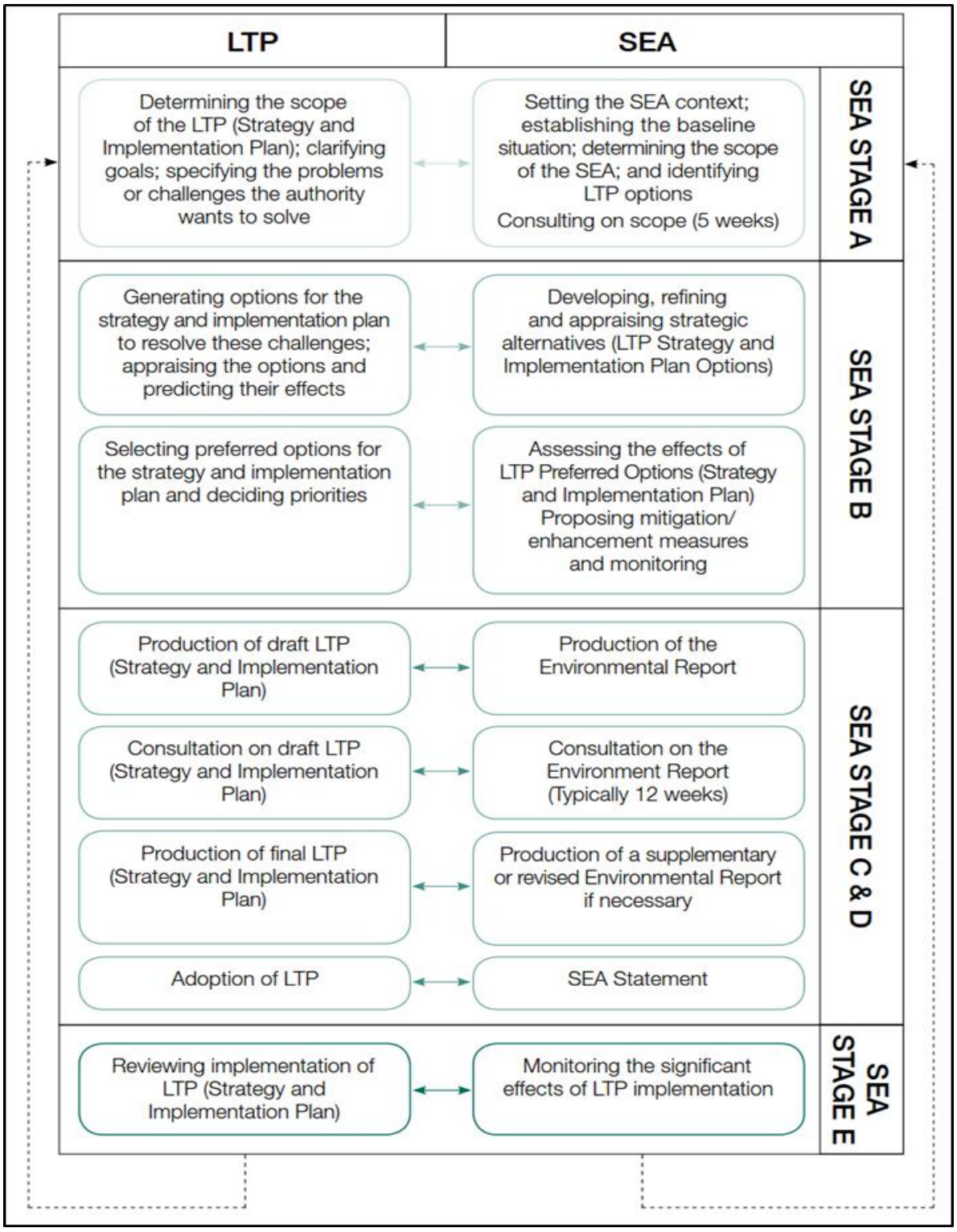
- Stage A: Setting the context and objectives, establishing the baseline and deciding on scope;
- Stage B: Developing and refining strategic alternatives and assessing their effects;
- Stage C: Preparing the Environmental Report;
- Stage D: Consulting on the draft plan or programme and the Environmental Report; and
- Stage E: Monitoring the significant effects of implementing the plan or programme on the environment.

4.1.4. The stages of the SEA process and their interactions with the LTP process are depicted in Figure 4-1 below.

[6] Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive. available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf

[7] Department for Communities and Local Government (2015) Strategic environmental assessment and sustainability appraisal. Available at: http://planningguidance.communities.gov.uk/blog/guidance/strategic-environmental-assessment-and-sustainability-appraisal/

Figure 4-1 - SEA Methodology



STAGE A: SCOPING

4.1.5. Stage A of the process described in Figure 3-1 above comprised the preparation of a report setting out the context and scope of the SA through:

- A description of the Transport Strategy (Chapter 2 of the Scoping Report);
- Presenting the methodology and framework for undertaking the SA (Chapter 1 of the Scoping Report);
- Review of relevant policies, baseline information and future trends (Chapter 3 of the Scoping Report);
- Identifying key issues and opportunities for the Transport Strategy, reflecting for example the increased pressure of development on the natural environment or the beneficial health effects of active travel (Chapter 3 of the Scoping Report);
- Identifying Sustainability Objectives to feed into an overall framework for appraisal of options (Chapter 4 of the Scoping Report); and
- Setting out next steps (Chapter 5 of the Scoping Report).

4.1.6. The SEA Regulations require that, as a minimum, consultation bodies are consulted on the scope of the SEA over a five-week consultation period. In line with this requirement, in December 2019 the SA / SEA Scoping Report was submitted to the SEA statutory consultees (i.e. Environment Agency, Natural England and Historic England) seeking their views on the proposed scope of the SA/SEA.

4.1.7. Comments received from the statutory bodies were reviewed and were considered in the update of the Scoping Report which is to be placed in Norfolk County Council's consultation website alongside the SA Report (see Section 7).

4.1.8. Given that the Draft LTP4 Strategy is the overarching umbrella document where the other three transport Strategies sit within, the approach to Stages B, C, D is as follows:

- Overarching SA, including EqIA and HIA of the Draft LTP4 Strategy.
- Individual annexes containing integrated SA assessments for:
  - The King's Lynn Transport Strategy
  - Great Yarmouth Transport Strategy
  - Transport for Norwich Strategy

STAGE B: ASSESSMENT

4.1.9. Stage B comprises the assessment of the Draft LTP4 Strategy, against the SA objectives, which will aid the development of LTP4 and its policies and options. Further information on the assessment framework applied is included in Section 5.

4.1.10. Although the EqIA and HIA form separate appendices to the SA/SEA report (refer to Appendix E and F respectively), their findings have been integrated into the overall appraisal. The same approach of integrating the findings albeit being reported separately has been followed for the Habitats Regulation Assessment (HRA) process of the Draft LTP4 Strategy (see Section 3.2 below).

4.1.11. The Transport for Norwich Strategy, Great Yarmouth Transport Strategy and King's Lynn Transport Strategy are also to be assessed against the SA objectives. Therefore, individual annexes containing integrated SA assessments are to be prepared for:

- The King's Lynn Transport Strategy (see Appendix B);
- Great Yarmouth Transport Strategy (see Appendix C); and

- Transport for Norwich Strategy (SA assessment to be prepared alongside strategy preparation and to be appended to the SA Report when available).

4.1.12. The SEA Regulations require that cumulative effects are considered when identifying likely significant effects. Therefore, a number of plans and policies (locally, regionally and nationally) have been reviewed for potential cumulative effects in addition to potential cumulative effects that could occur across the Draft LTP4 Strategy and its supplementary transport strategies.

4.1.13. Recommendations, mitigation and monitoring measures will be incorporated into the four draft transport strategies as appropriate.

STAGE C AND D: REPORTING AND CONSULTATION

4.1.14. The results, recommendations and mitigation have been summarised in this Report (Stage C and D) with the Annexes described above focusing on each of the district level strategies.

4.1.15. In accordance with the SEA Regulations, the SA/SEA Environmental Report must be made available at the same time as the draft plan or programme, as an integral part of the consultation process, and the relationship between the documents clearly indicated.

STAGE E: MONITORING

4.1.16. This report sets out recommendations for monitoring the social, environmental and economic effects of implementing the Draft LTP4 Strategy (Section 6.8).

LIMITATIONS AND ASSUMPTIONS

4.1.17. The preparation of the Transport Strategy alongside the SA has allowed an iterative process of assessment and refinement in the narrative and policies within the Strategy. Therefore, some of the recommendations set out in this report may already have been addressed in the Transport Strategy.

4.1.18. The Transport Strategy does not propose other specific development sites with defined boundaries above those mentioned. As such, the main focus of the assessment is of the strategic policies (policy alternatives) have been undertaken for the SA.

4.1.19. Some of the Transport Schemes are being delivered by other organisations, including Highways England and Network Rail. NCC will need to continue working in partnership with these other organisations for the development and delivery of these schemes. The policy framework for the delivery of these major schemes is the National Networks National Policy Statement[8].

4.1.20. The Transport Strategy will apply to the plan period 2020 to 2036. The assessment will focus on effects likely to occur during the plan period but will also seek to identify longer term effects that may occur beyond this period. It is acknowledged that longer term effects generally have a greater level of uncertainly than shorter-term, more immediate effects.

4.1.21. During the preparation of the SA, Norfolk has been affected by the worldwide COVID-19 pandemic. This has led to unprecedented changes in travel patterns and needs, and the way in which transport

[8] DfT, 2014, National Policy Statement for National Networks https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387222/npsnn-print.pdf

infrastructure has been used, over a very short period of time. There is a great deal of uncertainty as to how these changes will continue to develop and what trends and travel needs may emerge in the short, medium and long term, particularly over the period covered by the Transport Strategy. The narrative within the Transport Strategy will enable opportunities provided by these changes to be realised, building upon the emerging evidence base as to what these changes will be.

4.2 RELATIONSHIP WITH OTHER PROCESSES

HABITATS REGULATIONS ASSESSMENT

4.2.1. Under Article 6 (3) of the EU Habitats Directive as transposed into the UK law by the Habitats Regulations[9], an assessment (referred to as a Habitats Regulations Assessment or HRA) needs to be undertaken in respect of any plan or project which:

- Either alone or in combination with other plans or projects would be likely to have a significant effect on a site designated within the Natura 2000 network – these are Special Areas of Conservation (SACs), candidate SACs (cSACs), and Special Protection Areas (SPAs). In addition, Ramsar sites (wetlands of international importance), potential SPAs (pSPA) and in England possible SACs (pSACs), are considered in this process as a matter of law or Government policy. [These sites are collectively termed 'European sites' in Habitats Regulations Assessment (HRA)]; and
- Is not directly connected with, or necessary to, the management of the site.

4.2.2. Guidance on the Habitats Directive[10] sets out four distinct stages for assessment under the Directive:

- Stage 1: Screening: the process which initially identifies the likely impacts upon a Natura 2000 site of a plan or project, either alone or in combination with other plans or projects, and considers whether these impacts are likely to be significant;
- Stage 2: Appropriate Assessment: the detailed consideration of the impact on the integrity of the Natura 2000 sites of the plan or project, either alone or in combination with other plans or projects, with respect to the site's conservation objectives and its structure and function. This is to determine whether there will be adverse effects on the integrity of the site;
- Stage 3: Assessment of alternative solutions: the process which examines alternative ways of achieving the objectives of the plans or projects that avoid adverse impacts on the integrity of the Natura 2000 site; and
- Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain: an assessment of whether the development is necessary for imperative reasons of overriding public interest (IROPI) and, if so, of the compensatory measures needed to maintain the overall coherence of the Natura 2000 network.

[9] The Conservation of Habitats and Species Regulations 2017. Available from: http://www.legislation.gov.uk/uksi/2017/1012/contents/made

[10] Assessment of plans and projects significantly affecting Natura 2000 sites Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC Available at: http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf (Accessed January 2019)

4.2.3. The HRA (Screening and Appropriate Assessment) for the draft LTP4 Strategy has been carried out and will be undergoing consultation with NCC and Natural England. This will also inform a strategy on how HRA will be implemented at district and borough transport strategy level.

4.2.4. The HRA Screening exercise will be reported separately to the SA Report.

EQUALITIES ASSESSMENT

4.2.5. An Equality Impact Assessment (EqIA) has been undertaken for the Draft LTP4 Strategy.

4.2.6. The Equality Act 2010 includes a public-sector equality duty which requires public organisations and those delivering public functions to show due regard to the need to eliminate unlawful discrimination, harassment, victimisation; to advance equality of opportunity; and to foster good relations between communities.

4.2.7. The Equality Impact Assessment (EqIA) process focuses on assessing and recording the likely equalities effects as a result of a policy, project or plan. It seeks to ensure that the policy, project or plan does not discriminate or disadvantage people, and enables consideration of how equality can be improved or promoted. The equality duty came into force in April 2011 and covers the following Personal Protected Characteristics:

- Age;
- Disability;
- Gender;
- Gender reassignment;
- Marriage and civil partnership;
- Pregnancy and maternity;
- Race;
- Religion or belief; and
- Sexual orientation.

4.2.8. The EqIA, a copy of which is included as Appendix D of this report, has informed the Draft LTP4 Strategy SA process.

HEALTH IMPACT ASSESSMENT

4.2.9. HIA is a process to identify the likely health effects of plans, policies or development and to implement measures to avoid negative impacts and / or promote opportunities to maximise the benefits.

4.2.10. There is no adopted formal methodology for HIA although there is a body of practice and guidance at policy level. Assessment of health can be undertaken as a discrete process within an HIA and can also be embedded within environmental assessments.

4.2.11. The approach adopted for the HIA of the Transport Strategy is therefore to combine it with the SA process, with ‘health’ included as a topic for assessment alongside the environmental topics. There is also a separate HIA provided in Appendix E to provide further context for the assessment.

5 IDENTIFYING THE SUSTAINABILITY ISSUES

5.1 INTRODUCTION

5.1.1. The Scoping Report identified the key issues for sustainability in relation to transport, using the sustainability policy context, baseline and future trends occurring without implementation of the four transport plans/strategies for Norfolk, Norwich, Great Yarmouth and King's Lynn. This will enable the effects of the plans/strategies to be compared to the evolution of the baseline in the absence of the plans/strategies.

5.1.2. The baseline for each of the SA topics and specific policy context is presented in Appendix F whilst Appendix G provides a series of maps showing environmental designations and, social and heritage constraints in the county A summary of key issues, identified from this review, is presented within the SA Framework in Table 5.1 below.

5.2 POLICY CONTEXT

LOCAL, REGIONAL AND NATIONAL POLICY AND LEGISLATION

- Norfolk County Council's Environmental Policy[11];
- Broads Authority Local Plan;
- Breckland District Council- Core Strategy and Development Control Policies Development Plan Document 2001-2026;
- Environmental Strategy for Broadland 2014;
- Environmental Strategy for Broadland Action Plan 2014;
- Great Yarmouth Local Plan: Core Strategy 2013-2030;
- Great Yarmouth The Plan: 2015-2020;
- King's Lynn & West Norfolk Borough Council Local Development Framework - Core Strategy 2011;
- North Norfolk Local Development Framework- Core Strategy 2008-2021;
- Norwich City Council Sustainable Community Strategy 2008-2020;
- Norwich City Council Environmental Strategy 2015-2018;
- Norwich Local Plan: Development Management policies plan (adopted 2014);
- New Anglia Local Enterprise Partnership's (LEP) Norfolk and Suffolk Economic Strategy;
- Joint Core Strategy for Broadland, Norwich and South Norfolk 2011-2026 (adopted 2014);
- Norfolk County Council: A vision for Norfolk in 2021;
- East of England Plan 2008;
- 25 Year Environment Plan: A Green Future: Our 25 Year Plan to Improve the Environment (DEFRA 2018);
- Major Road Network and Large Local Majors programmes investment planning 2018;
- National Planning Policy Framework (NPPF) 2019; and
- National Networks National Policy Statement (NN NPS) 2014.

[11] https://www.norfolk.gov.uk/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/natural-environment-policies/environmental-policy

5.3 SUSTAINABILITY APPRAISAL FRAMEWORK

5.3.1. A Sustainability Appraisal Framework has been produced (Table 5.1) to guide the assessment process of the plans and strategies. The framework summarises the main sustainability issues in Norfolk across each environmental topic, and the subsequent sustainability objectives and appraisal questions to be used to assess emerging policies and implementation plans.

Table 5.1 - Sustainability Appraisal Framework

Topic	Sustainability Issues Identified	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
Air Quality	There are a number of AQMAs around Norfolk that are designated as a result of air pollution from transport. The number of vehicles on county roads is expected to increase, which can affect air quality.	SA1 - To improve air quality, particularly in areas affected by poor air quality.	Reduce congestion and traffic levels particularly in AQMAs and congestion hot-spots? Encourage sustainability friendly transport?
Biodiversity	There are a wide range of statutory local, national and international sites designated for nature conservation in Norfolk, which may be affected by any increase in transport infrastructure development, particularly through indirect effects. The construction and operation of potential new transport infrastructure may have an effect on biodiversity including priority habitats, species and protected species.	SA 2 - To maintain and protect and biodiversity and geodiversity	Cause damage to Special Areas of Conservation (SAC's), Special Protection Areas (SPAs), Site of Special Scientific Interest (SSSIs), Local Nature Reserves (LNRs) and Local Wildlife Sites (LWS) though infrastructure provision, traffic or maintenance? Maintain biodiversity in Norfolk?
Climate Change, Soils and Resources and Water Resources and Flooding*	Sustainability issues in relation to climate change are as follows:	SA 3 - To reduce carbon emissions	Reduce car trips and encourage a more energy efficient and/or greener/cleaner transport system?

Topic	Sustainability Issues Identified	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
	Climate change could have potential impacts on transport infrastructure, particularly in Norfolk's coastal areas. Transport is one of the largest contributors to greenhouse gas emissions in Norfolk. Due to the rural nature of Norfolk and few public transport services in these rural areas there is greater reliance on private cars. There is opportunity to provide more sustainable modes of travel in relation to greenhouse gases or promote use of alternative fuels such as electric vehicles. Sustainability issues in relation to soil are as follows: Future development may lead to the degradation of BMV land. Improvements to transport infrastructure will likely require land take. There are likely to be increase pressures on agricultural land due to climate change. Sustainability issues in relation to minerals and waste are as follows: Agricultural land and mineral resources are a finite resource. There is a large reliance on road transport for importing and exporting minerals, which is unlikely to change.	SA 4 - To maintain and improve water, soil and mineral quality and resources SA 5 - Adapt to the effects of climate change	Reduce impacts from infrastructure development and maintenance on water, soil and mineral resources? Plan a transport system which is more resilient to the can cope with impact from climate change?

Topic	Sustainability Issues Identified	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
	Materials will be required for any new transport infrastructure, and subsequent waste produced. Resource efficiency is important in the reduction of waste and conservation of resources. Sustainability issues in relation to water resources and flooding are as follows: Climate change is likely to increase the occurrence of flooding from all sources and hence raise the flood risk in Norfolk. Transport infrastructure could be required in areas of high flood risk. The physical and chemical quality of Norfolk's water resources is an important aspect of the natural environment and can be adversely affected by, for example, pollution or physical associated with transport infrastructure.		
Community and Access	Access to reliable, affordable and safe transport is important for all age groups for social interaction, helping to avoid loneliness and isolation. Public transport plays an essential role for those who do not have use of a car. There may be inequalities in access to healthcare, jobs and other services.	SA6 - To improve the quality and safety of where people live SA7 - To reduce poverty and social exclusion, improving access to key services for all sectors of the population	Help improve the quality of urban and rural communities? Create a more accessible transport system for all? Improve accessibility?

Topic	Sustainability Issues Identified	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
	An increase in population and new housing will increase demand for local transport services. Growth of education facilities, as well as students in apprenticeships will increase pressure on transport networks. Access to education and other facilities is important, particularly in deprived areas.	SA8 - To improve accessibility and provide an infrastructure which will enable sustained economic growth.	Provide the infrastructure to enable sustained economic growth?
Cultural Heritage and the Historic Environment	Norfolk has a large amount of heritage assets around the county, in the case of buried archaeology some of these may be unknown and their significance may be affected by the potential development of new transport infrastructure. The increase of vehicles and pollution in the vicinity of designated assets such as scheduled monuments and listed buildings can have an impact on their setting. Ancillary features of transport infrastructure, inclusive of marked parking bays, yellow lines etc. can adversely impact upon the setting of the historic environment.	SA9 - To protect and enhance the historic environment, including heritage assets (designated and non-designated) and their settings where this contributes to their significance, and / or allows their significance to be appreciated	Cause direct physical impact upon any heritage asset (designated and non-designated), resulting in a loss of significance? Cause a change in traffic flows or the nature of traffic that affects any heritage asset (designated and non-designated)? Cause indirect impact upon any heritage asset (designated and non-designated) through a change in their setting, resulting in a loss of significance? Protect, enhance and manage the character and appearance of historic landscapes/seascapes/townscapes, maintaining local character, distinctiveness and sense of place?

Topic	Sustainability Issues Identified	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
			Achieve high quality sustainable design for buildings, spaces and the public realm?
Economy and Employment	Transport is important for access to employment centre, particularly town centres. The number of small businesses within Norfolk highlight the need for transport services which can support growth. Important sectors within Norfolk include agricultural, forestry and fisheries and tourism. To sustain economic growth and enable well paid employment, provision of reliable and accessible transport networks are needed.	SA10 - To encourage indigenous and inward investment, fuelling economic growth in key sectors including agriculture and food processing, tech/digital industries and offshore energy SA11 - To enable access to employment centres, such as town centres, ports and other hubs	Increase connectivity and help alleviate congestion, reducing journey times? Improve access to employment centres?
Health and Population**	Sustainability issues in relation to Health are as follows: The population of Norfolk is an ageing population; older generations may not have access to appropriate forms of private transport to access healthcare and social care facilities. The potential increase of road safety issues due to an increase in older drivers in the county because of an ageing population.	SA12 - To reduce death and injury SA13 - To encourage healthy lifestyles and wellbeing	Improve the safety of the transport system? Increase walking and cycling? Improve mental health and wellbeing?

Topic	Sustainability Issues Identified	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
	Road safety is improving but continues to be an issue. There may be inequalities in access to healthcare, jobs and other services. Sustainability issues in relation to Population are as follows: The population of Norfolk is increasing and there will be additional movement associated with this growth. The ageing population structure is likely to increase demand for access to services.		
Landscape and Townscape (including seascape)	The character and quality of Norfolk's landscapes can be eroded by the potential construction and operation of transport infrastructure. Development of transport infrastructure has the potential to indirectly affect Norfolk's designated landscapes. Norfolk's coastline is constantly changing due to sea level changes and climate change	SA14 - To protect and maintain townscapes and landscapes of visual importance, including the rural environment and town centres.	Cause changes in traffic flows in areas valued for their landscape or visual character? Cause direct impacts through development or maintenance on any areas valued for their landscape, townscape, intrinsic value or visual character? Consider the setting of the rural environment?
Noise	An increase in noise from transport can have an adverse effect on general health, sleep and can be seen as a nuisance. A potential increase in transport development and infrastructure may adversely impact sensitive receptors and	SA15 - To minimise the effects of noise in the identified Noise Important Areas (NIAs)	Maintains the noise baseline in NIAs

Topic	Sustainability Issues Identified	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
	increase current noise levels across the county.		

6 SUSTAINABILITY APPRAISAL

6.1 INTRODUCTION

6.1.1. This section presents the findings of the assessment of the LTP4 objectives covering both:

- The policy alternatives considered in developing the Draft LTP4 Strategy; and
- The proposed policies in the Draft LTP4 Strategy.

6.1.2. Mitigation and enhancement measures for negative or positive significant effects are set out below in section 6.7.

6.2 ALTERNATIVES

6.2.1. The SEA Regulations require an assessment of the plan and its “reasonable alternatives”. In order to assess reasonable alternatives, different options for delivering strategic level transport across Norfolk County were developed and assessed against the established sustainability objectives and environmental baseline.

6.2.2. The assessment considers the development and eventual adoption of the policies contained in the Draft LTP4 Strategy. Where possible, each LTP4 policy had a proposed policy alternative, with a total of 27 policy alternatives being assessed.

6.2.3. The findings of the policy alternatives are reported in Appendix A.

6.3 ASSESSMENT OF DRAFT LTP4 OBJECTIVES

6.3.1. The assessment of LTP4 objectives and composite policies is summarised below and presented in full in Appendix A. The assessment will be guided by questions which have been outlined in Table 5.1.

6.3.2. In general, LTP4 policies have performed well against most SA objectives, with no significant negative effects being identified. Some uncertain effects were identified for air quality, noise, biodiversity and geodiversity, water, soils and mineral resources, landscape and townscape and cultural heritage and the historic environment.

6.3.3. LTP4 policies have generally resulted in more positive effects and less uncertainties than their policy alternatives. Table 6.1 below provides a summary of the findings of the assessment against each of the 15 SA objectives.

Table 6.1 - Draft LTP4 Strategy Assessment Summary

SA Objective	Summary of Effects
1. To improve air quality, particularly in areas affected by poor air quality.	Policies have resulted in predominantly significant positive effects. LTP4 introduces policies that aim to reduce car travel, increase sustainable and active travel modes and improve air quality in urban areas and AQMAs. Some policies aim to increase rural connectivity which has resulted in the potential for both positive and negative effects. Providing greater connectivity is likely to reduce journey times and efficiency, however, it could increase the capacity of the road network and subsequently increase air pollution in some locations.

SA Objective	Summary of Effects
2. To maintain and protect and biodiversity and geodiversity	Policies have generally resulted in both positive and negative effects and biodiversity and geodiversity. Policies that encourage sustainable transport modes are likely to help decrease air quality emissions which may indirectly benefit the biodiversity and geodiversity in Norfolk. Greater uptake in sustainable transport modes may also reduce the number of single occupancy journeys which could lessen the impact of disturbance. However, some policies could result in the disturbance and loss of biodiversity as part of their construction and operation (e.g. highway maintenance, new cycle ways and footpaths) through land take. Negative impacts can be mitigated through project level design and delivery.
3. To reduce carbon emissions	Policies have resulted in predominantly significant positive effects. LTP4 introduces policies that aim to reduce car travel, increase sustainable and active travel modes, provide opportunities for low carbon vehicles and technology. It was however noted that the development of some infrastructure will result in an increase in GHG emissions through the carbon associated with the construction, maintenance and from the operational use of the transport systems.
4. To maintain and improve water, soil and mineral quality and resources	Policies have resulted in predominantly neutral effects, and most LTP4 policies are unlikely to have any effect on water, soil and mineral quality and resources. Some policies (objectives 3 and 7) have resulted in uncertainties. Some developments that may arise as a result of the LTP4 policies could result in land take (including use of best and most versatile land) which could be resource intensive. There is also potential for construction to result in modifications and discharges to local watercourses, and the introduction of hard standing and sealed surfaces may increase surface run-off and subsequently flood risk. Negative impacts can be mitigated through project level design and delivery.
5. Adapt to the effects of climate change	Polices have generally resulted in significant positive effects. LTP4 introduce policies that make preparations for future changes and challenges which are likely to ensure the best for society, environment and economy is likely to help build early resilience and provide practical solutions to tackling the challenge of climate change.
6. To improve the quality and safety of where people live	Polices have generally resulted in significant positive effects. LTP4 introduce policies that will ensure the maintenance of roads, encouragement of behavioural changes, increased rural connectivity and access to more active travel will help to improve the quality of where people live and reduce safety concerns on the roads. Options for sustainable travel and active travel modes are likely to reduce levels of noise and air pollution, leading to increased levels of tranquillity and improved quality in the places where people live.
7. To reduce poverty and social exclusion, improving access to key services for all sectors of the population	Policies have generally resulted in either significant or minor positive effects. LTP4 policies will result in enhancements to the public transport network which will make employment centres, schools, health centres more accessible for people, reducing social isolation, particularly in rural areas.

SA Objective	Summary of Effects
8. To improve accessibility and provide an infrastructure which will enable sustained economic growth.	Policies have mainly resulted in significant positive effects. LTP4 includes plans which improve the connectivity between rural areas, new housing growth centres and employment centres.
9. To protect and enhance the historic environment, including heritage assets (designated and non-designated) and their settings where this contributes to their significance, and / or allows their significance to be appreciated	Policies have predominantly resulted in effects that are either both positive and negative or negligible. Some LTP4 policies could require transport infrastructure and associated components such as street fixtures, lighting, furniture, signage, and maintenance equipment, can have a major visual impact, which has the potential to erode the townscape character and the setting of heritage assets. Potential reductions in air and noise pollution are likely to increase levels of tranquillity and could slow/prevent the degradation of surfaces of historical buildings and monuments from air pollutants. Some policies may result in increased connectivity across Norfolk enabling more people being able to access and explore the county's heritage. This brings the potential for positive development. which could present opportunities to generate activity and vitality and help define the character of development distinctive to the surrounding areas and Norfolk.
10. To encourage indigenous and inward investment, fuelling economic growth in key sectors including agriculture and food processing, tech/digital industries and offshore energy	Policies have resulted in a mixture of significant and minor positive effects. LTP4 policies may result the introduction of new technology and low carbon/efficient vehicles could result in further investment in innovative technology development, and development of sustainable supply chains. This could help to increase further employment within the region, the longevity of which could be made more secure by a transport network that is future ready. Providing greater connectivity to major ports, airports and cities may enable greater economic opportunities for Norfolk, allowing businesses to grow nationally and internationally. These opportunities could also attract more businesses into the region, supporting further economic growth, provide employment opportunities and ensure a strong and sustainable local economy.
11. To enable access to employment centres, such as town centres, ports and other hubs	Policies have mainly resulted in significant positive effects. LTP4 policies includes plans which improve the connectivity between rural areas, new housing growth centres and employment centres.
12. To reduce death and injury	Polices have generally resulted in significant positive effects. LTP4 introduce policies that will ensure the maintenance of roads, encouragement of behavioural changes, increased rural connectivity and access to more active travel will help to improve the quality of where people live and reduce safety concerns on the roads.
13. To encourage healthy lifestyles and wellbeing	Policies have mainly resulted in significant positive or minor positive effects. LTP4 policies includes plans for sustainable and active travel, which is likely to improve access for all groups inclusively and help support more active lifestyle. Provision of sustainable travel options between rural settlements and onward to urban centres will reduce severance, improve accessibility to jobs, services, healthcare and amenities and will open up access to the countryside.
14. To protect and maintain townscapes and	Policies have predominantly resulted in effects that are either both positive and negative or negligible. Some LTP4 policies may require transport infrastructure

SA Objective	Summary of Effects
landscapes of visual importance, including the rural environment and town centres.	and associated components such as street fixtures, lighting, furniture, signage, and maintenance equipment, can have a major visual impact, which has the potential to erode the townscape and landscape character. Some policies may result in increased connectivity across Norfolk enabling more people being able to access and explore the county's landscape. This brings the potential for positive development. which could present opportunities to generate activity and vitality and help define the character of development distinctive to the surrounding areas and Norfolk.
15. To minimise the effects of noise in the identified NIAs	Policies have result in a mixture of minor and significant positive and both negative and positive effects. The introduction of more sustainable and active travel options are likely to reduce the level of noise from the transport network. Some policies however may result, in greater road capacity resulting in more cars on the roads, which could increase levels of noise in the county's NIA.

6.3.4. A matrix approach has been used for the assessment which will use the significance identified in Table 6.2 below. Table 6.3 below provides an overview on the performance of the LTP4 objectives against each SA objective, using the significance provided in Table 6.2 below.

Table 6.2 –Significance of Effects

Key	Significance
++	Likely significant positive effect
+	Likely minor positive effect
0	Negligible or no effect
-	Likely Minor negative effect
- -	Likely significant negative effect
?	The effect is uncertain
+/-	The effect is likely to be both positive and negative

Table 6.3 – LTP4 Policy and Policy Alternative Assessment Overview

Strategic Objectives	Type	SA Objectives														
		SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
1. Embracing the Future	Policies	+	++	0	++	+	+	+	+	++	+	++	++	0	++	++
	Alternatives	-	?	-	--	?	?	?	-	--	?	?	?	-	?	?
2. Delivering a sustainable Norfolk	Policies	+/-	++	0	++	++	++	+	+/-	+	++	+	++	+/-	+	+
	Alternatives	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+	+	+/-	+/-	+/-	+/-	+/-
3. Enhancing Connectivity	Policies	+/-	?	+/-	+	++	++	++	+/-	++	++	+	+	+/-	?	?
	Alternatives	+/-	+/-	0	+/-	0	++	++	0	+	++	0	+/-	0	+/-	+/-
4. Enhancing Norfolk's Quality of Life	Policies	+	++	0	++	++	+	+	0	+	+	+	+	0	+	+
	Alternatives	+	+/-	0	?	++	+	++	+/-	+	+	+	+	0	+/-	+/-
5. Increasing Accessibility	Policies	0	+	0	+	+	++	++	0	+	++	++	++	0	?	?
	Alternatives	+/-	+/-	0	+	++	+/-	++	+/-	+	+	+	+	+/-	+/-	+/-
6. Improving Transport Safety	Policies	0	+	0	0	++	+	0	0	0	0	++	++	0	0	0
	Alternatives	0	?	0	0	--	-	0	0	0	0	--	+/-	0	?	?
7. A Well Managed and Maintained Transport Network	Policies	+/-	++	+	++	++	+	++	+/-	+	++	+	+	+/-	+	+
	Alternatives	-	-	+	+/-	+/-	+/-	0	-	+	+	+/-	?	-	+/-	+/-

6.4 HEALTH IMPACT ASSESSMENT

6.4.1. An assessment of health, population, environment and deprivation was undertaken for the strategic policies. The policies were assessed against the following determinants of health:

- Air quality;
- Noise;
- Physical activity;
- Road safety;
- Economy and employment; and
- Access and accessibility.

6.4.2. The HIA assessment (Appendix E) identified that the proposed transport policies are likely to result in positive health outcomes due to their focus on encouraging active and sustainable transport modes. Improving connectivity between rural areas and urban centres is also likely to result in positive health outcomes, through the reduction in severance, improved accessibility to jobs, services, healthcare, amenities and the environment.

6.4.3. Although predominantly positive, enhancing connectivity and increasing accessibility could result in negative outcomes on health, particularly for air quality, noise and road safety, due a potential increase in the number of vehicles on the road.

6.5 EQUALITIES IMPACT ASSESSMENT

6.5.1. An EqIA was undertaken to assess the strategic policies from an equality perspective (Appendix D). The EqIA has considered the impact that these policies might have on persons, or groups of persons, who share characteristics which are protected under the Equality Act 2010, and also includes others considered to be vulnerable in society such as low-income groups.

6.5.2. Overall, the transport policies should have a positive impact on the general public that are living, working or visiting the Norfolk region by providing a safer, resilient, sustainable and convenient transport opportunities for the region. Some of the most vulnerable groups (those considered within this EqIA and falling within protected characteristic groups) will particularly benefit, specifically:

- People with limited or no access to cars (affecting those in deprived areas, those with limited mobility such as the young, the old, and some with disabilities);
- People with respiratory illnesses, and those more susceptible to poor air quality (particularly younger and older people); and
- People that require access to employment, education, health and/ or other services.

6.5.3. Although positive, there are still possible adverse impacts that would be felt by those with limited mobility who are unable to participate in active travel (such as older people or people with a mobility limiting disability). Therefore, LTP4 should incorporate measures for all levels of mobility so as not to exclude people who are unable to participate in active travel.

6.5.4. There is also the potential for those in deprived and urban areas to be disproportionately affected by measures to reduce air pollution, achieve carbon neutrality and address the effects of climate change.

6.6 CUMULATIVE EFFECTS

6.6.1. The SEA Regulations require that cumulative effects are considered when identifying likely significant effects.

6.6.2. Cumulative effects arise, for instance:

- Where several individual policies have a combined effect on an objective; or
- Where several plans each have insignificant effects but together have a significant effect.

6.6.3. A review of plans and policies identified a number of plans for cumulative effects assessment, in addition to cumulative effects within the Transport Strategy. This is set out in Table 6.4 below.

6.6.4. It should be noted that this list is not exhaustive and cumulative effects arising from individual projects and plans should be revisited as part of a project level assessment. For example, noise, dust and visual have a combined effect which can only be determined at the project level. In addition, current events are leading to rapid short-term changes in the transport sector, as well as creating greater uncertainty about future transport approaches in the medium to longer term (post 2020).

Table 6.4 – Cumulative Effects

Policies, Plans and Schemes	Potential Source of Cumulative Effects
Cambridge – Norwich Tech Corridor	Norwich- Cambridge Corridor- This corridor spans over 100km of the A11 and rail links between the two cities. Significant housing and commercial development is underway along this corridor. Jobs and housing growth are due to be developed in Norwich. There is potential for the expansion to have both positive and negative cumulative impacts on the economy and employment, noise, air quality, health and population, noise, climate change, the historic environment and landscape and townscape.
East-West Rail (Eastern Section)	The delivery of East West Rail is likely to have cumulative impacts on all topics. This is likely to be dependent upon the type, number and scale of future proposals which may occur within close proximity to East West Rail and future associated developments. There is potential for the expansion to have both positive and negative cumulative impacts on the economy, noise, air quality, health, noise and vibration, climate change, greenhouse gases, the water environment, the historic environment and landscape and townscape.
England's Economic Heartland Regional Transport Strategy – draft (2020)	England's Economic Heartland is one of the world's leading economic regions and made up of eleven local authorities including the neighbouring county of Cambridgeshire. The strategy aims to harness the region's economic potential, and improve quality of life, health and well-being and enables the transport system to meet the requirement to be net-zero no later than 2050. All locations for economic and residential development are likely to stimulate transport demand and furthermore improvements in economic transport corridors are likely to stimulate development. An integrated sustainability assessment was undertaken in 2020 which has similar topics to those listed for this SA and identified

Policies, Plans and Schemes	Potential Source of Cumulative Effects
	potential for significant negative effects on landscape and townscape, the historic environment, biodiversity, noise. Significant positive effects were identified in relation to the economy, health air quality and climate change.
Norfolk Minerals and Waste Plan (The existing minerals and waste plan period runs up to the end of 2026; the latest review will extend this plan period up to the end of 2036)	Once adopted, the Norfolk Minerals and Waste Local Plan Review will contain the policies used to determine planning applications for mineral extraction and associated development and waste management facilities in the county. There is potential for the plan to result in positive cumulative effects on employment and the economy, whilst negative effects may be had on noise, air quality, the water environment, the historic environment and landscape and townscape. A SA was undertaken which identified significant positive effects on sustainable use of minerals resources, employment opportunities and economic growth and the restoration and after use of minerals sites. Significant negative effects were identified in relation to biodiversity, landscape and noise.
Neighbouring Local Transport Plans: Suffolk Local Transport Plan- 2011- 2031 Cambridgeshire and Peterborough Local Transport Plan 2011-2031 Lincolnshire Local Transport Plan 2013-2023	Neighbouring county's local transport plans have potential to deliver cross-boundary transport improvements. Development in Suffolk, Cambridgeshire and Lincolnshire have the potential to cause a range of cumulative effects with development in Norfolk. All Plans have similar objectives in providing good connectivity to and within urban areas, reducing the carbon intensity of travel, improving the safety of the road network as well as providing a more sustainable system.
Norfolk Local Transport Strategies: Great Yarmouth Transport Strategy Kings Lyn Transport Strategy Transport for Norwich	Local Transport Strategies enable Local Authorities to plan for transport in their areas. They can identify both strategic policy and implementation plans for delivering this policy. Therefore, like LTP4 they identify policy options for implementing transport improvements, including different modes of transport. They also prioritise a number of areas and schemes for development over the plan period.
Norfolk Local Plans: Breckland Local Plan (2019) Broadland, Norwich and South Norfolk Joint Core Strategy (2014) Great Yarmouth Local Plan – draft (2020) North Norfolk Core Strategy (2012) Broads Local Authority Plan (2019)	Local plans are prepared by the Local Planning Authority and provide a vision for the future of each area and a framework for addressing housing needs and other economic, social and environmental priorities. All locations for economic and residential development are likely to stimulate transport demand and furthermore improvements in economic transport corridors are likely to stimulate development.

6.6.5. The review of plans and policies has identified a number of areas for cumulative effects:

- **Air Quality**: There may be cumulative benefits from transport initiatives in Norfolk by improving air quality, but increased uptake of vehicular traffic (especially in the short term) may worsen air quality in some areas. This could have additional cumulative effects on health and wellbeing, tranquillity and biodiversity.
- **Biodiversity**: There is potential for cumulative loss, damage or fragmentation of statutory and non-statutory wildlife sites and habitats. Although it is assumed that protected species would be mitigated at a project level, there are wider impacts on biodiversity. Net gain over multiple development plans may be difficult to achieve, however, the commitment of East West Rail to biodiversity net gain could set a precedent for future developments across Norfolk. This could have some beneficial cumulative effects on biodiversity.
- **Climate Change**: There may be cumulative benefits from transport and climate resilient initiatives in Norfolk in reducing greenhouse gases, but increased development is also likely to increase transport related greenhouse gas emissions, particularly where this leads to increases in vehicular traffic. Climate change adaptation measures are likely to be specific to each development, but there may be cumulative benefits if implemented county-wide.
- **Soils and Resources**: There is potential for cumulative deterioration in quality of, and loss of soils, including the best and most versatile agricultural land. There would be a cumulative use of resources in construction. The sustainable use of resources and repurposing of existing resources is are likely to be specific to each development, but there may be cumulative benefits if implemented county-wide.
- **Water Resources and Flooding**: There is potential for cumulative increase in surface water runoff and flood risk, and impacts on surface water and groundwater, particularly from physical alteration as a result of development. Flood risk, drainage and water quality measures are likely to be specific to each development, but there may be cumulative benefits if implemented region-wide.
- **Community and access**: There may be potential for cumulative benefits from the integration of multiple transport schemes and policies, which could enable more reliable, accessible public transport, which can be accessed by walking and or cycling.
- **Cultural Heritage and the Historic Environment**: There is potential for both positive and negative, direct and indirect cumulative impacts on nationally and locally designated heritage assets, and their unique settings. This is in addition to cumulative effects on undesignated and unknown assets, which are also important. However, well-designed transport infrastructure could present opportunities to enhance the quality of visual amenity of heritage assets by managing public access to or from the historic features and through the region's towns. This could have additional cumulative benefits for identity, health and wellbeing and placemaking.
- **Economy and employment**: There are likely to be significant cumulative economic benefits across the region if East West Rail, the Cambridge – Norwich Tech Corridor and schemes from LTP4, EEH Regional Transport Strategy and other local transport plans were all to come forward. These are likely to result in greater connectivity, more jobs (and greater access to them) and increased tourism into the region.
- **Health and Population**: There may be cumulative effects, both positive and negative (depending on schemes implemented), from multiple transport schemes on health outcomes related to social isolation, physical inactivity and obesity. There may also be cumulative effects on health relating to air quality and noise.

- **Landscape and Townscape**: There is potential for both positive and negative, direct and indirect cumulative impacts on landscapes and townscapes, including their settings. However, developments present opportunities for positive placemaking, by generating activity and vitality, helping to define the character of developments distinctive to the surrounding areas and the wider region. Increased connectivity provided by all future developments could result in more people being able to access and explore the county's unique landscape and townscape, with additional cumulative benefits on identity, health and wellbeing.
- **Noise**: There are likely to be cumulative effects arising from noise of increased development, particularly transport related development such as road and rail, with cumulative effects on health and wellbeing, tranquillity and biodiversity.

6.7 MITIGATION AND ENHANCEMENTS

6.7.1. Mitigation of significant negative effects of the plan and enhancement of positive effects are a key purpose of SA. The SEA Regulations require that mitigation measures are considered to prevent, reduce or offset any significant adverse effects on the environment of implementing the plan. The measures are known as 'mitigation' measures. Mitigation measures include both proactive avoidance of adverse effects and actions taken after potential effects are identified.

6.7.2. The mitigation measures proposed in Table 6.5 are designed to avoid or reduce the effects identified as potentially negative through the policy assessments on the SA Objectives. The table also includes enhancement measures, that aim to optimise positive impacts and enhance sustainability.

6.7.3. These mitigation measures should be used to inform the subsequent development of specific schemes in line with the strategic objectives and policies.

Table 6.5 – Proposed Mitigation

SA Topic	Mitigation/Enhancement	Mechanism
Health and Population Community and Access Economy and employment	Ensure the needs and aspirations of groups with protected characteristics are considered in delivering transport solutions, in addition, including those from low income households.	Strategic and project specific EqIA and HIA for digital solutions and projects seeking behavioural change DDA compliance
Climate Change, Soils and Resources and Water Resources and Flooding Economy and employment Health and population	All development must be protected from effects of flooding, pollution and events exacerbated by climate change. Emissions of GHG must also be neutral wherever possible to address climate change.	Embedded into LTP4 policies and narrative Project level design and assessment
Health and Population Community and Access	Streetscape, spacing and infrastructure design for electric infrastructure (charging, parking, signposting) will need to take account of accessibility for all including those with reduced mobility or disability.	Project level design and assessment Project specific EqIA and HIA

SA Topic	Mitigation/Enhancement	Mechanism
Climate Change, Soils and Resources and Water Resources and Flooding Noise	Any form of construction and operation should be undertaken as sustainably as possible, making use of tools and processes, such as circular economy, waste hierarchy, CEEQUAL and BREEAM. Sustainable design and construction techniques should be promoted, such as low energy lighting and low noise road surfaces	Embedded into LTP4 policies and narrative Project level design and assessment
Health and Population Community and Access	Consideration needs to be given to those who may not have the same understanding of or access to emerging technology.	Project level EqIA Use of alternative forms of communication/ information.
Health and Population Community and Access	Community safety, health and equalities should be considered in design, for example, pedestrian networks, including linking new developments into existing infrastructure, integrating modes of transport (both public and active), lighting and other safety design considerations, materials used (contrasting colours, non-slip surfaces), accessibility for all including those with reduced mobility or disability, well-being, affordability of schemes, active travel.	Embedded within Transport Strategy Principles Project level Community Safety Assessment, EqIA, HIA, BNG
Biodiversity and geodiversity	The incorporation of natural features such as tree planting, hedgerows and floral arrangements along walk/cycleways to enhance connections to nature and reduced stress levels, contributing to mental health and wellbeing benefits. Larger infrastructure schemes should incorporate design measures to lessen the impact on biodiversity and ensure biodiversity net gain.	Project levels biodiversity net gain assessment
Landscape and Townscape Cultural Heritage and the Historic Environment	Transport solutions must seek to maximise sustainability benefits from existing landscape, townscape and heritage assets by	Embedded into TS policies and narrative Historic Landscape Characterisation

SA Topic	Mitigation/Enhancement	Mechanism
	valuing them inherently and for the wider services they provide. Promoters and designers should liaise closely with NCC to avoid or minimise negative impacts, such as land take and light pollution, whilst seeking to maximise benefits, such as tranquillity.	Project level design and assessment

6.7.4. Despite mitigation measures some residual uncertain effects have remained which will require monitoring. These are as follows:

- SA2: The potential loss and fragmentation of habitats;
- SA4: The potential loss of the County's best and most valuable agricultural land; and
- SA15: The potential increase in noise within the County's NIAs.

6.8 MONITORING

6.8.1. The SEA Regulations require that monitoring is undertaken on a plan so that the significant effects of implementation can be identified, and remedial action imposed. The purpose of the monitoring is to provide an important measure of the sustainability outcome of the final plan, and to measure the performance of the plan against sustainability objectives and targets. Monitoring is also used to manage uncertainty, improve knowledge, enhance transparency and accountability, and to manage sustainability information.

6.8.2. The aim of monitoring is to check whether the plan is having the significant effects that were predicted in the SA, and to deal with any unforeseen problems. As the assessment of LTP4 policies did not conclude any residual significant effects, monitoring has not been proposed for significant effects, however, Table 6.6 below outlines monitoring for some residual impacts that remain uncertain.

Table 6.6 – Monitoring Proposals

Potential Uncertain effect	What needs to be monitored?
Potential negative effects on biodiversity and geodiversity	The number of biodiversity enhancement schemes implemented through LTP4 schemes
Potential loss of important agricultural land	Total area (ha) of permitted loss of best and most versatile (grades 1-3a) agricultural land
Increase in noise in NIAs	The number of developments located within NIAs Noise assessments submitted with planning applications within NIAs

7 NEXT STEPS

7.1.1. In accordance with the SEA Regulations, the SA Environmental Report must be made available at the same time as the draft plan or programme, as an integral part of the consultation process, and the relationship between the documents clearly indicated.

7.1.2. This SA Report will be issued to consultees in September 2020 for a 6-week consultation period, alongside the draft LTP4 Strategy.

7.1.3. NCC is seeking the views of statutory bodies and other stakeholders on the results of the SA. Consultation at this stage continues to ensure that the SA provides a robust assessment of the Transport Strategy.

7.1.4. A SA Statement will be prepared following the consultation period to summarise how responses to consultation and the SA have influenced the development of the Transport Strategy. The SA Statement will be included in the adopted LTP4 strategy.

Appendix A

DRAFT LTP4 STRATEGY ASSESSMENT

Strategic Objective 1 - Embracing the Future

LTP4 Policies

- We will plan and prepare the county for future changes and challenges to ensure the best for our society, environment and economy.
- The priority for reducing emissions should be to support a shift to more sustainable and more efficient vehicles, including lower carbon technology and cleaner fuels; this includes the facilitation of necessary infrastructure.
- Innovation and new technologies will be embraced in order to respond to the new targets set by the recently adopted environmental policy.
- Behaviour change and interventions that can help to increase the use of sustainable transport will be implemented.

LTP4 Alternatives

- React to future changes and challenges as and when they occur.
- Leave it to the market to provide the infrastructure for low carbon vehicles.
- Implement new technologies only when necessary and the technologies have been tried and tested in multiple other, similar locations.
- Implement infrastructure first instead of behaviour change interventions at an early stage to support growth.

Table A-1 – Embracing the Future - Assessment

Polices and Alternatives	SA Objectives														
Proposed LTP4 Policies	SA1 (Air Quality)	SA2 (Biodiversity/ geodiversity)	SA3 (Carbon emissions)	SA4 (Water, soils and Minerals)	SA5 (Climate Change)	SA6 (quality and safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and Wellbeing)	SA14 (Landscape/ Townscape)	SA15 (Noise)
	++	+	++	0	++	+	+	+	+	++	+	++	++	0	++

Polices and Alternatives	SA Objectives
	Policies work towards reducing transport emissions, through decarbonisation of the transport, implementation of new technology and encouraging the use of sustainable transport modes. This is likely to have significant positive effects on the County's air quality and help to build resilience to climate change. Advancements in technology have the potential to improve noise pollution, for example, traffic management measures (such as speed cameras, and smart phone apps to alert road users where there is traffic on the road so they can avoid those route) to reduce congestion on the network can reduce idling cars, and therefore improve local noise pollution. Additionally, development of electric vehicles are likely to result in a reduction in noise from the transport network. Economic benefits of prioritising efficient vehicles could be sought through investment in innovative technology development, and development of sustainable supply chains. This could also help to increase further employment within the region, the longevity of which could be made more secure by a transport network that is future ready. Increasing the use of sustainable transport modes through behavioural changes could see greater opportunities for active travel which is likely to improve access for all groups inclusively and help support more active lifestyle. People are more likely to choose active travel for journeys if there are suitable networks to travel on. The addition of new technologies could result in enhanced safety measures, such as pedestrian and cyclist autonomous emergency braking and speed limiting technology could result in significant positive effects on the safety of pedestrians, cyclists and road users. Behavioural changes to increase the use of sustainable travel modes will lead to a reduction in the number of cars on the road, which is likely to help reduce levels of congestion and accidents and near misses. There are potential issues with obstructive charging facilities (e.g. trailing cables), which can put pedestrians, particularly people with disabilities or pushchairs, at risk. Making preparations the county for future changes and challenges to ensure the best for society, environment and economy is likely to help build early resilience and provide practical solutions to tackling the challenge of climate change. Given the vulnerability of some areas and communities in Norfolk (particularly along the coast) and the cross cutting nature of climate change, making preparations for society, environment and the economy is likely to have positive effects across all SA topics. Encouragement of sustainable transport modes and support for lower carbon vehicles will decreases air quality emissions (such as the deposition of nitrogen from NO2/NOx) which may indirectly benefit the biodiversity, geodiversity and heritage assets in Norfolk.

	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
	?	-	?	-	--	?	?	?	-	--	?	?	?	-	?

Polices and Alternatives	SA Objectives
Alternative LTP4 Policies	Without forward planning and only reacting to future changes as and when they present themselves, will put the population of Norfolk at risk, particularly with regards to the potential impacts of climate change. The adverse impacts of climate change, such as extreme heat, flooding and water scarcity, will result in costs to businesses, households and the environment, and solutions to the problems they pose should be developed at a local level. Although climate change is a major threat, some of the adaption measures required to tackle it can often offer major economic opportunities, with the potential for significant job creation. Without forward planning, the County could be placed at an economic disadvantage, become less competitive and less attractive to inward investments. Taking a back seat and leaving the provision of low carbon vehicles and the trialling new technologies down to the market, could also result in Norfolk missing out on key opportunities for investments. These approaches may not be tailored to the County's needs and could lead to negative effects on landscape, cultural heritage, biodiversity soils and geodiversity. Low carbon vehicles and new transport technology have potential for positive effects on air and noise pollution, through lower carbon and GHG emissions, quieter vehicles and recued levels of congestion. However, without Norfolk County Council taking a leading role on this, there's no guarantee on the how many schemes will be implemented and the overall effectiveness on air and noise pollution and carbon emissions. Future changes are not just limited to climate change, the population in Norfolk continues to grow and is expected to be over 1 million by 2036. In addition to this the population is ageing. The growth in population will increase the volume of traffic on the road and place increased pressure and demand on the transport network. Failing to adapt to these projected changes early could result in a transport network that is unable to cope and rising levels of congestion and subsequent air and noise pollution.

Strategic Objective 2 - Delivering a Sustainable Norfolk

LTP4 Proposed Policies

- New development should be well located and connected to maximise use of sustainable and active transport options, making them more attractive places to live, thus supporting a strong sense of the public realm.
- We will seek to ensure that any adverse effects of new development on the transport network are mitigated through developer contributions.
- In air quality management areas development will need to demonstrate its positive contribution to tackling the air quality problem.

LTP 4 Alternative Policies

- New development should be spread evenly across settlements and transport considerations should be added on afterwards. Transport therefore will not a factor in where development should be.
- Contributions from development should be targeted at overcoming vehicular congestion.
- Provision should be made for walking and cycling and public transport.
- Contributions from development should be targeted towards alternatives to travel such as better broadband.
- NCC will object to development in an air quality management area.

Table A-2 – Delivering a Sustainable Norfolk - Assessment

Polices and Alternatives	**SA Objectives**														
Proposed LTP4 Policies	SA1 (Air Quality)	SA2 (Biodiversity/ geodiversity)	SA3 (Carbon emissions)	SA4 (Water, soils and Minerals)	SA5 (Climate Change)	SA6 (quality and safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and Wellbeing)	SA14 (Landscape/ Townscape)	SA15 (Noise)
	++	+/-	++	0	++	++	++	+	+/-	+	++	+	++	+/-	+

<table>
<tr><th>Polices and Alternatives</th><th>SA Objectives</th></tr>
<tr><td></td><td>Ensuring that new developments are well located and connected to sustainable and active travel modes, is likely to improve access for all groups inclusively and help support more active lifestyle. People are more likely to choose active travel for journeys if there are suitable networks to travel on. Well-connected developments will reduce severance, improve accessibility to jobs, services, healthcare and amenities and improve safety.

Minimising the need for travel will help to reduce air quality emissions (such as NO2, NOx, PM10) and noise pollution, resulting in a beneficial impact to health, particularly for those more vulnerable members of the population. Ensuring that developments within AQMAs will make a positive contribution to air quality issues will have a significant positive effect on the county's air quality as well as helping to adapt to climate change. Reduced levels of noise and air pollution will also have beneficial effects on biodiversity, landscape and the historic environment from reduced levels of disturbance and increased levels of tranquillity.

Contributions to the transport network from new developments could help improve developments for the people who live there, through greater access to services and facilities, reduce levels of congestion, improved safety and provision of active travel opportunities. However, there is potential for some contributions and their infrastructure requirements to indirectly have a negative impact on biodiversity, landscape and heritage if land take is required in vulnerable areas (e.g. junction upgrades).</td></tr>
<tr><td rowspan="3">Alternative LTP4 Policies</td><td>
<table>
<tr><td>SA1</td><td>SA2</td><td>SA3</td><td>SA4</td><td>SA5</td><td>SA6</td><td>SA7</td><td>SA8</td><td>SA9</td><td>SA10</td><td>SA11</td><td>SA12</td><td>SA13</td><td>SA14</td><td>SA15</td></tr>
<tr><td>+/-</td><td>+/-</td><td>+/-</td><td>+/-</td><td>+/-</td><td>+/-</td><td>+/-</td><td>+/-</td><td>+/-</td><td>+</td><td>+</td><td>+/-</td><td>+/-</td><td>+/-</td><td>+/-</td></tr>
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</td></tr>
<tr><td>Policies could give rise to new developments that are poorly located and inaccessible by sustainable transport, which can result in residents relying on private cars and having to undertake long and possibly expensive journeys on congested roads. This can also lead to socioeconomic marginalisation, hinder healthy lifestyles and lead to the degradation of the natural environment. A disjointed approach between transport and other developments, could lead to unnecessary or additional land take, which could result in the disturbance and fragmentation of habitats. This approach may also result in the unsustainable use of resources, the loss of valuable agricultural land and damage soils.

This approach may also give way to insensitive design, that does not take into account landscape and heritage settings. New developments and transport infrastructure projects often require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, which can also have a major visual impact, that has the potential to erode the townscape character and the setting of built heritage.

Reductions in vehicular congestion is likely to lead to reductions in air and noise pollution from the transport network. The promotion of sustainable transport modes is likely to reduce traffic volumes and help encourage a modal shift, also leading to reductions in air and noise pollution from the transport network. Promoting sustainable and active transport modes should help to reduce traffic</td></tr>
</table>

Polices and Alternatives	SA Objectives
	volumes and congestion, which should work towards reduce carbon and GHG emissions. Potential reductions in air and noise pollution are likely to increase levels of tranquillity benefitting biodiversity, landscape and cultural heritage. Provision of cycleways and footpaths between new developments will reduce severance, improve accessibility to jobs, services, healthcare and amenities and could open up access to the countryside. Focusing on active travel modes is likely to have positive effects for community safety. If carefully designed, the provision of off-road routes for cyclists and pedestrians will reduce the number of collisions involving them. Well-designed walkways and cycleways could present opportunities to enhance the quality of visual amenity of the landscape and heritage assets by managing public access to or from the historic features and through the County's towns and villages. Objecting to developments within AQMAs is likely to prevent the exacerbation of pollution within the management areas and help to stay within emissions targets. However, preventing development in AQMAs could result in traffic congestion from new developments elsewhere, exacerbating air pollution at these locations. Contributions from developments that are focused on alternatives to travel such as broadband, would have environmental benefits such as reducing emission to air, but long term could increase social isolation and would mean that opportunities to encourage healthy lifestyles and wellbeing through active travel are missed.

Strategic Objective 3 - Enhancing Connectivity

LTP4 Proposed Policies

- Our priority will be to improve major road and rail connections between larger places in the county, and to major ports, airports and cities in the rest of the UK.
- Our priority for improved connectivity will be for it to be via clean transport modes
- Improve connectivity between rural areas and services in urban centres.

LTP 4 Alternative Policies

- Encouraging clean growth around micro industries so rural connections are emphasised. Improving local connections to support low carbon industries
- NCC will not focus on the cleanness of transport modes when assessing transport options.
- We will seek to improve connectivity between rural areas and services in urban areas.

Table A-3 – Enhancing Connectivity - Assessment

Polices and Alternatives	SA Objectives														
Proposed LTP4 Policies	SA1 (Air Quality)	SA2 (Biodiversity/ geodiversity)	SA3 (Carbon emissions)	SA4 (Water, soils and Minerals)	SA5 (Climate Change)	SA6 (quality and safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and Wellbeing)	SA14 (Landscape/ Townscape)	SA15 (Noise)
	?	+/-	?	+/-	+	++	++	++	+/-	++	++	+	+	+/-	?
	All policies aim to improve connectivity across the County and beyond, which is likely to help to increase the capacity, connectivity and efficiency of the transportation network to support future population growth across Norfolk. Improved connectivity in rural areas will help rural populations access the public transport network, enabling them to access jobs, facilities and services in urban areas. This could help to improve the places in which people live and work, improving health and wellbeing and the outcomes of future generations. Providing greater connectivity to gateways such as Norwich Airport, Great Yarmouth Port and King's Lynn Port may enable greater economic opportunities for Norfolk, allowing businesses to grow nationally and internationally, including offshore energy. These														

Polices and Alternatives	SA Objectives
	opportunities could also attract more businesses into the region, supporting further economic growth, provide employment opportunities and ensure a strong and sustainable local economy. Greater connectivity may also present growth in tourism opportunities for the County. The promotion of clean transport modes could lead to the delivery of pedestrian and cycle network, in addition to bus services as part of highways infrastructure. The A11, A47 and Long Stratton Bypass currently have congestion issues. Policies aim to focus improving problematic junctions along these roads as well as other junctions on the major road network, to help ease congestion. The improvements to the major road network and introduction of clean transport modes would lead to reductions in air and noise pollution from the transport network. Clean transport modes (such as cycle and footways) help to reduce traffic volumes and congestion, which should work towards reduce carbon and GHG emissions. Improving connectivity to international airports, cities and ports has the potential to have a positive effect by reducing levels of congestion and subsequent GHG emissions associated with travel to and from these places. However, development of new highways infrastructure will result in an increase in GHG emissions through the carbon associated with the construction, maintenance and from the operational use of the transport systems. Improving connectivity to international airports and major ports will help to further support the port and aviation sectors which in themselves are key sources of air, noise and GHG pollution. Improving connectivity through clean transport modes will decrease air quality emissions (such as the deposition of nitrogen from NO2/NOx) which may indirectly benefit the biodiversity and geodiversity in Norfolk. However, new highway infrastructure could result in the disturbance and loss of biodiversity during construction and operation, due to their scale and linear nature. There are likely to be opportunities for mitigation, compensation and net gain, although this would take time to establish. New transport infrastructure projects often require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, that can have a major visual impact, detracting from heritage assets and their unique setting, if designed inappropriately. Insensitive design and large land take could result in negative effects on the region's designated heritage assets. Landscapes and tranquillity are under pressure from development throughout the region. Public transport enhancements can take cars off the road, reducing congestion and having a potential benefit on the tranquillity. However, the promotion of development of proposals in rural settings may also have negative effects on landscapes and townscape. The potential to increase connectivity across the county and could result in more people being access and explore the region's unique landscape and townscape. This could present opportunities to generate activity and vitality and help define the character of development distinctive to the surrounding areas and the wider region. This in turn could have beneficial on the tourism and the economy. The upgrades to junctions on the A11, dualling of the A47 and other upgrades to the major road network, are likely to result in the use of raw materials. However, opportunities may exist, where practicable, for works to reuse existing materials and therefore promote waste minimisation and sustainable use of materials. There is also potential for construction to result in modifications and discharges to local watercourses. Construction of new routes, could result in the loss of land, including 'Best and Most Versatile' agricultural land,

<table>
<tr><td>Polices and Alternatives</td><td colspan="15">SA Objectives</td></tr>
<tr><td></td><td colspan="15">however, 'clean transport' modes may result in less intensive developments with less resources and lower levels of waste generation, particularly if these are focused on non-motorised modes.</td></tr>
<tr><td rowspan="3">Alternative LTP4 Policies</td><td>SA1</td><td>SA2</td><td>SA3</td><td>SA4</td><td>SA5</td><td>SA6</td><td>SA7</td><td>SA8</td><td>SA9</td><td>SA10</td><td>SA11</td><td>SA12</td><td>SA13</td><td>SA14</td><td>SA15</td></tr>
<tr><td>+/-</td><td>+/-</td><td>+/-</td><td>0</td><td>+/-</td><td>0</td><td>++</td><td>++</td><td>0</td><td>+</td><td>++</td><td>0</td><td>+/-</td><td>0</td><td>+/-</td></tr>
<tr><td colspan="15">Policies that aim to improve connectivity across the County and beyond, which is likely to help to increase the capacity, connectivity and efficiency of the transportation network to support future population growth within the county’s rural areas. Improved connectivity in rural areas will help rural populations access the public transport network, however, the need for connectivity with urban areas would better enable them to access jobs, facilities and services.

Connectivity to low carbon industries, such as micro-industries would lead to growth in these sectors as well as wellbeing of those working in them. Achieving clean growth can also help work towards increased productivity and job availability, whilst helping to build climate resilience for the future. Focussing on rural areas will also help to improve economic prosperity for rural communities, helping rural communities better reach rural jobs.

Interventions to improve rural connectivity such as the introduction of new transport infrastructure to the rural environment has the potential for adverse impact on noise and air pollution (and subsequently human health and wellbeing), however, this would be highly dependent upon the types of proposals that come forward. If greater connectivity was provided by public transport, or the introduction of footpaths and cycleways, there are opportunities for traffic noise and air pollution to be significantly reduced. However, the introduction of large mass transit or if improved local connectivity revolves around motorised transport (e.g. road upgrades and dualling) there's potential that that localised noise and air pollution could increase.

Transport is one of the largest contributors to GHGs in Norfolk, therefore, not focussing on clean transport is likely to continue this trend and potentially worsen the current baseline as the County's population continues to grow. This approach is also unlikely to provide climate change adaptation and resilience and could put more of the population at risk. Improved connectivity is likely to help to reduce congestion and journey times in rural areas which could help to reduce GHGs, however if development of infrastructure is required, this will result in an increase in GHG emissions through the carbon associated with the construction, maintenance and from the operational use of the transport systems. Encouraging clean growth around micro industries will help to grow to grown Norfolk's economy whilst reducing GHG emissions.</td></tr>
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Strategic Objective 4 – Enhancing Norfolk's Quality of Life

LTP4 Policies:

- Action will be taken to improve air quality in urban centres, including investigating vehicular restrictions or charging, in order for air quality to fall below the threshold for Air Quality Management Areas.
- We will change our transport network to work towards carbon neutrality by 2030.
- Quality of place will be improved through improving the transport network.

LTP Alternatives:

- Improve local air quality and monitor outside schools, extending the reach beyond Air Quality Management Areas.
- An alternative where NCC do not tackle carbon neutrality is not an option due to environmental policy targets.
- NCC will concentrate funding on making transport networks functional.

Table A-4 – Enhancing Norfolk's Quality of Life - Assessment

Polices and Alternatives	SA Objectives														
Proposed LTP4 Policies	SA1 (Air Quality)	SA2 (Biodiversity/ geodiversity)	SA3 (Carbon emissions)	SA4 (Water, soils and Minerals)	SA5 (Climate Change)	SA6 (quality and safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and Wellbeing)	SA14 (Landscape/ Townscape)	SA15 (Noise)
	++	+	++	0	++	++	+	+	0	+	+	+	+	0	+

<table>
<tr><th>Polices and Alternatives</th><th colspan="15">SA Objectives</th></tr>
<tr><td></td><td colspan="15">Exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung cancer, leading to reduced life expectancy, therefore, taking action to improve air quality is likely to have significant benefits for air health and wellbeing of the County's residents, especially those more vulnerable members of the population. Improving the quality of places through transport planning and carbon neutrality could include the incorporation of footpaths, cycleways and green spaces which may help the County's populations to incorporate physical activity into their daily journeys, improving productivity and reducing ill health.

Working towards improving carbon neutrality could result in the uptake of more sustainable transport modes, which is likely to reduce traffic volumes and help encourage a modal shift, leading to reductions in carbon and GHG emissions from the transport network. Better transport planning and the creation of better places can also provide practical solutions for reducing GHG emission and mitigating and adapting to the challenge of climate change. Despite this, improving the quality of places through the transport network may result in the new infrastructure or upgrading and repurposing existing infrastructure, which will have embodied carbon.

Air pollution is a key factor in the degradation of surfaces of historical buildings and monuments and the impact of pollutants emitted into the atmosphere on materials is significant and often irreversible. Action to improve air quality in urban centres has the potential in directly benefit the historic environment. The creation of better places could present an opportunity to enhance the historic environment particularly in the setting of heritage features through improved design and landscaping. However, there is also potential for negative impact on heritage assets; new facilities to improve the transport network may also erode the character and the setting of heritage assets.</td></tr>
<tr><td rowspan="3">Alternative LTP4 Policies</td><td>SA1</td><td>SA2</td><td>SA3</td><td>SA4</td><td>SA5</td><td>SA6</td><td>SA7</td><td>SA8</td><td>SA9</td><td>SA10</td><td>SA11</td><td>SA12</td><td>SA13</td><td>SA14</td><td>SA15</td></tr>
<tr><td>?</td><td>+</td><td>+/-</td><td>0</td><td>?</td><td>++</td><td>+</td><td>++</td><td>+/-</td><td>+</td><td>+</td><td>+</td><td>+</td><td>0</td><td>+/-</td></tr>
<tr><td colspan="15">Focusing on increasing functionality of the transport network could help to increase the capacity, connectivity and efficiency of the transportation network to support future population growth across the county. Improved connectivity in rural areas will help rural populations access the public transport network, enabling them to access jobs, facilities and services. This could help to improve the places in which people live and work, improving health and wellbeing.

However, focussing on the functionality of the transport system has resulted in some uncertainties. A functional network could help to reduce congestion thereby improving air quality; however, road capacity may increase which in time would allow greater traffic flows, increasing air pollution, noise and GHG emissions, making carbon emissions targets more challenging. There are numerous AQMAs and NIAs within Norfolk which could be affected by highway improvements, both beneficially (e.g. if congestion is relieved and low noise surfacing is used) and negatively (e.g. through increased traffic and an increase in heavy vehicles).</td></tr>
</table>

Polices and Alternatives	SA Objectives
	Improvements to air quality and decreases in emissions from sustainable transport modes may indirectly benefit biodiversity. Encouragement of sustainable transport modes may reduce the number of single occupancy journeys which could lessen the impact of disturbance on the County's biodiversity, through decrease traffic noise and levels of air pollution. There are a number of AQMAs around Norfolk that are designated as a result of air pollution from transport. Exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung cancer, leading to reduced life expectancy, therefore, taking action to improve air quality is likely to have significant benefits for the health and wellbeing of the County's residents, especially those more vulnerable members of the population. Air pollution is a key factor in the degradation of surfaces of historical buildings and monuments and the impact of pollutants emitted into the atmosphere on materials is significant and often irreversible. Action to improve air quality in urban centres has the potential in directly benefit the historic environment. However, increasing the functionality of the transport network may result in a negative impact on heritage assets through eroding the character and the setting of built heritage and there may be a particular impact on, buried archaeology, historic landscapes and a potential impact on the setting of other historic assets such as scheduled monuments, listed buildings, historic parks and gardens, conservation areas and undesignated assets.

Strategic Objective 5 - Increasing Accessibility

LTP4 Policies

- Agencies in Norfolk should tackle accessibility problems in partnership, targeting those communities most in need. Accessibility should be planned as part of service delivery.
- Priority on some routes should be given to sustainable and active modes of transport
- We will work towards providing a network where transport is accessible to all.

LTP4 Alternatives

- Accessibility for new developments could be planned from the planning applications stage.
- Efficient movement to town and urban centres should be enabled for all modes. Priority should be on achieving a balance between access for car drivers, including the availability of car parking, and the attractiveness of sustainable travel options like walking, cycling and public transport.
- Provide dedicated facilities and dedicated space for people with disabilities and different types of users.

Table A-5 – Increasing Accessibility - Assessment

Polices and Alternatives	**SA Objectives**														
Proposed LTP4 Policies	SA1 (Air Quality)	SA2 (Biodiversity/ geodiversity)	SA3 (Carbon emissions)	SA4 (Water, soils and Minerals)	SA5 (Climate Change)	SA6 (quality and safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and Wellbeing)	SA14 (Landscape/ Townscape)	SA15 (Noise)
	?	0	+	0	+	++	++	++	0	+	++	++	++	0	?
	Improving connectivity is likely to help to increase the capacity, connectivity and efficiency of the transportation network to support future population growth across Norfolk. With an ageing population ensuring access for those with disabilities will help to provide an inclusive transport network which will be suitable for all users now and in the future. Improved connectivity in rural areas will help rural populations access the public transport network, enabling them to access jobs, employment centres, facilities and services. This could help to improve the places in which people live and work, improving health and wellbeing and outcomes of future generations.														

<table>
<tr><th>Polices and Alternatives</th><th>SA Objectives</th></tr>
<tr><td></td><td>Providing accessible and reliable travel option for all users, could ensure that providing a safe transport network is given greater consideration. Focusing on active travel modes is likely to have positive effects for community safety. If carefully designed, the provision of off-road routes for cyclists and pedestrians will reduce the number of collisions involving them. In addition, focusing on sustainable and active travel is likely to improve access for all groups inclusively and help support more active lifestyle. People are more likely to choose active travel for journeys if there are suitable networks to travel on.

The prioritisation of sustainable transport modes is likely to reduce traffic volumes and help encourage a modal shift, leading to reductions in air and noise pollution from the transport network. Promoting sustainable and active transport modes should help to reduce traffic volumes and congestion, which should work towards reduce carbon and GHG emissions. However, improving rural connectivity may enable greater capacity and, therefore, allow for more road users which could increase air and noise pollution from vehicles. Policies may also result in the need for new infrastructure or upgrades to existing infrastructure, will have embodied carbon.</td></tr>
<tr><td rowspan="3">Alternative LTP4 Policies</td><td><table>
<tr><td>SA1</td><td>SA2</td><td>SA3</td><td>SA4</td><td>SA5</td><td>SA6</td><td>SA7</td><td>SA8</td><td>SA9</td><td>SA10</td><td>SA11</td><td>SA12</td><td>SA13</td><td>SA14</td><td>SA15</td></tr>
<tr><td>+/-</td><td>+/-</td><td>+/-</td><td>0</td><td>+</td><td>+</td><td>+/-</td><td>++</td><td>+/-</td><td>+</td><td>+</td><td>+</td><td>+</td><td>+/-</td><td>+/-</td></tr>
</table></td></tr>
<tr><td>Ensuring efficient movements to and from town centres could ensure that providing a safe transport network is given greater consideration. Making active travel modes an attractive option is likely to improve access for all groups inclusively and help support more active lifestyle; people are more likely to choose active travel for journeys if there are suitable networks to travel on. However, providing that balance between car users and sustainable transport users may incur conflicts between road users. Providing dedicated facilities and spaces for people with disabilities could lead to discrimination, if these spaces remain segregated from other users.

Improving accessibility for new developments is likely to help to create more sustainable places whilst helping to increase the capacity, connectivity and efficiency of the transportation network to support future population growth. This will help populations access the public transport network, enabling them to access jobs, employment centres, facilities and services. This in turn will improve the places in which people live and work, improving health and wellbeing and outcomes of future generations. However, interventions for new developments rely on developers to assess accessibility which may not necessarily reflect residents' needs.

Making sustainable transport modes more attractive could help to reduce traffic volumes and encourage a modal shift, leading to reductions in air pollution, noise pollution, carbon and GHG emissions from the transport network. However, improving efficient movements to towns and urban centres and providing greater availability of car parking, may enable greater capacity and, therefore, allow for more road users which could increase air and noise pollution from vehicles. Policies may also result in the need for new infrastructure or upgrades to existing infrastructure, will have embodied carbon.

Encouragement of sustainable transport modes may reduce the number of single occupancy journeys which could lessen the impact of disturbance on the County's biodiversity, through decrease traffic noise and levels of air pollution. However, improving efficient</td></tr>
</table>

Polices and Alternatives	SA Objectives
	movements to towns and urban centres and providing greater availability of car parking, may result in the disturbance and loss of biodiversity as part of their construction and operation through land take. Early involvement in planning for new developments could present opportunities for new developments to better consider biodiversity and work towards net gain. Policy alternatives could result in the creation of new footpaths and cycleways, which are unlikely to have a negative effect on designated heritage sites or their settings, provided new routes and infrastructure are designed appropriately to its setting. Well-designed walkways and cycleways could present opportunities to enhance the quality of visual amenity of the landscape and heritage assets by managing public access to or from the historic features and through the County's towns. Potential reductions in air and noise pollution are likely to increase levels of tranquillity and slow/prevent the degradation of surfaces of historical buildings and monuments from air pollutants. Conversely, improving efficient movements to towns and urban centres, providing greater availability of car parking and providing dedicated facilities, may result in land take, new infrastructure and other associated components, which can also have a visual impact. This has the potential to erode the townscape character and the setting of built heritage.

Strategic Objective 6 - Improving Transport Safety

LTP4 Polices

- The number of people killed and serious injured on the road network will be reduced by adopting a safe systems approach and working with partners to achieve this vision.

LTP4 Alternatives

- Focus on improving the skills and knowledge of vulnerable road users, relying on their capability to manage each variable and risk on the road.
- Make transport network appear safer to make it more comfortable for different road users.

Table A-6 – Improving Transport Safety - Assessment

Polices and Alternatives	**SA Objectives**														
Proposed LTP4 Policies	SA1 (Air Quality)	SA2 (Biodiversity/ geodiversity)	SA3 (Carbon emissions)	SA4 (Water, soils and Minerals)	SA5 (Climate Change)	SA6 (quality and safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and Wellbeing)	SA14 (Landscape/ Townscape)	SA15 (Noise)
	+	0	+	0	0	++	+	0	0	0	0	++	++	0	0
	Adopting a safe systems approach aims to ensure that lives will not be compromised by the need to travel. Ensuring a safer transport network, may reduce levels of fear and intimidation and encourage users to adopt more sustainable travel modes such as walking and cycling, which will have additional health benefits for the County's population. The introduction of reduced speeds, road analysis and introduction of sustainable travel options may also tackle other problems associated with road traffic, such as congestion, noise and air pollution.														
	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
	?	0	?	0	0	--	-	0	0	0	0	--	+/-	0	?

Polices and Alternatives	SA Objectives
Alternative LTP4 Policies	Improving the skills of and knowledge of road users may help to support confidence and positive behavioural changes of drivers. The population in Norfolk is ageing and whilst older people are not necessarily more likely to be involved in road traffic collisions, they are more at risk of injury in the event of any collisions. Therefore, focusing solely on improving the skills of vulnerable road users may not necessarily increase road safety, and could lead to discrimination. Although drivers should be able to deal with a number of risks on the roads, there still may be risks beyond the control drivers (e.g. extreme weather, the actions of other drivers, poor roads) that require greater intervention. Making the transport network 'appear safe' may help reduce levels of fear and intimidation and encourage users to adopt more sustainable travel modes such as walking and cycling, which will have additional health benefits for the County's population. However, making it 'appear safe' doesn't necessarily ensure that roads are safe for all users and could put more people in danger, in particular those more elderly and vulnerable members of the population. This works against the SA12 objective to 'reduce death and injury'. Tackling areas such as engine idling, moderating the rates of acceleration and deceleration and keeping to an optimum speed may help reduce the impact of driving on air pollution noise and human health. However, the focus on vulnerable road users, may not necessarily include drivers or even cover the environmental impacts of driving.

Strategic Objective 7 - A Well Managed and Maintained Transport Network

LTP4 Proposed Policies

- To bring about an improvement in the condition of Norfolk's highway network, maintaining the current asset should be a key priority for funding. Works should be targeted to ensure A and urban / inter-urban routes are in good condition.
- In market towns and urban areas, we will focus maintenance of routes for sustainable transport used by walkers and cyclists.
- We will focus on measures to improve public transport measures in some urban areas, and elsewhere we will focus on reliable journeys for all users.
- The likely impacts of climate change on the highway network should be addressed, with a risk-based approach taken to determining the priority for action.
- New and innovative technology to collect data about the network, inform decisions, assess where to target funding on the network and share information with the public will be embraced.

LTP 4 Alternative Policies

- Increase the coverage of funding to all of the network, maintaining it to the same standard, including rural roads.
- Focus maintenance on carriageways to make conditions comfortable for cars.
- Ensure priority for cars.
- NCC will take a demand responsive approach to climate change intervention.
- Network resilience should form a key part of the Transport Asset Management Plan to ensure there is preparation for future impacts.
- Continue using existing data analytics to assess where to target funding on the network.

Table A-7 – A Well Managed and Maintained Transport Network - Assessment

Polices and Alternatives	SA Objectives														
Proposed LTP4 Policies	SA1 (Air Quality)	SA2 (Biodiversity/ geodiversity)	SA3 (Carbon emissions)	SA4 (Water, soils and Minerals)	SA5 (Climate Change)	SA6 (quality and safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and Wellbeing)	SA14 (Landscape/ Townscape)	SA15 (Noise)
	+	+/-	++	+	++	++	+	++	+/-	+	++	+	+	+/-	+
	Poor road surfaces are linked to higher levels of particle emissions, so improvements to the highway network could result in less abrasion and therefore a reduction in particulate emissions and improve noise pollution. Improvements to road surfaces also has the potential to reduce levels of noise pollution from the road network. Better maintenance and funding of the County's roads is likely to lead to greater levels of safety, reduced levels of stress and improved driver experience. Reduced air quality emissions (such as NO2, NOx, PM10), will also result in a beneficial impact to health, particularly for those more vulnerable members of the population. Innovative technology which collects data about the County's highway network could help to improve safety across the entire transport network, keeping users better informed. Maintenance of sustainable transport modes will encourage use and decrease air quality emissions (such as the deposition of nitrogen from NO2/NOx) which may indirectly benefit the biodiversity and geodiversity in Norfolk. Greater uptake in sustainable transport modes may reduce the number of single occupancy journeys which could lessen the impact of disturbance on the County's biodiversity, through decrease traffic noise and levels of air pollution. However, maintenance work has potential to cause temporary disruption to the habitats and species from noise and vibration and temporary reductions in air quality. Accessible and reliable travel option for all users, could ensure that providing a safe transport network is given greater consideration. Focusing on the maintenance of sustainable and active travel modes is likely to have positive effects for community safety and help support more active lifestyle. People are more likely to choose active travel for journeys if there are suitable networks to travel on. Provision of cycle/footpaths between rural settlements and onward to urban centres will reduce severance, improve accessibility to jobs, services, healthcare and amenities and will open up access to the countryside.														

<table>
<tr><th>Polices and Alternatives</th><th colspan="15">SA Objectives</th></tr>
<tr><td></td><td colspan="15">Improvements to existing roads should help improve the longevity of the County's highway network and could prevent the future need for new roads and build greater resilience to damage (e.g. potholes) which require continual maintenance. Repurposing and maintaining existing infrastructure, is likely to minimise the use of resources.

New technologies may have embodied carbon; however, it is likely that when these technologies are applied at scale, they will have the overall effect of reducing carbon emissions. Enabling innovation in the transport sector to progress quicker has the potential to help improve technologies and approach to deal with resilience to climate change. The use of new technologies may require access to and knowledge of how to use smart phones and other smart devices. Those elderly members of the population and/or those lower income groups without access to a smart device, may not benefit so greatly, therefore, digital divides could inhibit the widespread implementation of robust and reliable innovative solutions.

Policies will maximise other funding sources for new measures like cycleways, roads or public transport infrastructure, which could result in the introduction of new infrastructure. The addition of new footpaths and cycleways are unlikely to have significant negative effect on the landscape, designated heritage sites or their settings, and well-designed walkways and cycleways could present opportunities to enhance the quality of visual amenity of the landscape and heritage assets by managing public access to or from the historic features and through the County’s towns. However, new transport infrastructure projects can require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, which can also have a major visual impact, that has the potential to erode the townscape character and the setting of built heritage.</td></tr>
<tr><td rowspan="3">Alternative LTP4 Policies</td><td>SA1</td><td>SA2</td><td>SA3</td><td>SA4</td><td>SA5</td><td>SA6</td><td>SA7</td><td>SA8</td><td>SA9</td><td>SA10</td><td>SA11</td><td>SA12</td><td>SA13</td><td>SA14</td><td>SA15</td></tr>
<tr><td>+/-</td><td>-</td><td>-</td><td>+</td><td>+/-</td><td>+/-</td><td>+/-</td><td>0</td><td>-</td><td>+</td><td>+</td><td>+/-</td><td>?</td><td>-</td><td>+/-</td></tr>
<tr><td colspan="15">Policies that support the funding and maintenance of the whole transport network (urban / rural, main roads / minor roads and carriageways / cycleways / pavements) in the county are likely to lead to greater levels of safety, reduced levels of stress and improved driver experience. Nationally there are more deaths on rural roads each year so ensuring the same standards across all the county's roads could lead to improved safety and a reduced number of incidents. However, the priority for cars may not ensure that all users (pedestrians, cyclists and other non-motorised users) are kept safe, which could lead to an increase in levels of fear and intimidation for some users.

Some policies focus on prioritising car usage which is likely to have significant negative effects on noise and air pollution as road capacity may increase which in time would allow greater traffic flows, increasing air pollution, noise and GHG emissions, making carbon emissions targets more challenging. This could have additional negative effects on human health and biodiversity. However, maintenance would reduce congestion thereby improving air quality and noise pollution. Poor road surfaces are linked to higher levels of particle emissions, so improvements to the highway network could result in less abrasion and therefore a reduction in particulate emissions and improve noise pollution.</td></tr>
</table>

Polices and Alternatives	SA Objectives
	Use of roads will largely depend on access to private car, so is unlikely to benefit all sectors of society. Car use does not encourage active travel which is unlikely to benefit health. Improvements may contribute to reducing road congestion; however, improvement could lead to an increased capacity and levels of traffic, resulting in poor air quality and noise impacting on health. Improvements to rural roads are also likely to improve connectivity between rural settlements and onward to urban centres, reducing severance, improving accessibility to jobs, services, healthcare and amenities and will open up access to rural areas of Norfolk. Improvements to existing roads should help improve the longevity of the County's highway network and could prevent the future need for new roads and build greater resilience to damage (e.g. potholes) which require continual maintenance. Repurposing and maintaining existing infrastructure, is likely to minimise the use of resources. The climate generally negatively effects the operation of the transport system. With future trends on climate change predicting more extreme climatic conditions, it is likely that there will be more significant effects in the future. Taking a responsive approach and building resilience could help to limit the impact of climate change on the County's transport network, protecting people and the environment.

Kings Orchard
1 Queen Street
Bristol
BS2 0HQ

wsp.com

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