Norfolk County Council

Norfolk LTP4 Part 2 - Implementation Plan

Sustainability Appraisal Report

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Sustainability Appraisal Report

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Introduction

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 Local Transport Plan (LTP4) Implementation Plan (IP) of their fourth Local Transport Plan Strategy (LTP4). The SA also incorporates the findings of the Health Impact Assessment (HIA) and the Equalities Impact Assessment (EqIA). A Habitats Regulations Assessment (HRA) has also been undertaken.

WSP previously undertook the SA, HIA and EqIA of the LTP4 Strategy (Part 1) in June 2021, which also included the assessment of the King's Lynn, Great Yarmouth and the Transport for Norwich (TfN) Strategies. The IP forms Part 2 of the LTP4.

The LTP4 Strategy was formally adopted in 2021, and the IP sets out proposals for the application of the policies in the adopted strategy. Both the IP and the LTP4 Strategy represent one plan and therefore, should be read in conjunction with one another.

This document comprises the Non-Technical Summary of the Environmental Report produced as part of the SA process.

Strategic Environmental Assessment and Sustainability Appraisal

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.

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.

The Norfolk LTP Implementation Plan

NCC is the Highways Authority and is responsible for maintenance and management of most public roads and rights of way in Norfolk (except the A47 and A11 which are the responsibility of National Highways, formerly Highways England).

NCC has regard to the plan in exercising its functions as a transport authority, using it as a guide for transport investment in Norfolk as well as on the position the Council will take when considering the transport impacts of initiatives considered by other agencies. The IP provides information on the delivery of the strategy and sets out the proposals for the implementation of the policies in the adopted strategy.

The proposals set out within the IP reflect the LTP4's seven strategic objectives which 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.

Full details of these objectives can be found in **Section 3** of the Implementation Plan.

Each of the above objectives has a number of corresponding policies. In total there are 22 policies which have all been allocated a number of proposed actions for the implementation of the policy. There are 140 actions included within the LTP which have been included within **Table 3.1** in Section 3 of the main SA report.

Sustainability Appraisal Methodology

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.

The approach adopted for the SA of both the LTP4 Strategy and IP follows that set out in the Practical Guide to SEA (click here for more detail) and the Planning Practice Guidance to SEA and SA (click here for more details). 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).

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.

This report will cover Stages B-D only. Stage A, Scoping, was undertaken in 2019-2020 for LTP4 Part 1 and its supplementary strategies. Full details of methodology can be found in **Section 4** of the SA Report.

Although both the IP and the LTP4 Strategy represent one plan, as they have been developed individually, the assessment has been undertaken separately. As the two plans are intrinsically linked, the assessment of the IP will take the previous assessment of the LTP4 Strategy into consideration.

The SA Report included the assessment of the following:

- IP actions;
- IP action alternatives;
- Major and significant transport schemes outlined in the IP;
- Alternatives to major and significant transport schemes (‘do nothing’ scenario); and
- Cumulative effects.

Relationship with Other Processes

Habitat Regulations Assessment

Under Article 6 (3) of the EU Habitats Directive as transposed into the UK law by the Habitats Regulations, 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.

The HRA (Screening and Appropriate Assessment) for the draft IP 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.

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

Equalities Assessment

An EqIA considers the impact of a project or policy on persons or groups of persons who share characteristics which are protected under section 4 of the Equality Act 2010 ("protected characteristics") and might also include others considered to be vulnerable within society such as low-income groups. It is an information gathering tool which enables decision makers within public bodies to implement their equality duty under the Equality Act 2010.

An EqIA guides decision makers and designers to:

- Consider the effects of existing and proposed policy or practice on people who share a "protected characteristic"; and
- Identify opportunities to improve equality of opportunity and eliminate discrimination.

The equality duty came into force in April 2011 and covers the following nine Personal Protected Characteristics:

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

The EqIA, a copy of which is included as **Appendix C** of this report, has informed the Draft IP and the SA process.

Health impact Assessment

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.

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.

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 D** to provide further context for the assessment.

Identifying the Sustainability Issues

The SA scoping report was previously undertaken by WSP in 2019 and updated in July 2020, in support of the LTP4 Strategy SA. The SA scoping report presented the sustainability context for Norfolk, including specific information for Great Yarmouth, King's Lynn and Norwich, in support of the supplementary strategies. The report presented baseline information across 13 SA topics and identified key sustainability issues and opportunities, which helped to form the Sustainability Appraisal (SA) Framework.

The full Scoping Report and the identified issues and opportunities can be read online here and in **Section 5** of the Implementation Report.

The SA Framework was agreed through the scoping process for the LTP4 Strategy. The objectives set out below were considered to be appropriate for the LTP as well as the King's

Lynn, Great Yarmouth and TfN Strategies. The objectives have been developed and consulted upon and updated to reflect any comments received.

Table NTS 1 – SA Framework

Topic	SA 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.

Topic	SA Objective
Noise	SA15 - To minimise the effects of noise in the identified NIAs

Assessment Findings

Assessment of Draft IP Actions

The proposed actions have been assessed as a whole package under each of the 22 policies, which sit within the seven key LTP4 objectives.

The assessment of IP actions has been summarised by SA objective below:

- **Objective 1 (Air Quality):** Actions have predominately positive effects on air quality.
- **Objective 2 (Biodiversity and Geodiversity):** Actions have resulted in a mix of minor positive, both positive and negative, and uncertain effects. Significant negative effects were identified for actions associated with Policy 8.
- **Objective 3 (Carbon Emissions):** Most actions have resulted in positive effects. Both positive and negative effects were identified for actions within Policy 8.
- **Objective 4 (Water, Soil and Mineral Quality and Resources):** Actions have resulted in predominantly neutral effects. Uncertain effects were identified for actions that support the delivery of new transport infrastructure. Significant positive effects were identified for actions within policies 11 and 18.
- **Objective 5 (Climate Change):** All actions have resulted in positive effects.
- **Objective 6 (Quality and Safety):** Actions resulted in predominately positive effects. Significant effects were identified for actions that improved the active travel modes and public transport offerings within Norfolk. Both positive and negative effects were identified for actions within policies 2 and 12.
- **Objective 7 (Poverty and Social Exclusion):** Most actions have resulted in positive effects. Significant positive effects were identified for actions that support the modal shift to more sustainable transport modes. Both positive and negative effects have been identified for actions that support the implementation of NCC's EV Strategy. Uncertain effects were identified for actions within Policy 22.
- **Objective 8 (Accessibility and Economic Growth):** All actions have resulted in positive effects.
- **Objective 9 (Historic Environment):** Actions have resulted in mixed effects, with predominately both positive and negative effects or uncertain effects.
- **Objective 10 (Economic Growth):** Actions have either resulted in positive or neutral effects.
- **Objective 11 (Access to employment):** Actions have resulted in predominately significant positive effects.

- **Objective 12 (Reduce death and injury):** Actions have predominately resulted in positive effects. Both positive and negative effects have been identified for actions within policies 2 and 12.
- **Objective 13 (Health and Wellbeing):** All actions have resulted in positive effects.
- **Objective 14 (Townscapes and Landscapes):** Actions have resulted in mix of effects with most being identified as both positive and negative.
- **Objective 15 (Noise):** Actions have predominately resulted in minor positive effects. Significant positive effects were identified for actions that support the transition to more sustainable transport modes and implementation of electric vehicles.

The full assessment of IP actions can be found in **Appendix A** and more detailed assessment summaries can be found in **Section 5.2** of the main SA Report. .

Assessment of Action Alternatives

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

In general, the alternatives have generated a higher number of uncertainties and significant negative effects than the proposed IP actions.

The full assessment of the IP action alternatives can be found in **Appendix A** and have been summarised in **Section 5** of the main SA Report.

Assessment of Major and Significant Transport Schemes

The assessment of Major and Significant Transport Schemes has been summarised by SA objective below:

- **Objective 1 (Air Quality):** The schemes have resulted in predominantly positive and negative effects. Significant positive effects were identified for schemes that help to improve public and active transport offerings within Norfolk Norwich to London Rail, Weavers Way and Green Loop.
- **Objective 2 (Biodiversity and Geodiversity):** The schemes resulted in mixed effects. Significant negative effects were identified for the A140 Long Stratton Bypass, A47 Tilney to East Winch Dualling, and A149 King’s Lynn Bypass due to the requirement of land take in areas with high biodiversity value.
- **Objective 3 (Carbon Emissions):** The schemes resulted in predominately both positive and negative effects. Significant positive effects were identified for schemes that help to improve public and active transport offerings within Norfolk, such as Norwich to London Rail, Weavers Way and Green Loop.
- **Objective 4 (Water, Soil and Mineral Quality and Resources:** The schemes have resulted in mixed effects. Significant negative effects were identified for schemes that required new infrastructure and land take of high-quality agricultural land, such as Norwich Western Link (NWL), A10 West Winch Housing Access Road, and A140 Long Stratton Bypass.
- **Objective 5 (Climate Change):** The schemes have resulted in predominantly uncertain effects where specific detail of the scheme is missing therefore it is unclear what effects, if any, the scheme will result in. Positive effects have been identified for Weavers Way and Green Loop due to supporting the modal shift to more sustainable transport modes.
- **Objective 6 (Quality and Safety):** Most schemes have resulted in positive effects. Significant positive effects were identified for schemes that improved the safety of the road network, such as NWL, or improved the public transport offerings within Norfolk such as Norwich to London Rail.
- **Objective 7 (Poverty and Social Exclusion):** All schemes resulted in positive or neutral effects. Significant positive effects were identified for schemes that improved access to

employment and community facilities from improving the capacity of the road network, such as NWL, or improving the public transport offerings within Norfolk such as Norwich to London Rail.

- **Objective 8 (Accessibility and Economic Growth):** All schemes resulted in positive effects. Significant positive effects were identified for schemes that support the future population growth in Norfolk.
- **Objective 9 (Historic Environment):** Schemes have resulted in mixed effects, with predominantly uncertain effects. Significant negative effects were identified for schemes that physically disturb or change the setting of historic assets, such as A140 Long Stratton Bypass, A47 Tilney to East Winch Dualling, and A47 Acle Straight Dualling.
- **Objective 10 (Economic Growth):** Most schemes have resulted in positive effects. Significant positive effects were identified for schemes that support the future population growth in Norfolk.
- **Objective 11 (Access to employment):** Most schemes have resulted in positive effects. Significant positive effects were identified for schemes that will improve access to employment inclusively.
- **Objective 12 (Reduce death and injury):** Most schemes have resulted in positive effects. Significant positive effects were identified for schemes that improved the safety of the road network.
- **Objective 13 (Health and Wellbeing):** Schemes have resulted in mixed effects. Positive effects were identified for schemes that help to improve the active transport offerings in Norfolk or improve air quality. Negative were identified for those schemes that may increase levels of noise and air pollution at some locations.
- **Objective 14 (Townscapes and Landscapes):** Schemes have resulted in mixed effects with predominantly uncertain effects. Significant negative effects were identified for NWL, A47 Tilney to East Winch Dualling, and A47 Acle Straight Dualling due to land take and introduction of new infrastructure.
- **Objective 15 (Noise):** Schemes have resulted in mixed effects. Significant negative effects were identified for the A47 dualling schemes.

The full assessment of Major and Significant Transport Schemes can be found in **Appendix B** and more detailed assessment summaries can be found in **Section 5** of the main SA Report.

Assessment of Major and Significant Transport Scheme Alternatives

The assessment of alternatives to the major and significant transport scheme, looked at a ‘do nothing’ scenario, where each of the transport schemes would not be delivered.

In general, the alternatives resulted in a higher number of neutral and minor negative effects than the draft Major and Significant Transport Schemes. No positive (significant or minor) effects were identified.

Significant negative effects have been identified for SA10 (economic growth) as a result of not implementing A10 West Winch Housing Access Road, A140 Long Stratton Bypass**,**

A17/A47 Pullover Junction, A47 Tilney to East Winch Dualling and North Walsham Link Road. These may result in Norfolk missing out on opportunities for new economic markets and a chance for businesses to grow, supporting economic growth and a strong sustainable local economy.

The full assessment of Major and Significant Transport Scheme Alternatives can be found in Appendix B and have been summarised in **Section 5** of the main SA Report.

Cumulative Effects

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

Cumulative effects arise, for instance:

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

This section therefore presents the findings of the following:

- How the proposed actions within the IP could cause cumulative effects in association with other plans, policies and projects in the surrounding area (Inter-project effects); and
- Consideration of how different proposed actions within the IP may interact and cause cumulative effects on a receptor (Intra-project effects).

Below summarises the cumulative effects identified for both intra and inter – project effects. Further details can be found in **Section 7** of the SA Report.

Inter-project Effects:

- 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;
- Cumulative benefits from transport initiatives in Norfolk by improving air quality;
- Cumulative benefits from transport and climate resilient initiatives in Norfolk in reducing greenhouse gases especially if implemented county-wide;
- Cumulative benefits (depending on scheme design) on fear of crime and transport related collisions, due to opportunities to improve safety standards on all forms of transport;
- 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;
- 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:

- An 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, biodiversity and historical assets;
- There is potential for cumulative loss, damage or fragmentation of statutory and non-statutory wildlife sites and habitats;
- 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;
- There is potential for cumulative increase in surface water runoff and flood risk, and impacts on surface water and groundwater; and
- There are likely to be cumulative effects arising from noise of increased development.

Intra-project Effects:

- There is potential for actions that support the development of EVs, active travel and sustainable transport to cumulatively help reduce the negative impact of the transport network on air quality;
- The provision of public realm improvements and incorporation of green infrastructure as part of the design will help to build further resilience to climate change;
- The implementation of a combination of actions within the plan are likely to positively improve the safety of the transport network and reduce the number of accidents;
- The combination of actions within the IP are likely to provide positive effects on communities, inclusivity and access;
- The IP proposes a number of initiatives that are likely to cumulatively improve access to employment within the county and beyond. This is likely to attract further inward investment to the county attracting new business and further employment opportunities;
- The introduction of more active travel schemes as part of the Local Cycling and Walking Infrastructure Plans may support a cumulative increase in the number of people undertaking active pursuits for commuting and recreation;
- Actions could also result in a cumulative increase in protection and preservation of townscapes and landscapes.
- There is the potential for negative cumulative effects on the natural environment and biodiversity if multiple large scale transport developments (such as A10 West Winch Housing Access Road, A140 Long Stratton Bypass, Broadland Growth Triangle Link Road) were to come forward;
- If multiple schemes were to come forward, there is likely to be a large cumulative use of resources in construction. Depending upon location of these schemes there is potential for a cumulative loss of valuable agricultural land;
- There is the potential for negative cumulative effects on the historic environment if multiple transport and housing developments were to come forward in close proximity

to heritage assets and Conservation Areas (areas such as Norwich King's Lynn, Cromer and Great Yarmouth);
- There is the potential for negative cumulative effects on townscapes and landscapes if multiple transport and housing developments were to come forward in close proximity to areas with high landscape and townscape values; and
- There are likely to be cumulative effects arising from noise of increased development, particularly transport related development such as road and rail.

Mitigation, Enhancements and Monitoring

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

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

Table 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 Seek the achievement of the biodiversity net gain through application of Natural England's Biodiversity Metric 3.0 (or any updates)
The overall reduction in carbon emissions	Measure carbon emissions from the transport network in NCC annually, to monitor whether the LTP4 is resulting in a net reduction in carbon emissions.
Adaptation to climate change	The number of LTP4 developments that benefit from climate resilient design. The number of instances of flooding on the transport network.
Potential negative effects on the historic environment	The number of historic assets (statutory and non-statutory) negatively affected by LTP4 schemes.

Potential Uncertain effect	What needs to be monitored?
	The number of historic assets (statutory and non-statutory) benefiting from conservation and enhancement measure as a result of LTP4.
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	The number of developments located within NIAs Noise assessments submitted with planning applications within NIAs

Next Steps

This SA Report will be issued to consultees in March 2022 for a 6-week consultation period, alongside the IP.

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 IP.

1 Introduction

1.1 Overview

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 Local Transport Plan (LTP) Implementation Plan (IP) of their fourth Local Transport Plan Strategy (LTP4). The SA also incorporates the findings of the Health Impact Assessment (HIA) and the Equalities Impact Assessment (EqIA). A Habitats Regulations Assessment (HRA) has also been undertaken.

1.1.2 WSP previously undertook the SA, HIA and EqIA of the LTP4 Strategy (Part 1) in June 2021, which also included the assessment of the King's Lynn, Great Yarmouth and the Transport for Norwich (TfN) Strategies. The IP forms Part 2 of the LTP4.

1.1.3 The LTP4 Strategy was formally adopted in 2021, and the IP sets out proposals for the application of the policies in the adopted strategy. Both the IP and the LTP4 Strategy represent one plan and therefore, should be read in conjunction with one another. As these documents have been developed separately, the assessment has been undertaken individually. 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.

1.2 Strategic Environmental Assessment and Sustainability Appraisal

1.2.1 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.

1.2.2 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) (click here for more information).

1.2.3 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) (click here for more information) and the Town and Country Planning (Environmental Impact Assessment) Regulations (click here for more information).

1.2.4 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.

2 Norfolk LTP4 Implementation Plan

2.1 Background

2.1.1 NCC is the Highways Authority and is responsible for maintenance and management of most public roads and rights of way in Norfolk (except the A47 and A11 which are the responsibility of National Highways, formerly Highways England).

2.1.2 The Council has a major influence on provision of other transport services, such as public transport, but is not directly or solely responsible for bus services, ports, airports, rail services or waterways. However, the county Council has significant influence, and this is exercised through working with partners, government, and operators to achieve the best outcomes through these other bodies where possible.

2.1.3 NCC has regard to the plan in exercising its functions as a transport authority, using it as a guide for transport investment in Norfolk as well as on the position the Council will take when considering the transport impacts of initiatives considered by other agencies. The IP provides information on the delivery of the LTP4 strategy and sets out the proposals for the implementation of the policies in the adopted LTP4 strategy.

2.2 Draft Implementation Plan

2.2.1 The proposals set out within the IP reflect the LTP4's seven strategic objectives which 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.

2.2.2 These strategic objectives are described in more detail below:

- **Objective 1 – Embracing the Future**

Rapid advances in technology bring opportunities for us to be more innovative and agile in delivering an efficient and effective transport network. Increased data can help to inform how we manage and maintain the network. At the same time, we 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. We will seek to preserve and enhance our built, natural and historic environment and seek to ensure new development is beneficial to Norfolk's society, economy and environment.

- **Objective 3 – Enhancing Connectivity**

It is our 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 very 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 NCC. We want to improve the health of our residents by improving air quality and encouraging active travel options to improve health and fitness. Our commitment is to work towards zero carbon.

- **Objective 5 - Increasing Accessibility**

Increasing accessibility is important so that everyone has access to the services and opportunities they require. In this plan we aim 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**

We aim to improve the safety of our transport network in order to reduce casualties and help people feel safe when using any mode of transport. NCC aims to overcome the various challenges on the network and to create a network which encourages safe usage of our roads and to protect vulnerable transport users.

- **Objective 7 – A Well Managed and Maintained Transport Network**

NCC is responsible for the management and maintenance of 10,000 kms of Norfolk's roads and 4,000 kms of Norfolk's footpaths and other public rights of way. We will apply new and innovative technology where it will be most effective to improve the management and maintenance of the network to keep Norfolk moving.

2.3 Implementation Plan Actions

2.3.1 Each of the above objectives has a number of corresponding policies. In total there are 22 policies which have all been allocated a number of proposed actions for the implementation of the policy. There are 140 actions included within the IP which have been included within **Table 3-1** below.

2.3.2 The Implementation Plan is not all currently funded. It has been prepared on the basis that the Council is able to secure resources equivalent to or exceeding current funding levels. This will require NCC to successfully secure funding from outside sources.

2.3.3 Some of this will be from successful funding bids for individual projects or programmes or being able to secure funding from partners. Some of the actions will be undertaken within available Council staff resources and will need to be included in future work programmes.

Table 2-1 – Implementation Plan Actions

Objective	Policy	Actions
Objective 1: Embracing the Future	Policy 1	▪ Explore opportunities and funding for trials of new forms of transport and mobility (such as autonomous vehicles, or digitally connected vehicles) ▪ Explore the use of Artificial Intelligence and cognitive thinking to help plan for and manage transport networks. ▪ Review and revise the highway network performance report. Increase the focus on public transport, walking & cycling, electric vehicles and air quality. ▪ Monitor outcomes and indicators in the Asset Management Strategy Performance framework. ▪ Undertake vulnerability assessments of transport networks: Undertake Resilient Network Assessment on core A roads which identify vulnerability ▪ Review Winter Service Policy
Objective 1: Embracing the Future	Policy 2	▪ Explore opportunities to participate in projects and trials to decarbonise the transport system ▪ Explore opportunities for first mile / last mile delivery solutions by for example autonomous or semi-autonomous electric vehicles / pods to reduce the numbers of van related delivery trips ▪ Deliver our Electric Vehicle (EV) strategy. The county Council can play an important role in helping to increase the uptake of electric vehicles by ensuring that the necessary charging infrastructure is in place. ▪ Deliver 'Charge Collective,' a regional pilot looking to promote on-street charge points for electric vehicles. This is being conducted in partnership with our regional electricity network operators UK Power Networks ▪ Take forward energy projects such as Local Area Energy Planning to ensure resilience of local energy networks required for a shift to electric vehicles ▪ Support Beryl Bikes and e-scooter trials and look at opportunities at expanding out the Beryl offer ▪ Develop Local Cycling and Walking Infrastructure Plans (LCWIPs) for countywide coverage ▪ Work with Transport East on bringing forward EV infrastructure ▪ Adopt Parking Standards to (amongst other things) ensure every new home with a parking space has an EV charge point. ▪ Adopt EV parking standards for new workplaces and other new non-residential developments

Objective	Policy	Actions
Objective 1: Embracing the Future	Policy 3	▪ Investigate the delivery of 'Mobility as a Service' solutions. Such solutions could range from car-sharing to phone apps that allow customers to make easy, multi-modal journeys. The customer simply enters details of the journey they wish to make, and the app plans the journey and makes a single charge to the customer ▪ Seek opportunities to improve digital connectivity ▪ Explore and utilise innovative monitoring equipment to show usage of the transport network (e.g. video technology that recognises different user types, use of GPS, mobile or telephone data) ▪ Investigate trial of a smart street, showcasing a range of technological innovations to enable better service delivery across a range of functions (e.g. street bins, air quality, street usage) ▪ Explore the use of low-cost air quality monitoring equipment including trialling the use of innovative, low-cost and portable devices ▪ Work with Transport East on Regional Agent Base Model + travel and behaviour data. This is an innovative modelling tool ▪ Implement the Bus Service Improvement Plan objective of multi-operator ticketing
Objective 1: Embracing the Future	Policy 4	▪ Develop an online information hub under the brand of Travel Norfolk to encourage behaviour change. This will act as a journey planner that encourages sustainable travel as the preferred method of transport. This hub will also provide a high quality resource of information to help people break down barriers that remain to using sustainable transport. ▪ Promote behaviour change through Getting Norfolk Active: Active Norfolk's 2021-2026 strategy • Advocating for walking and cycling to be the first choice for short journey • Promoting physical activity's contribution to carbon reduction targets • Addressing other barriers that prevent this positive behaviour change ▪ Deliver travel plans at residential development ▪ Monitor travel habits at residential developments through travel plans delivered via our AtoBetter programme

Objective	Policy	Actions
Objective 2: Delivering a Sustainable Norfolk	Policy 5	■ Review the planning and health protocol to ensure principles of health and wellbeing are adequately considered in plan making, and when evaluating and determining planning applications. This will include considerations of connection to, and accessibility of, public and active travel options ■ Review the Norfolk Infrastructure Delivery Plan (NSIDP) to ensure it captures the full range of projects being delivered to support growth including decarbonisation projects, and transport projects focused on active travel, public transport and decarbonisation ■ Review and roll forward the market town Network Improvement Strategies ■ Take forward work with partners on infrastructure requirements to unlock growth, including: • N Walsham housing link road • East Norwich masterplan • W Winch masterplan • Thetford A11 junctions and successor to link road work • Bradwell ■ Review Safe Sustainable Development (guidance document for new developments) ■ Review Parking Standards ■ Work as part of the Greater Norwich Development Partnership and Greater Norwich Local Plan Partnership ■ Work with district Councils as local plans are reviewed ■ Provide comments on neighbourhood plans to inform their development ■ Work with county Council service providers on location of services, e.g. schools ■ Work closely with DfT, National Highways, Network Rail / Great British Railways and other local authorities to influence transport decisions in Norfolk to ensure good connectivity to new developments
Objective 2: Delivering a Sustainable Norfolk	Policy 6	■ Consider options for monitoring and offsetting carbon impacts arising from new development ■ Alongside this, develop carbon plans and budgets and devise methodologies to achieve carbon neutrality from new development. Write these into future reviews of our guidance documents for new developments ■ Work with other active travel groups to expand sustainable travel plans to schools.

Objective	Policy	Actions
		■ Engage with developers in pre-application discussions on major sites to secure sustainable transport links in our role as statutory consultee on planning applications, seek sustainable transport links ■ Develop proposals for, and introduce, pre-application charges ■ Work with partners on the development of land-use planning documents ■ Review Safe Sustainable Development ■ Review Parking Standards ■ Deliver travel plans at residential development
Objective 2: Delivering a Sustainable Norfolk	Policy 7	■ Roll-forward our 2022 review of Safe Sustainable Development to adopt guidance on our expectations of how developers would need to demonstrate how development would address air quality or bring forward measures to address the issue. ■ Take account of any changes to UK law, best practice or guidance following new air quality guidelines announced by the World Health Organisation in 2021.
Objective 3: Enhancing Connectivity	Policy 8	■ Make the case for early electrification of the remainder of the rail network serving the county ■ Look to secure inclusion of rail, trunk road and major road networks in digitally-connected programmes. ■ Remain an active member of Transport East and work with Transport East on development of its transport strategy and its subsequent delivery, and any review ■ Work with Transport East on Connectivity Study and Rail Connectivity ■ Continue to lead and coordinate the A47 Alliance ■ Review the Alliance programme and activities to include further focus on carbon and technology ■ Work with partners on Task Forces and other consortia making the case for rail improvements ■ Work with partners to understand the evidence base to identify and secure improvements to transport gateways ■ Take forward schemes that are included in the current government large local major and major road network funding streams; and develop the forward pipeline of projects.

Objective	Policy	Actions
Objective 3: Enhancing Connectivity	Policy 9	▪ Assess the carbon impacts of schemes the county Council brings forward ▪ Investigate funding opportunities to deliver a range of initiatives to deliver clean freight including e-cargo bikes, freight consolidation centres (where last-mile deliveries are made by clean modes) and more innovative technologies such as drones or automated vehicles / pods ▪ Prepare evidence to support the case for improvements, reviewing previous work to – in particular – update and build in low carbon objectives and the future role of the A47 given technological advancements ▪ Work with National Highways to secure active travel and public transport improvements on the trunk road network ▪ Actively seek funding investment from central government in partnership with bus operators to bring zero emissions busses to Norfolk and enable a transition to zero emissions vehicles ▪ Implement a Behaviour Change Programme ▪ Develop LCWIPs to set out policy for walking and cycling ▪ Deliver our EV strategy
Objective 3: Enhancing Connectivity	Policy 10	▪ Develop countywide Local Cycling and Walking Infrastructure Plans (LCWIPs) ▪ Consult on the draft Walking and Cycling Strategy ▪ Implement the Bus Service Improvement Plan to improve public transport services and infrastructure connecting into settlements ▪ Trial innovative technology in different parts of the network by developing prototypes, preferably with local companies ▪ Deliver our EV strategy: Encourage stakeholders to deliver charge points at other key destinations including supermarkets and rail stations ▪ Investigate the delivery of ‘Mobility as a Service’ solutions.
Objective 4: Enhancing Norfolk’s Quality of Life	Policy 11	▪ Undertake appropriate and proportionate whole life carbon assessments on proposed schemes including construction and use of the asset ▪ Deliver net zero carbon on our own estate

Objective	Policy	Actions
		▪ Work with Transport East on the Decarbonisation analysis toolkit (being led by England's Economic Heartland) ▪ Work with Transport East on alternative fuels (being led by Midlands Connect) ▪ Develop our assessment criteria for schemes on the project pipeline to consider their impact across the range of LTP4 objectives ▪ Develop our assessment criteria for schemes on the project pipeline to consider their impact across the range of LTP4 objectives ▪ Consider implication of LTP guidance on future reviews of the LTP ▪ Investigate working with Broads Authority and other partners on decarbonising waterways ▪ Deliver a range of actions to reduce carbon. These include delivery of the EV strategy, investment in active travel networks, rollout of digital connectivity to reduce travel, and working with partners to influence the location and nature of development.
Objective 4: Enhancing Norfolk's Quality of Life	Policy 12	▪ Deliver Transport for Norwich (TfN) Strategy including development of feasibility work on a range of measures to reduce traffic ▪ Review King's Lynn transport strategy ▪ Review Great Yarmouth transport strategy ▪ Promote behaviour change work ▪ Work with bus operators and other transport providers to achieve a shift to clean fuels ▪ Explore the use of low-cost air quality monitoring equipment, survey equipment ▪ Develop and implement LCWIPs ▪ Deliver our EV Strategy ▪ Support District Councils in monitoring Air Quality Action Areas. ▪ Develop action plans for transport interventions where transport is a cause of poor air quality. ▪ Seek funding to deliver and implement programmes of work
Objective 4: Enhancing	Policy 13	▪ Undertake proportionate assessments of schemes to consider their impact across the range of LTP4 objectives

Objective	Policy	Actions
Norfolk's Quality of Life		▪ Develop our assessment criteria for schemes on the project pipeline to consider their impact across the range of LTP4 objectives ▪ Apply a Healthy Streets approach in Norfolk. This approach has been adopted for Norwich in the Transport for Norwich Strategy. ▪ Identify opportunities for linear habitat creation along the active travel network as part of an integrated approach between active travel and Greenways to Greenspaces.
Objective 5: Increasing Accessibility	Policy 14	▪ Deliver the Bus Service Improvement Plan (BSIP). ▪ Make an Enhanced Partnership Plan and Enhanced Partnership Scheme ▪ Facilitate the commercial operation of the bus network through physical design including busways, bus priority and advising local planning authorities on appropriate estate design ▪ Support roll out of improved digital connectivity in rural areas. ▪ Represent the county Council on the Board of Community Rail Norfolk ▪ Work within the county Council and with other partners to plan accessibility as part of service delivery ▪ Work with Transport East on Regional rural mobility centre of excellence ▪ Work with Transport East on Regional rural mobility case for investment (led by the Western Gateway) ▪ Explore opportunities to secure funding to develop and trial innovative rural mobility solutions ▪ Investigate the delivery of 'Mobility as a Service' solutions.
Objective 5: Increasing Accessibility	Policy 15	▪ Prioritise space for certain types of user in urban areas, putting in dedicated, segregated lanes for public transport and / or cycling. We will do this when we implement transport strategies in urban areas and market towns ▪ Develop countywide Local Cycling and Walking Infrastructure Plans (LCWIPs) ▪ Consult on the draft Walking and Cycling Strategy ▪ Work with partners at an early stage of planning and development on accessibility to key regeneration, housing and employment sites ▪ Work with National Highways to improve local connections along and adjacent to trunk roads as set out in the NSIDP ▪ Promote the use of mobility solutions such as electric bikes

Objective	Policy	Actions
		▪ Respond to the Norfolk Rural Economic Delivery Plan and support priorities, such as programmes to improve connectivity between coast and rural Norfolk, including market towns
Objective 5: Increasing Accessibility	Policy 16	▪ Undertake proportionate assessments of proposals to make sure they are suitable for all users including people with disabilities or restricted mobility ▪ Continue to support and review the Safe Sustainable Development in development management guidance, which gives due regard to equality as part of meeting the Equality Act 2010 and the Public Sector Equality Duty.
Objective 6: Improving Transport Safety	Policy 17	▪ Deliver road safety through the Safe Systems Approach by agreeing annual plans with interventions focusing on education and behaviour change with Road Safety Partnership. ▪ Work in partnership with the Road Safety Partnership and Safety Camera Partnership to deliver the adopted Safe Systems approach. This is based on four pillars: safe roads; safe vehicles; safe road users, and safe speeds. ▪ Refresh the county Council's speed limit strategy ▪ Monitor casualty numbers on the network with the priority being to reduce the number of people killed and seriously injured ▪ Continue to support the road safety partnership priorities supported by the Road Safety Communities Team ▪ Deliver a range of projects including driver development, driver education and enforcement ▪ Investigate the implementation of trials of technology and innovation to improve transport safety ▪ Roll out via the Road Safety team training programmes in schools for pedestrians and cyclists including Step on it, Crucial Crew and Bikeability
Objective 7: A Well Managed and Maintained Transport Network	Policy 18	▪ Vigorously exploit all funding opportunities to deliver the widest range of improvement and maintenance schemes, and other initiatives. ▪ Seek to secure funding for innovative schemes such as trials of new technology through exploiting opportunities ▪ Annually update the Transport Asset Management Plan

Objective	Policy	Actions
		▪ We will annually monitor the Asset Management Strategy and its performance framework
Objective 7: A Well Managed and Maintained Transport Network	Policy 19	▪ Include outcomes of prioritisation for active travel and public transport, and from other initiatives such as LCWIPs in reviews of the Transport Asset Management Plan ▪ Consider banning parking on pavements
Objective 7: A Well Managed and Maintained Transport Network	Policy 20	▪ Implement the Bus Service Improvement Plan and priority measures in urban areas ▪ Monitor journey times and reliability to inform implementation
Objective 7: A Well Managed and Maintained Transport Network	Policy 21	▪ Review the resilient network assessment (see Policy 1 action to identify vulnerability on the network) ▪ Maintain an up to date Norfolk Local Flood Risk Management Strategy to manage risk of flooding due to climate change
Objective 7: A Well Managed and Maintained Transport Network	Policy 22	▪ Explore the use of connected vehicle and mobile phone data ▪ Trial artificial intelligence cameras to better capture walking and cycling data ▪ Exploit key contracts with companies such as Microsoft to trial use of artificial intelligence technology to improve decision making ▪ Implement and evolve the prototype for network management data using vehicle movement data ▪ Trial sensor technology to collect information about air quality, network use, and road and weather conditions ▪ Work with Transport East on the future of freight strategy

2.4 Major and Significant Transport Schemes

2.4.1 The IP gives support to the continued development of a number of major and significant transport schemes.

2.4.2 It should be noted that these projects would be required to go through other legal processes and environmental assessments before they can be implemented.

2.4.3 These comprise of the following:

Large Local Major Schemes

- Norwich Western Link

Major Road Network Schemes

- A10 West Winch Housing Access Road
- A140 Long Stratton Bypass
- A17/A47 Pullover Junction, King's Lynn

Trunk Roads

- A11 Thetford Bypass Junctions
- A47 Wisbech Bypass Junctions
- A47 Tilney to East Winch Dualling
- A47 Acle Straight Dualling

Railways

- Norwich to London Rail (Norwich in 90)
- Great Yarmouth Rail Station:
- Ely Area Enhancements
- East West Rail (Cambridge to Oxford)

Schemes within Local Authority Control

- Broadland Growth Triangle Link Road
- Attleborough Link Road
- A148 Fakenham Roundabout Enhancement
- Broadland Business Park Rail Station
- Weavers Way
- The Green Loop.

Up-and-coming projects in Local Authority Control

- North Walsham Link Road *See below for location*
- Longwater additional access

Up-and-coming Projects not in Local Authority Control

- Trowse Rail Bridge:

3 Sustainability Appraisal Methodology

3.1 Introduction

3.1.1 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.

3.1.2 The approach adopted for the SA of the Draft LTP4 Strategy follows that set out in the Practical Guide to SEA (click here for more detail) and the Planning Practice Guidance to SEA and SA (click here for more details). 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).

3.1.3 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.

3.1.4 This report will cover Stages B-D only. Stage A, Scoping, was undertaken in 2019-2020 for the Norfolk LTP4 and supplementary strategies. The baseline information has been reviewed an updated as part of the assessment of the IP – see **Section 4** for more details.

3.1.5 Although both the IP and the LTP4 Strategy represent one plan, due to the timescales on the development of these, the assessment has been undertaken separately. As the IP and LTP4 Strategy are intrinsically linked, the assessment of the IP will build upon the previous assessment of the LTP4 Strategy and assess how effective the IP actions will be in delivering LTP4 Strategy policies.

3.2 Methodology of Remaining Stages

Stage B: Assessment

3.2.1 Stage B comprises the assessment of the Draft IP, against the SA objectives, which will aid the development of the plan and its actions. This assessment assessed the proposed actions of the IP including major and significant transport schemes. Further information on the assessment framework applied is included in **Section 5**.

3.2.2 Although the EqIA and HIA form separate appendices to the SA report (refer to **Appendix C** and **D** 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 IP.

3.2.3 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 IP, LTP4 and its supplementary transport strategies.

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

Stage C and D: Reporting and Consultation

3.2.5 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.

3.2.6 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.

3.2.7 The SA will be updated following consultation, to take into account changes to the Transport Strategy as well as comments received from consultees.

Stage E: Monitoring

3.2.8 This report sets out recommendations for monitoring the social, environmental and economic effects of implementing the LTP4 Strategy and the IP (**Section 7.2**).

3.3 Assumptions and Limitations

The following assumptions and limitations have been identified:

- The preparation of the IP alongside the SA has allowed an iterative process of assessment and refinement in the narrative and actions within the Plan. Therefore, some of the recommendations set out in this report may already have been addressed in the IP.
- The IP does not detail every scheme that the county Council intends to deliver over the next three years, rather, it sets out the measures and actions that the county Council will

take, with partners, to implement the LTP4 policies. As such, the main focus of the SA assessment is of the proposed actions set out within the IP as well as the schemes detailed in **Section 2.4**.

- 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 (click here for further details).
- 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.
- WSP have ensured that effects are predicted accurately; however, this can be challenging given limited understanding of precisely how some actions within the IP will materialise. Given uncertainties there is inevitably a need to make some assumptions, however, these are made carefully and explained in detail within the assessment text.
- In some instances, given reasonable assumptions, it is not possible to predict 'significant effects', but it is possible to comment on the potential positive and negative effects of the draft plan and its alternatives in more general terms.

3.4 Relationship with Other Processes

Habitats Regulations Assessment

3.4.1 Under Article 6 (3) of the EU Habitats Directive as transposed into the UK law by the Habitats Regulations (click here for more details), 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.

3.4.2 Guidance on the Habitats Directive (click here for more details on this guidance) 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.

3.4.3 The HRA (Screening and Appropriate Assessment) for the draft IP has been carried out and will be undergoing consultation with NCC and Natural England.

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

Equalities Assessment

3.4.5 An EqIA considers the impact of a project or policy on persons or groups of persons who share characteristics which are protected under section 4 of the Equality Act 2010 ("protected characteristics") and might also include others considered to be vulnerable within society such as low-income groups. It is an information gathering tool which enables decision makers within public bodies to implement their equality duty under the Equality Act 2010.

3.4.6 An EqIA guides decision makers and designers to:

- Consider the effects of existing and proposed policy or practice on people who share a "protected characteristic"; and
- Identify opportunities to improve equality of opportunity and eliminate discrimination.

3.4.7 An EqIA should be carried out before making decisions, to inform and shape the outcomes. They should be updated throughout the decision-making process as necessary, as policy or practices are developed.

3.4.8 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.

3.4.9 The EqIA, a copy of which is included as **Appendix C** of this report, has informed the Draft IP and the SA process.

Health impact Assessment

3.4.10 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.

3.4.11 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.

3.4.12 The approach adopted for the HIA of the LTP4 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 D** to provide further context for the assessment.

4 Identifying the Sustainability Issues

4.1.1 The SA scoping report was previously undertaken by WSP in 2019 and updated in July 2020, in support of the LTP4 SA. The SA scoping report presented the sustainability context for Norfolk, including specific information for Great Yarmouth, King's Lynn and Norwich, in support of the supplementary strategies. The report presented baseline information across 13 SA topics and identified key sustainability issues and opportunities, which helped to form the SA Framework.

4.1.2 **Table 4-1** below summarises the sustainability context of Norfolk which was identified as part of the previous scoping process. The full Scoping Report and the identified issues and opportunities can be read online here. Some of the information in **Table 4-1** below has been updated using baseline information collected for both the EqIA and HIA.

Table 4-1 – Sustainability Context

SA Topic	Summary of Sustainability Context
Transport	■ Norfolk has one of the largest highway networks in the country with over 6,000 miles and an overall asset base valued at approximately £6.5 billion. ■ The predominant mode of transport in the county is the car with Light Goods Vehicles being the second popular mode of transport. This can be attributed to long journey distances due to Norfolk being a mainly rural county. ■ The A11 and A47 are two trunk roads within Norfolk that are manage by the National Highways. ■ The Major Road Network (MRN) within Norfolk includes: the A140, A1042, A146, A134, A10 and A17. ■ Other corridors of movement within Norfolk include: the A143 running from Great Yarmouth to Haverhill in Suffolk; the A148 running from Great Yarmouth to Kings Lynn via Holt and Fakenham; the A149 running from Cromer to Great Yarmouth; the A1075 running from Thetford to East Dereham; the A1065 running from Mildenhall to Fakenham; the A1066 running from Thetford to Diss; the A1067 running from Norwich to Fakenham; A1122 running from Outwell to Swaffham and A1151 linking the A149 at Smallburgh to Norwich via Hoveton. ■ There are five railway lines that run through Norfolk, these are: the Breckland line, the Wherry line, the Fen line, the Bitten line and the Great Eastern Main Line. ■ There is one public airport in Norfolk which is situated in Norwich. There are 1.5 million people within a 90-minute drive of Norwich International Airport, which covers Norfolk, Suffolk and North Cambridgeshire. ■ There are two major ports -King's Lynn and Great Yarmouth ■ There is a national trail in Norfolk, the Peddars Way and Norfolk Coast Path.

SA Topic	Summary of Sustainability Context
Population and Equalities	▪ The total population of Norfolk in 2020 was 914,000. Of this population, 449,000 (49.1%) were male and 465,000 (50.9%) were female. ▪ Compared to surrounding counties in the East of England, Norfolk has the third highest population, with only Essex and Hertfordshire having larger populations (1,497,800 and 1,195,700 respectively). ▪ The age profile of residents within Norfolk indicates that the population is composed of predominantly young and middle-aged population. Within Norfolk, 58.5% of the population are aged 16-64 years. This is slightly lower than both the East average of 60.6% and the England average of 62.4%. ▪ Life expectancy in Norfolk for males is 80.0 years and for females is 83.9 years. This is similar to the regional average of 80.2 years for males and 83.8 years for females. Life expectancy in Norfolk is slightly higher than the England average of 79.4 years for males and 83.1 years for females. More information on population and equalities can be found here.
Health	▪ The proportion of adults (aged 18+) in Norfolk classified as overweight or obese in 2020 was 62.3%. This is in line with the regional average of 62.3% and slightly lower than the England average of 62.8%. ▪ Levels of physical activity in Norfolk are similar to the England results whereby 61.4% are considered active, 11.5% considered fairly active and 27.1% considered inactive. ▪ Smoking prevalence among adults (aged 18+) in Norfolk in 2020 was slightly higher than both the regional and England averages. The prevalence of current smokers in Norfolk was 14.5%, compared to 13.7% for the region and 13.9% in the rest of England. ▪ Census data shows that the proportion of residents within Norfolk living with a long-term illness or disability is higher than the England average, at 20.1% and 17.6% respectively. ▪ Between 2016 and 2018, an average of 47.6 people per 100,000 were killed or seriously injured on roads in Norfolk. This is higher than both the regional average of 46.7 people per 100,000 and the national average of 42.6 per 100,000. More information on health in Norfolk can be found here.
Economy and Employment	▪ In 2021 the average unemployment rate across Norfolk was 4.6% for those aged 16-64. This is a higher unemployment rate when compared to the region (4.1%) and lower when compared to England (5.0%). ▪ In the same period, the average employment rate for Norfolk was 76.4%%, which is lower than the regional average of 77.1% and higher than the England average of 74.6%. ▪ Industries that have the highest number of employees in the county include Wholesale And Retail Trade; Repair Of Motor Vehicles And

SA Topic	Summary of Sustainability Context
	Motorcycles (17.3%), Human Health And Social Work Activities (16.2%) and Accommodation And Food Service Activities (9.2%). ■ The average gross weekly pay for full-time workers in Norfolk is £566.8. This is lower than the average gross weekly pay for full-time workers in both the region (£628.6) and England (£613.1). ■ Qualification levels within Norfolk are slightly lower than the England and regional averages across all qualification levels. Additionally, there are higher portions of Norfolk's population with no qualifications when compared to both the region and England. More information on economic statistic for Norfolk can be found here.
Air Quality	■ Air pollution can have harmful effects on health, the environment and the economy. Air pollution particularity affects the most vulnerable in society: children and older people, and those with heart and lung conditions. ■ Air quality across the county is generally considered to be good. ■ There are four AQMAs in Norfolk, declared primarily as a result of pollution caused by road transport. Breckland District Council has one AQMA, the Borough Council of King's Lynn and West Norfolk has two AQMAs and Norwich City Council has one AQMA.
Biodiversity	■ Norfolk is an area of high biodiversity value and contains a variety of habitats and species which range from international and national status to those of local importance. ■ The Norfolk Broads is an area of acknowledged national importance as highlighted above for landscape, biodiversity and recreational and navigational value. It is also a major contributor to the economy and quality of life in the Broadland, Norwich and South Norfolk areas. ■ There are 12 Special Areas of Conservation (SACs) within Norfolk. ■ There are eight Ramsar sites in Norfolk - Redgrave and South Lopham Fens, Breydon Water, Broadland (The Broads), Ouse Washes, North Norfolk Coast, Dersingham Bog, Roydon Common and the Wash. ■ There are seven Special Protection Areas (SPAs) in the county- Breydon Water, Broadland, Breckland, Great Yarmouth North Denes, Ouse Washes, North Norfolk Coast and the Wash. ■ There are 163 Sites of Special Scientific Interest (SSSIs) in Norfolk ■ There are 22 National Nature Reserves (NNR) in the county ■ There are 27 Local Nature Reserves located across Norfolk.
Climate change	■ The key challenges for Norfolk include increased flood risk, water scarcity and sea level rise. These challenges are likely to affect human health during increasingly frequent extreme weather events, the ability of Norfolk's infrastructure to cope with changing demand and use, and the organisational resilience to climate change and changes to natural systems.

SA Topic	Summary of Sustainability Context
	▪ Norfolk's CO2 emission levels are 5052.8 kilo ton (kt) CO2 total emissions at 5.7 tonnes of CO2 (tCO2) per capita in 2016. In line with regional figures, CO2 emission levels have reduced from 2005 levels of 6877.5 kt CO2 total emissions and 8.4 tCO2 per capita. ▪ In 2016, 5,052.8 kilo tonnes (5.1 Mt) of CO2 emissions were released in Norfolk, which represented approximately a 9% decrease since 2015. In 2016, the total emissions in kt CO2 per sector were as follows: • 1,442.6kt from domestic sources; • 1,728.7kt from industrial and commercial sources; and • 1,973.2kt from road transport. ▪ Total CO2 emissions from transport were highest in South Norfolk District Council, which accounted for 424.6 kt CO2 in 2016, and the lowest emissions were in Norwich City Council with 132.3 kt CO2. ▪ Although total CO2 is falling it is starting to rise from vehicular sources; besides Norwich City Council all local authorities showed an increase in their total emissions related to transport between 2015 and 2016. ▪ Norfolk County Council is a member of the CIVITAS European Project, which is a network of cities for cities dedicated to cleaner, better transport in Europe and beyond.
Cultural Heritage and the Historic Environment	▪ Norfolk's historic landscape consists of coastal, heathland and woodland landscapes that are diverse in nature which have been altered by settlement. ▪ There are approximately: 289 conservation areas, 10,866 listed buildings,446 Scheduled Monuments and 51 Parks and Gardens in the county. ▪ The Local Authorities within Norfolk have recognised the importance of their built heritage; this is reflected in development plans which contain a number of policies and planning restrictions in conservation areas. ▪ Non-designated and unknown heritage assets may be present around Norfolk which may be of high value. These include, but are not limited to, locally listed buildings. ▪ The Norfolk Monuments Management project focuses on historic monuments that have no legal protection.
Landscape and Townscape	▪ The Norfolk Coast Area of Outstanding Natural Beauty (AONB) is a significant feature of the Norfolk landscape; the AONB covers Kings Lynn and West Norfolk Borough Council, North Norfolk District Council and Great Yarmouth Borough Council. ▪ There are ten Landscape Character Areas (LCA) within Norfolk: • Mid Norfolk • Breckland • South Norfolk and High Suffolk Claylands • Central North Norfolk

SA Topic	Summary of Sustainability Context
	• North East Norfolk and Flegg • The Broads • Suffolk Coast and Heaths • The Fens • North West Norfolk • North Norfolk Coast ▪ The major urban areas within Norfolk are those within and around Norwich, Thetford, Diss, Wymondham, Dereham, Great Yarmouth, Kings Lynn and North Walsham. Areas closer to the coastline are recently becoming increasingly urbanised due to tourism. ▪ The Norfolk coastline has been shaped throughout history by natural processes such as changes in sea level and coastal processes are constantly shaping the coast. The effects of changes in sea level and climate change will impact greater on the coastline leading to coastal erosion.
Noise	▪ The main sources of noise in Norfolk are derived from the roads. ▪ An increase in noise from transport can have an adverse effect on general health, sleep and can be seen as a nuisance. ▪ Noise action plans provide a framework to manage environmental noise and its effects. They aim to protect quiet areas in agglomerations (large urban areas) where noise quality is good. Increased noise pollution affects quality of life and has been linked to health problems. ▪ Noise from road, rail and air traffic is regulated under the Environmental Noise Directive which is implemented in England through the Environmental Noise (England) Regulations 2006. A Noise Important Area (NIA) is identified through a noise action plan. ▪ There are 162 identified NIA's around Norfolk.
Soils and Resources	▪ Norfolk's bedrock geology is made up of mainly Neogene and Quaternary Rocks to the east of the county formed up to 23 million years ago with the local environment previously being dominated by shallow seas. ▪ The superficial geology of the county is blanketed with a covering of Quarternary superficial deposits that formed within the last 2 million years. The Quarternary deposits include alluvium, clays, glacial sand and gravel. ▪ Norfolk contains a wide variety of soils including: Till (Diamicton), Alluvium (Clay, Silt and Sand), glacial sand and gravel. ▪ A majority of the land in Norfolk ranges between ALC Grade 2 and 3 (Very Good, Good to Moderate). Some land in Great Yarmouth is also classified as Grade 1 (Excellent). ▪ There are multiple sites across Norfolk that have been allocated to increase waste management capacity.

SA Topic	Summary of Sustainability Context
	▪ There is a need to provide 163,000 tonnes of new recycling, composting and source-segregated-anaerobic digestion capacity, about 703,000 tonnes of recovery infrastructure and about 2,060,000 m3 of new inert landfill/quarry restoration by 2026.
Water Resources and Flooding	▪ There are 16 main rivers that run through Norfolk. ▪ The water quality of the rivers that flow within Norfolk can be affected by the agricultural activities that are carried out across the county. Agrichemicals and pollutants can contaminate groundwater reserves and degrade the quality of water. ▪ Roads and urban infrastructure are also another source of pollutant to the water environment. ▪ The increase of population in the county and the effects of climate change presents a challenge for the county. The aquatic environment is being increasingly threatened by the over-abstraction of water. ▪ Areas located in Flood Zone 3 and 2 include: • King's Lynn • Fakenham • Wells Next the Sea • Stalham • Caister-on-Sea • Banks of the River Bure • Great Yarmouth • East of Norwich • The Broads and the River Yare • Lowerstoft • Beccles • Bungay • Downham Market

Future Evolution of the Baseline

4.1.3 The population in Norfolk is predicted to increase. With this increase comes a rise in demand for housing, transport infrastructure, and education and employment facilities. As the population rises so does the percentage of older people, which will result in its own issues, such as an increased demand for health facilities and reliance on public transport. Norfolk is by nature a rural county. Therefore, there is likely to be an additional demand for services and regular public transport offerings, which could lead to increased stress on current transport infrastructure and increased use of private transport.

4.1.4 Transport related emissions are the primary reason for poor air quality in some areas of Norfolk. Air quality may decline in the region due to the increasing population and increased use of transport, however, the use of the cleaner vehicles such as electric vehicles and shift to more sustainable transport modes in the future will lead to a higher standard of air quality and reduction in carbon emissions.

4.1.5 Another issue Norfolk is facing into the future is climate change. Key challenges Norfolk face include increased flood risk, water scarcity and sea level rise. These challenges are likely to affect human health during increasingly frequent extreme weather events, the ability of Norfolk's infrastructure to cope with changing demand and use, and changes to natural systems.

4.1.6 NCC are committed to deliver transport schemes to help support the growth in population and future impacts from climate change by ensuring climate resilient transport infrastructure are in place, and carbon emission reductions and improvements to air quality are included within scheme design.

4.1.7 At the same time more infrastructure and development will be required to support this population and transition to a more sustainable transport network, resulting on increased pressure on agricultural land and finite resources. Avoiding impacts to Norfolk's biodiversity, historic assets and unique landscape will also be increasingly important as population grows and development increases.

4.1.8 The Scoping Report carried out in June 2020 considered a future baseline that would involve certain infrastructure projects proceeding. This has been reviewed in the context of the draft IP and it has been determined that those local authority schemes, the development of which is supported by the IP should be scoped in for assessment. The detailed assessment of this projects is set out in Appendix B and summarised in **Section 5.4**.

4.2 Sustainability Appraisal Framework

4.2.1 A Sustainability Appraisal Framework has been produced to guide the assessment process of the plans and strategies. The framework (Set out in **Table 4-2** below) 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.

4.2.2 The Sustainability appraisal framework was agreed through the scoping process for the Norfolk LTP4. The objectives set out below were considered to be appropriate for the LTP as well as the King's Lynn, Great Yarmouth and TfN Strategies. The objectives have been developed and consulted upon and updated to reflect any comments received.

Table 4-2 - Sustainability Appraisal Framework

Topic	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
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	**SA2** - To maintain and protect and biodiversity and geodiversity	▪ Cause damage to SAC's, SPAs, SSSIs, Local Nature Reserves (LNRs) and / or Local Wildlife Sites (LWS) though infrastructure provision, traffic or maintenance? ▪ Maintain biodiversity in Norfolk?
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	▪ Reduce car trips and encourage a more energy efficient and/or greener/cleaner transport system? ▪ Reduce impacts from infrastructure development and maintenance on water, soil and mineral resources?

Topic	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
	SA 5 - Adapt to the effects of climate change	■ Plan a transport system which is more resilient to the can cope with impact from 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.	■ Help improve the quality of urban and rural communities? ■ Create a more accessible transport system for all? ■ Improve accessibility? ■ Provide the infrastructure to 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	■ 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? ■ Achieve high quality sustainable design for buildings, spaces and the public realm?

Topic	Sustainability Objective	Appraisal Questions: Will the Plan/ Strategy
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	■ Increase connectivity and help alleviate congestion, reducing journey times? ■ Improve access to employment centres?
Health and 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?
Landscape and Townscape (including seascape)	**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	**SA15** - To minimise the effects of noise in the identified Noise Important Areas (NIAs)	■ Maintain the noise baseline in NIAs?

5 Sustainability Appraisal

5.1 Introduction

5.1.1 This section presents the findings of the assessment of the IP covering the proposed actions and action alternatives as well as the proposed major and significant transport schemes and their alternatives.

5.1.2 Mitigation and enhancement measures for negative or positive significant effects are set out below in **Section 7** below.

5.2 Assessment of Draft IP Actions

5.2.1 The assessment of the IP actions has been summarised below. The assessment will be guided by questions which have been outlined in **Table 4-2**.

5.2.2 The proposed actions have been assessed as a whole package under each of the 22 policies, which sit within the seven key LTP4 objectives..

5.2.3 A matrix approach has been used for the assessment which has used the significance identified in **Table 5-1** below. **Table 5-2** overleaf provides an overview of the performance of the IP actions and alternatives.

Table 5-1 – 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 5-2 – Assessment Overview of IP Actions

Strategic Objective	Policy	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
Objective 1: Embracing the Future	1	++	+	++	0	++	++	+/-	+	+	++	++	++	++	+	++
Objective 1: Embracing the Future	2	++	+	++	0	+	+/-	+/-	++	+/-	++	++	+/-	++	+/-	++
Objective 1: Embracing the Future	3	++	+	++	0	++	+	++	++	+	+	++	+	+	+	++
Objective 1: Embracing the Future	4	++	+	++	0	+	+	++	++	+	+	++	++	++	0	++
Objective 2: Delivering a Sustainable Norfolk	5	++	?	++	?	+	++	++	++	?	++	++	+	++	?	+
Objective 2: Delivering a Sustainable Norfolk	6	++	+	++	0	+	+	++	++	+	0	+	+	++	+	+
Objective 2: Delivering a Sustainable Norfolk	7	++	+	+	0	+	+	0	0	+	0	0	0	++	+	0
Objective 3: Enhancing Connectivity	8	+	- -	+/-	?	+	++	++	++	?	++	++	+	+	?	+
Objective 3: Enhancing Connectivity	9	++	+/-	++	?	+	++	+/-	++	+/-	++	++	+	++	+/-	++

Strategic Objective	Policy	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
Objective 3: Enhancing Connectivity	10	++	+	++	0	++	++	+/-	++	+	+	++	+	++	0	++
Objective 4: Enhancing Norfolk's Quality of Life	11	+	+	++	++	+	+	++	++	+	++	0	0	+	0	+
Objective 4: Enhancing Norfolk's Quality of Life	12	++	+	++	0	+	+/-	+/-	++	+	+	+	+/-	++	+	++
Objective 4: Enhancing Norfolk's Quality of Life	13	++	++	+	0	+	++	++	++	+	+	+	++	++	++	++
Objective 5: Increasing Accessibility	14	++	+/-	+	0	+	++	++	++	+/-	++	++	++	+	+/-	+
Objective 5: Increasing Accessibility	15	++	+/-	++	0	+	++	++	++	+/-	+	++	++	++	+/-	+
Objective 5: Increasing Accessibility	16	0	0	0	0	0	++	++	++	0	0	++	++	++	0	0
Objective 6: Improving Transport Safety	17	+	0	+	0	0	++	++	++	0	0	++	++	++	0	0
Objective 7: A Well Managed and Maintained Transport Network	18	+	0	+	++	++	++	0	+	+/-	+	0	++	+	+/-	+
Objective 7: A Well Managed and Maintained Transport Network	19	++	+/-	++	+/-	+	++	+	+	+/-	0	++	++	++	+/-	+

Strategic Objective	Policy	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
Objective 7: A Well Managed and Maintained Transport Network	20	+	+/-	+	+/-	+	+	++	+	+/-	0	+	+	++	+/-	+
Objective 7: A Well Managed and Maintained Transport Network	21	+	?	+	?	++	++	0	0	?	0	0	+	+	?	0
Objective 7: A Well Managed and Maintained Transport Network	22	+	?	+	?	++	++	?	++	?	++	+	++	+	?	0

Assessment of IP Actions Summary

5.2.4 The assessment of IP actions has been summarised by SA objective below:

- **Objective 1 (Air Quality):**
  - All actions resulted in positive effects on air quality apart from actions within Objective 5 and Policy 12 where neutral effects were identified.
  - Significant effects were identified for actions which implemented the use of new technology (autonomous vehicles, or digitally connected vehicles), electric vehicles and providing improvements to active and public transport modes such as Local Cycling and Walking Infrastructure Plans (LCWIPs) and the Bus Service Improvement Plan as part of Objective 1. These actions will help to reduce transport related emissions by reducing private car use or use of cleaner vehicles, therefore improving local air quality.
  - Other notable actions include those within Policy 7 which aim to take further action to improve air quality in urban areas and existing Air Quality Management Areas (AQMAs) through reviewing the of Safe Sustainable Development to adopt guidance of how developers would need to demonstrate how development would address air quality, and take account of any changes to UK law, best practice or guidance following new air quality guidelines announced by the World Health Organisation in 2021.
- **Objective 2 (Biodiversity and Geodiversity):**
  - There are multiple actions that have resulted in positive effects on Norfolk's biodiversity and geodiversity, however, only actions within Policy 13 have resulted in significant positive effects. These positive effects were identified due to the to NCC identifying opportunities for linear habitat creation along the active travel network as part of an integrated approach between active travel and Greenways to Greenspaces.
  - Taking forward schemes such as Long Stratton Bypass, Norwich Western Link (NWL), West Winch Housing Access Road, as included within Policy 8, is likely to result in significant negative impacts on biodiversity. The landscape contains many significant areas of importance for wildlife, in particular the NWL has potential to negatively affect the River Wensum SAC which is a site of international importance for wildlife. The scheme does, however, aim to achieve a biodiversity net gain which will include improvements to existing habitats and creation of new habitat, including woodland and wetland, and including green bridges and wildlife underpasses.
  - Actions within policies 9, 14, 15, 19 and 20 have resulted in both positive and negative effects. These actions support the modal shift to more sustainable transport modes such as walking, cycling and taking public transport which is likely to result in indirect positive effects of reducing carbon emissions and improving air quality. Greater uptake in sustainable transport modes may also reduce the number of single occupancy journeys which could lessen the impact of disturbance. However, to enable this shift these actions are likely to result in new development of bus lanes, segregated cycle

lanes and other associated transport infrastructure such as signage, bus stops and additional lighting. Therefore, insensitive design and large land take could result in negative effects on the regions biodiversity.

- Indirect positive effects have been identified for actions that encourage sustainable transport modes such as policies in Objective 1and Objective 5 as these actions are likely to help improve air quality and reduce carbon emissions. Greater uptake in sustainable transport modes may also reduce the number of single occupancy journeys which could lessen the impact of disturbance.

- **Objective 3 (Carbon Emissions):**
  - Most actions have resulted in positive effects. Significant positive effects have resulted from actions which help to decarbonise the transport network, most notably Objective 1, from enabling the shift to more sustainable transport modes which reduce private car travel and implementation of low carbon vehicles, such as EVs, and technologies.
  - Both positive and negative effects have been identified for Policy 8. These actions support the improvement of large local major and major road network which may result in an increase in carbon emissions through the embodied carbon associated with the construction and maintenance, and emissions from the operational use of the transport systems.
  - There is also potential that this could support the continued reliance on private vehicles, which could worsen air quality and could compromise meeting carbon and climate change targets.
- **Objective 4 (Water, Soil and Mineral Quality and Resources):**
  - Actions have resulted in predominantly neutral effects.
  - Significant positive effects were identified for actions within policies 11 and 18. Water quality is likely to improve from NCC working with Broads Authority and other partners to decarbonise waterways, as part of Policy 11, and the requirement for agricultural land and infinite resources will be reduced due to NCC's approach to maintain the existing asset rather use this funding on new assets, part of Policy 18.
  - Uncertain effects have been identified for actions that support the delivery of new transport infrastructure which will require the use of raw materials and could result in the loss of land, including 'Best and Most Versatile' agricultural land, as well as modify and discharge into local waterbodies. However, this will depend on scheme level designs which come forward, as opportunities could arise, where practical, for works to reuse existing materials and promote waste minimisation.
- **Objective 5 (Climate Change):**
  - All actions have resulted in positive effects. Significant positive effects have resulted from actions that make preparations for future changes and challenges which are likely to help build early resilience for society, environment and the economy and provide practical solutions to tackling the challenge of climate change.

- **Objective 6 (Quality and Safety):**
  - Actions resulted in predominately positive effects. Significant effects were identified for actions that improved the active travel modes and public transport offerings within Norfolk such as Objective 5 and Policy 19.
  - If carefully designed, the provision of new and improved routes for cyclists and pedestrians as part of the Local Cycling and Walking Infrastructure Plans (LCWIPs), and more reliable and frequent bus services, are likely reduce the number collisions involving pedestrians and cyclists, and road traffic accidents due to the reduced number of vehicles on the road network.
  - Other significant effects were identified for actions which could help to increase the feeling of safety.
  - Most notably however, Objective 6 included actions to improve transport safety and reduce the number of people killed and seriously injured by delivering the Safe Systems Approach which will deliver a number of road safety initiatives such as the deployment of speed cameras and behavioural change programmes.
  - Actions that support 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.
  - Both positive and negative effects were identified for actions within policies 2 and 12. These actions help to deliver the shift to more sustainable transport modes through implementation of LCWIPs and electric vehicles (EVs). However, EVs are quieter than internal combustion engine vehicles which could increase the risk of accidents, especially with pedestrians who may suffer with partial or complete hearing loss or those who are visually impaired. There are also potential issues with obstructive charging facilities (e.g. trailing cables), which can put pedestrians, particularly people with disabilities or those who use pushchairs, at risk.
- **Objective 7 (Poverty and Social Exclusion):**
  - Most actions have resulted in positive effects. Significant positive effects were identified for actions that support the modal shift to more sustainable transport modes which will help to improve access to employment centres, schools and health centres, and reduce social isolation, for all inclusively, especially those who cannot drive or own a private car.
  - Both positive and negative effects have been identified for actions within policies that support improvements to active and public transport as well as, the implementation of NCC's EV Strategy, which may disproportionally affect those in deprived areas who may be less able to adapt and accommodate changes for these vehicles.
  - Uncertain effects were identified for actions within Policy 22 where the use of new technologies may require access to and knowledge of how to use smart phones and other smart devices. Therefore, elderly members of the population and/or those lower income groups without access to a smart device, may not benefit so greatly.

- **Objective 8 (Accessibility and Economic Growth):**
  - All actions have resulted in positive effects. Significant positive effects have been identified where actions have supported the investment in innovative technology and sustainable supply chains which are ready for future challenges, such as Objectives 1, and increasing connectivity across Norfolk, including rural areas, to provide greater economic opportunities, such as increased tourism (Objective 3).
- **Objective 9 (Historic Environment):**
  - Actions have resulted in mixed effects, with predominately both positive and negative effects or uncertain effects. Some actions, such as within policy 8 and Objective 7 , will require new transport infrastructure and associated components such as street fixtures, lighting, furniture, signage, and maintenance equipment which can have the potential to erode the character and setting of heritage assets. However, these effects will be determined by scheme level design.
  - Both positive and negative effects have been identified for actions that support the transition to more sustainable transport. As these are likely to result in new infrastructure and development due to the construction of bus lanes, segregated cycle lanes, and other associated transport infrastructure such as signage, bus stops and additional lighting; insensitive design and large land take could result in negative effects on the region's designated heritage assets. However, the addition of cycle routes and footpaths could also present opportunities for greater access to the county's heritage.
  - Minor positive effects have been identified for actions that aim to improve air quality in Norfolk such as within policies 7 and 11, as air pollution is a key factor in the degradation of surfaces of historical buildings.
- **Objective 10 (Economic Growth):**
  - Actions have either resulted in positive or neutral effects. Significant positive effects have been identified for actions that support the introduction of new technology and low carbon/efficient vehicles (Policy 2 and Objective 3) which 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 which is ready for future challenges, such as actions within Objective 1.
  - Increasing connectivity across Norfolk, including rural areas, may provide greater economic opportunities, allowing businesses to grow (Objective 3). These opportunities could also attract more businesses into the region, and increased tourism.
- **Objective 11 (Access to employment):**
  - Actions have resulted in predominately significant positive effects. Significant positive effects have been identified for actions that help to improve connectivity and

accessibility to employment for all inclusively, through improvements to active and public transport modes (actions within Objectives 1, 3, and 4) and implementation of EVs (Policy 2 and Objective 3).

- **Objective 12 (Reduce death and injury):**
  - Actions have predominately resulted in positive effects.
  - Significant positive effects have been identified for actions that help to improve the safety of the transport network, in particular Objective 6, and improve active transport which will help to reduce the number of accidents involving pedestrians and cyclists. The encouragement of sustainable transport modes will also help to reduce the number of vehicles on the road and therefore will reduce the number of collisions on the road network.
  - Both positive and negative effects have been identified for actions within policies 2 and 12 as they support improvements to active and public transport, as well as the implementation of the EV strategy. EVs are quieter than internal combustion engine vehicles resulting in increased risk of accidents, especially with pedestrians who may suffer with partial or complete hearing loss or those who are visually impaired. There are also potential issues with obstructive charging facilities (e.g. trailing cables), which can put pedestrians, particularly people with disabilities or those who use pushchairs, at risk.
- **Objective 13 (Health and Wellbeing):**
  - All actions have resulted in positive effects. Significant positive effects have been identified for actions that support the modal shift to more active transport modes, such as actions within Objectives 1 and 5, which will provide benefits to both physical and mental health. Provision of sustainable travel options between rural settlements and onward to urban centres (Objective 5) will reduce severance, improve accessibility to jobs, services, healthcare and amenities and will open up access to the countryside.
  - Further significant positive effects have also been identified for actions within Policy 7 that help to improve air quality, as exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung cancer, leading to reduced life expectancy, especially for those more vulnerable members of the population.
- **Objective 14 (Townscapes and Landscapes):**
  - Actions have resulted in mix of effects with most being identified as both positive and negative. Actions which require new transport infrastructure and associated components such as street fixtures, lighting, furniture, signage, and maintenance equipment, such as within Objective 1, policy 8 and Objective 7, can have the potential to have a major visual impact and erode the townscape character and landscape setting.

- However, the encouragement of more sustainable transport modes will also result in a reduction in noise pollution caused by traffic, due to the reduction of single occupancy journeys. This could increase tranquillity and contribute to overall sense of place.
- Uncertain effects have been identified for actions within policies 5, 8, 21, and 22 that will require new infrastructure, which could result in negative impacts on Norfolk's landscape. However, development is very much dependent upon the interventions required and schemes that may come forward.

- **Objective 15 (Noise):**
  - Actions have predominately resulted in minor positive effects. Significant positive effects were identified for actions that support the transition to more sustainable transport modes and implementation of EVs, such as actions within Objective 1, which is likely to reduce the number of vehicles on the road and reduce noise caused from car transport therefore reducing noise pollution.

5.2.5 The full assessment of IP actions can be found in **Appendix A**.

5.3 Assessment of Alternative IP Actions

5.3.1 The SEA Regulations require an assessment of the plan and its "reasonable alternatives". In order to assess reasonable alternatives, different options for delivering proposals and actions for transport across Norfolk were developed and assessed against the established sustainability objectives and environmental baseline.

5.3.2 The assessment considers the development and eventual adoption of the actions contained in the IP. Each of the seven LTP objectives had a number of proposed alternatives for delivering transport initiatives across the county, with a total of 16 alternatives being assessed. The action alternatives have been assessed as a whole package under each of the seven key LTP4 objectives.

5.3.3 The assessments can be found in **Section 5.5** below.

Table 5-3 – Assessment Overview of IP Action Alternatives

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

Assessment of IP Action Alternatives

5.3.4 The assessment of alternatives has resulted in a greater number of uncertainties than the preferred IP options, which have generally occurred due to the limited amount of supporting information available to support these actions.

5.3.5 Alternatives to Objective 6 (improving transport safety) is the only alternative that has the potential to result in significant positive effects. Positive effects were identified for SA6 (quality and safety), SA7 (poverty and social exclusion), SA12 (Reduce death and injury) and SA13 (Health and Wellbeing), as alternatives are likely to result in increased safety on the transport network, through the introduction of behaviour change and targets and is likely to help reduce the number of accidents and make the transport network more inclusive and safer for all users.

5.3.6 The greatest number of uncertainties have been identified in relation to Objective 4 (enhancing Norfolk's quality of life) as it intends to only concentrate on delivery of measures within current plans, and only meet current requirements and guidance. Negative effects are unlikely to be significant as plans would still meet existing national and local requirements and legislation, however, it's not clear how effective this would be.

5.3.7 Objective 2 (delivering a sustainable Norfolk) has resulted in the highest number of significant negative effects. Alternative implementation actions could result in transport not being considered at an early-enough stage in planning proposals, potentially resulting in developments coming forward in unstainable and undesirable locations. This has resulted in significant negative effects on biodiversity (SA2), soils (SA4), the historic environment (SA9), and landscape and townscapes (SA14), as development may give way to insensitive design, that does not take into account landscape and heritage settings and their importance (in particular the Norfolk Broads, historic character of Norwich and high quality soils).

5.3.8 Objective 3: Enhancing Connectivity has resulted in significant negative effects on SA8 (access and economy) and SA10 (investment and growth). Alternatives aim to pause current development plans and review them which could result in some developments being delayed or aborted. NCC have previously committed to developing a number of schemes and developments and the business cases demonstrate their overriding need. Not building these schemes and their associated infrastructure themselves would also result in missed opportunities for substantial employment opportunities during construction and operation.

5.3.9 IP alternatives for Objective 1 (embracing the future) are likely to lead to slower responsive actions to global challenges within the county, which includes reducing carbon emissions and working to achieve net zero. In the meantime, this could lead to a rise in carbon emissions and has therefore resulted in significant negative effects on SA3 (carbon emissions).

5.3.10 The full assessment of IP action alternatives can be found in **Appendix A**.

5.4 Assessment of Major and Significant Transport Schemes

5.4.1 The assessment of major and significant transport schemes has been summarised by SA objective below. **Table 5-4** shows the findings from these assessments.

Table 5-4 – Assessment of Major and Significant Transport Schemes

Scheme	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
Norwich Western Link	+/-	- -	+/-	- -	?	++	++	++	?	++	++	++	+/-	- -	+/-
A10 West Winch Housing Access Road	+/-	-	+/-	- -	?	+	+	++	?	++	++	++	+/-	?	+/-
A140 Long Stratton Bypass	+/-	- -	+/-	- -	?	++	++	++	- -	++	++	++	+/-	?	+/-
A17/A47 Pullover Junction, King's Lynn	?	?	?	?	?	++	+	++	?	++	++	++	?	?	?
A11 Thetford Bypass Junctions	+/-	0	+/-	0	0	+	0	+	0	+	+	+	0	0	0
A47 Wisbech Bypass Junctions	+/-	0	+/-	?	0	++	0	+	0	+	+	++	0	0	0
A47 Tilney to East Winch Dualling	+/-	- -	+/-	- -	?	++	+	++	- -	++	++	++	+	- -	- -

Scheme	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
A47 Acle Straight Dualling	+/-	--	+/-	- -	?	+	+	++	- -	++	++	+	?	- -	- -
Norwich to London Rail (Norwich in 90)	++	+/-	++	0	0	++	++	++	+/-	++	++	++	0	+/-	-
Great Yarmouth Rail Station	+	0	+	0	0	+	0	+	0	+	0	0	0	+	+
Ely Area Enhancements	+/-	?	+/-	?	+	++	+	++	?	++	+	++	+	?	+/-
East West Rail (Cambridge to Oxford)	+/-	?	+/-	?	?	+	++	++	?	++	++	+	+	?	+/-
Broadland Growth Triangle Link Road	+/-	?	+/-	?	?	+	+	++	?	++	++	+	+	?	+/-
Attleborough Link Road	+/-	?	+/-	?	?	++	++	++	?	++	++	++	+	?	+/-
A148 Fakenham Roundabout Enhancement	?	0	?	0	0	+	+	++	0	++	+	+	0	0	?

Scheme	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
Broadland Business Park Rail Station	+/-	+/-	++	0	+	++	++	++	+/-	++	++	++	+	+/-	+/-
Weavers Way	++	?	++	?	+	++	++	+	?	0	0	++	++	+	+
The Green Loop	++	?	++	?	+	+	+	+	?	?	+	+	++	?	+
North Walsham Link Road	+/-	?	?	- -	?	++	+	++	?	++	++	++	++	?	+/-
Longwater additional access	+/-	0	+/-	0	0	?	0	+	0	0	+	?	?	0	+/-
A149 King's Lynn Bypass	+/-	- -	+/-	?	?	++	+	++	?	++	++	+	++	?	+/-
Trowse Rail Bridge	+/-	?	+/-	?	+/-	+	+	++	0	++	++	+	+	+/-	?

5.4.2 The assessment of the major and significant transport schemes has been summarised by SA objective below

- **Objective 1 (Air Quality):**
  - The schemes resulted in predominately both positive and negative effects.
  - Significant positive effects were identified for schemes that help to improve public and active transport offerings within Norfolk, such as Norwich to London Rail, Weavers Way and Green Loop. These schemes will help to achieve a modal shift in sustainable transport, reducing transport related emissions due to a reduction private car use and single occupancy journeys.
  - Both positive and negative effects have been identified for schemes that could cause air pollution to increase due to improving the accessibility and connectivity of the road network such as NWL, dualling of the A47, and implementation of link roads (Attleborough and Broadland Growth Triangle). However, these schemes, also target improvements to active transport links which will help to improve local air quality.
  - Other positive and negative effects have been identified for railway schemes such as Ely Area Enhancements and East West Rail where the increased frequency in services may increase delay at level crossings which are key sources of air pollution.
- **Objective 2 (Biodiversity and Geodiversity):**
  - The schemes resulted in mixed effects.
  - Significant negative effects were identified for the NWL, A140 Long Stratton Bypass, A47 Tilney to East Winch Dualling, and A149 King's Lynn Bypass due to the requirement of land take in areas with high biodiversity value. The A140 Long Stratton Bypass transects areas with known bat activity, including the rare barbastelle bat and the A47 intersects the River Nar SSSI between Tilney to East Winch. Therefore, development of these scheme could lead to direct habitat loss and fragmentation.
  - Uncertain effects were identified where specific detail of the scheme is missing therefore it is unclear what effects, if any, the scheme will result in. These schemes include A17/A47 Pullover Junction, King's Lynn, Ely Area Enhancements, Broadland Growth Triangle Link Road, and Attleborough Link Road.
- **Objective 3 (Carbon Emissions):**
  - The schemes resulted in predominately both positive and negative effects.
  - Significant positive effects were identified for schemes that help to improve public and active transport offerings within Norfolk, such as Norwich to London Rail, Weavers Way and Green Loop. These schemes will help to achieve a modal shift in sustainable transport, reducing transport related emissions due to a reduction private car use and single occupancy journeys.
  - Both positive and negative effects have been identified for schemes that could cause an increase in carbon emissions due to improving the accessibility and connectivity of the road network such as NWL, dualling of the A47, and implementation of link roads

(Attleborough and Broadland Growth Triangle). However, these schemes, also target improvements to active transport links which will help reduce transport related carbon emissions.

- A number of these larger scale schemes are likely to involve significant amounts of embodied carbon emissions.

Other positive and negative effects have been identified for railway schemes such as Ely Area Enhancements and East West Rail where the increased frequency in services may increase delay at level crossings which are key sources of carbon emissions.

Objective 4 (Water, Soil and Mineral Quality and Resources):

- The schemes resulted in uncertain, neutral and significant negative effects.
- Significant negative effects were identified for schemes that required new infrastructure and land take of high-quality agricultural land, such as NWL, A10 West Winch Housing Access Road, A140 Long Stratton Bypass, dualling of the A47, and North Walsham Link Road. These schemes could result in this land being lost.
- Uncertain effects have been identified for schemes that required the use of raw, finite materials. However, this will depend on scheme level designs which come forward, as opportunities could arise, where practical, for works to reuse existing materials and promote waste minimisation.

- **Objective 5 (Climate Change):**

  - The schemes have resulted in predominantly uncertain effects as specific detail of the schemes are currently not finalised, therefore it is unclear what effects the schemes will have on climate change.
  - Positive effects have been identified for Weavers Way and Green Loop due to supporting the modal shift to more sustainable transport modes.

- **Objective 6 (Quality and Safety):**

  - Most schemes have resulted in positive effects.
  - Significant positive effects were identified for schemes that improved the safety of the road network, such as NWL, A140 Long Stratton Bypass and A11 Thetford Bypass junctions, or improved the public transport offerings within Norfolk such as Norwich to London Rail, Ely Area Enhancements, and Weavers Way. These schemes help to either alleviate congestion issues or reduce the number of vehicles on the road network.
  - Uncertain effects were identified for Longwater additional access as the junction improvements may help to improve safety and reduce the number of accidents at the junction; however, this will be dependent upon scheme level design.

- **Objective 7 (Poverty and Social Exclusion):**

  - All schemes resulted in positive or neutral effects.

  Significant positive effects were identified for schemes that improved access to employment and community facilities from improving the capacity of the road network,

such as NWL and A140 Long Stratton Bypass or improving the public transport offerings within Norfolk such as Norwich to London Rail, East West Rail, and Weavers Way.

- **Objective 8 (Accessibility and Economic Growth):**
  - All schemes resulted in positive effects.
  - Significant positive effects were identified for schemes that support the future population growth in Norfolk by increasing the capacity of the road network such as NWL, A10 West Winch Housing Access Road, and A140 Long Stratton bypass, or rail network such as Norwich to London Rail and East West Rail.
  - Other positive effects were identified for schemes that improve connectivity nationally or even internationally such as Broadland Growth Triangle Link Road, that provide new and improved opportunities for economic markets and a chance for businesses to grow
- **Objective 9 (Historic Environment):**
  - Schemes have resulted in mixed effects, with predominantly uncertain effects.
  - Significant negative effects were identified for A140 Long Stratton Bypass, A47 Tilney to East Winch Dualling, and A47 Acle Straight Dualling. The A140 Long Stratton Bypass may physically disturb or change the setting of historic assets, and the Long Stratton Conservation Area located immediately adjacent.
  - Dualling of the A47 is likely to negatively affect historic assets (designated and undesignated including buried assets) during construction from noise, vibration, temporary reductions in air quality (including dust spoiling). These are also likely to require components that will permanently degrade the unique historic environment
- **Objective 10 (Economic Growth):**
  - Most schemes have resulted in positive effects
  - Significant positive effects were identified for schemes that support the future population growth in Norfolk by increasing the capacity of the road network such as NWL, A10 West Winch Housing Access Road, and A140 Long Stratton bypass, or rail network such as Norwich to London Rail and East West Rail.
  - Other positive effects were identified for schemes that improve connectivity nationally or even internationally such as Broadland Growth Triangle Link Road, that provide new and improved opportunities for economic markets and a chance for businesses to grow
  - Uncertain effects were identified for The Green Loop as it is currently unclear whether the development of this network will encourage investment in Norwich, and the surrounding area through improved connectivity
- **Objective 11 (Access to employment):**
  - Most schemes have resulted in positive effects.

- Significant positive effects were identified for schemes that support the future population growth in Norfolk by increasing the capacity of the road network such as NWL, A10 West Winch Housing Access Road, and A140 Long Stratton bypass, or rail network such as Norwich to London Rail and East West Rail. These schemes will improve access to employment inclusively.

- **Objective 12 (Reduce death and injury):**
  - Most schemes have resulted in positive effects.
  - Significant positive effects were identified for schemes that aim to improve the safety of the road network, such as NWL, A140 Long Stratton Bypass and A11 Thetford Bypass junctions, or improved the public transport offerings within Norfolk such as Norwich to London Rail, Ely Area Enhancements, and Weavers Way. These schemes could help to either alleviate congestion issues or reduce the number of vehicles on the road network.
  - Ely Area Enhancements will also reduce the number of HGV's on the road network due to the potential to increase rail freight services.
  - Uncertain effects were identified for Longwater additional access as the junction improvements may help to improve safety and reduce the number of accidents at the junction; however, this will be dependent upon scheme level design.
- **Objective 13 (Health and Wellbeing):**
  - Schemes have resulted in mixed effects.
  - Significant positive effects were identified for schemes that help to improve the active transport offerings in Norfolk such as Weavers Way and Green Loop. These schemes will also provide further benefits to human health by helping to improve air quality.
  - Other positive effects were identified for schemes that help to reduce stress whilst using the road network, such as the A10 West Winch Housing Access Road and A140 Long Stratton Bypass.
  - Some larger road schemes such as NWL, the A10 West Winch Housing Access Road and A140 Long Stratton Bypass have potential to increase noise and air pollution at some locations, which could have negative effects on health and wellbeing at some locations.
- **Objective 14 (Townscapes and Landscapes):**
  - Schemes have resulted in mixed effects with predominantly uncertain effects.
  - Significant negative effects were identified for NWL, A47 Tilney to East Winch Dualling, and A47 Acle Straight Dualling. These schemes will require land take and will introduce new infrastructure that could have major visual impacts and erode the townscape character and landscape setting.
  - Both positive and negative effects were identified for schemes that will help to reduce air and noise pollution which will help to improve tranquillity, but will require

components such as street fixtures, lighting, furniture, signage, and maintenance equipment that may have a visual impact.

- **Objective 15 (Noise):**
  - Schemes have resulted in mixed effects.
  - Significant negative effects were identified for the A47 dualling schemes. These schemes increase ethe capacity of the road network which will increase noise pollution.
  - Both positive and negative effects have been identified for rail schemes that will help to reduce vehicles on the road network by improving rail offerings in Norfolk, however the increased frequency of rail services could increase noise pollution at some locations.

5.5 Assessment of Major and Significant Transport Schemes Alternatives

5.5.1 The assessment of alternatives to the major and significant transport scheme, looked at a 'do nothing' scenario, where each of the transport schemes would not be delivered.

5.5.2 **Table 5-5** below shows a summary of the findings from this assessment. Key findings of the assessment can be found overleaf, and full assessment can be found in **Appendix B**.

Table 5-5 – Assessment of Major and Significant Transport Scheme Alternatives

Scheme	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
Norwich Western Link	+/-	0	+/-	0	0	-	-	-	0	-	-	-	+/-	0	+/-
A10 West Winch Housing Access Road	+/-	0	+/-	0	-	-	-	-	0	- -	-	-	+/-	0	+/-
A140 Long Stratton Bypass	+/-	0	+/-	0	-	-	-	-	0	- -	-	-	+/-	0	+/-
A17/A47 Pullover Junction, King's Lynn	?	0	?	0	-	-	-	- -	0	- -	-	-	-	0	?
A11 Thetford Bypass Junctions	-	0	-	0	0	-	0	-	0	-	-	-	0	0	0
A47 Wisbech Bypass Junctions	-	0	-	0	0	-	0	-	0	-	-	-	0	0	0

Scheme	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
A47 Tilney to East Winch Dualling	?	0	?	0	?	- -	-	-	0	- -	-	- -	-	0	?
A47 Acle Straight Dualling	?	0	?	0	?	-	-	-	0	-	-	-	0	0	?
Norwich to London Rail (Norwich in 90)	-	0	-	0	0	0	0	-	0	-	-	0	0	0	0
Great Yarmouth Rail Station	0	0	0	0	0	0	0	-	0	-	0	0	0	-	0
Ely Area Enhancements	+/-	0	+/-	0	0	-	-	-	0	-	-	-	0	0	+/-
East West Rail (Cambridge to Oxford)	+/-	0	+/-	0	0	0	-	-	0	-	-	0	0	0	+/-
Broadland Growth Triangle Link Road	-	0	-	0	0	-	0	-	0	-	-	-	0	0	0
Attleborough Link Road	-	0	-	0	0	-	0	-	0	-	-	-	0	0	0
A148 Fakenham Roundabout Enhancement	-	0	-	0	0	-	0	-	0	-	-	-	0	0	0

Scheme	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12	SA13	SA14	SA15
Broadland Business Park Rail Station	-	0	-	0	0	0	0	-	0	-	-	0	0	0	0
Weavers Way	-	0	-	0	-	-	-	-	0	0	0	-	-	0	-
The Green Loop.	-	0	-	0	-	-	-	0	0	0	0	-	-	0	-
North Walsham Link Road	?	0	?	?	0	0	-	-	0	- -	-	0	-	0	?
Longwater additional access	-	0	-	0	0	-	0	-	0	0	-	0	-	0	-
A149 King's Lynn Bypass	-	0	?	0	-	-	-	-	0	-	-	-	-	0	?
Trowse Rail Bridge	-	0	-	0	-	0	0	-	0	-	-	-	0	0	-

Key findings of the assessment of Major and Significant Transport Schemes Alternatives

5.5.3 The assessment of alternatives has resulted in a greater number of neutral and minor negative effects than the proposed major and significant transport schemes. No positive effects have been identified.

5.5.4 Minor negative effects have predominantly occurred due to missing opportunities for improving links to national economic markets and improving the capacity of the transport network to support the growth in population. Uncertain effects have occurred due to the limited amount of supporting information available to support these schemes.

5.5.5 Significant negative effects have been identified for SA10 (economic growth) as a result of not implementing A10 West Winch Housing Access Road, A140 Long Stratton Bypass**,** A17/A47 Pullover Junction, A47 Tilney to East Winch Dualling and North Walsham Link Road. These may result in Norfolk missing out on opportunities for new economic markets and a chance for businesses to grow, supporting economic growth and a strong sustainable local economy. This could also mean that vital housing developments do not come forward, which could limit housing availability within the county driving up prices and potentially forcing residents to locate outside of the county.

5.5.6 Negative effects were also identified for SA8 (access and economy), SA11 (access to jobs), and SA12 (accidents) for most schemes. If these were not taken forward existing issues of congestion and severance will make it harder for residents to travel to work and access services and reduce the safety of the road network.

5.5.7 Air quality issues are also likely to continue or worsen if schemes that help to reduce congestion or remove vehicles form the road network such as NWL, dualling of the A47, and Ely area enhancements, were not taken forward.

5.5.8 The full assessment of IP action alternatives can be found in **Appendix B**.

5.6 Health Impact Assessment

5.6.1 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.

5.6.2 The HIA assessment (**Appendix D**) identified that the proposed IP actions 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.

5.6.3 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.

5.7 Equalities Impact Assessment

5.7.1 An EqIA was undertaken to assess the IP actions from an equality perspective (**Appendix C**). The EqIA has considered the impact that these actions 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.

5.7.2 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.

5.7.3 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, the LTP4 Strategy and actions set out in the IP should incorporate measures for all levels of mobility so as not to exclude people who are unable to participate in active travel.

5.7.4 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. Similarly, actions that aim to implement new technologies, may also disproportionately affect the elderly, those with learning difficulties and those lower income groups who may not have the access or understanding to use these emerging technologies.

6 Cumulative Effects

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

6.1.2 Cumulative effects arise, for instance:

- Where several individual implementation actions have a combined effect on a SA objective; or
- Where several plans together have a significant effect.

6.1.3 This section therefore presents the findings of the following:

- How the proposed actions within the IP could cause cumulative effects in association with other plans, policies and projects in the surrounding area (Inter-project effects); and
- Consideration of how different proposed actions within the IP may interact and cause cumulative effects on a receptor (Intra-project effects).

6.1.4 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.

6.1.5 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 2022).

6.2 Inter Project Effects

Table 7-1 below outlines the sources of potential inter-cumulative effects. Further details are provided overleaf, detailing the cumulative effects identified for each of the SA Topics in relation to these policies and plans.

Table 6-1 – Cumulative Effects

Policies, Plans and Schemes	Potential Source of Cumulative Effects
Development Consent orders (DCO) submissions: • A47 - A11 Thickthorn Junction • A47 Blofield to North Burlingham • A47 North Tuddenham to Easton	The three DCOs proposed form part of National Highway's A47 Corridor Improvement Programme. It is recognised that the A47 has a number of congestion hotspots in the county particularly around Norwich and Great Yarmouth. These result in delays and concerns regarding safety for all road users. There is potential for these schemes to have both positive and negative cumulative impacts on noise, air quality, health and population, noise, climate change, the historic environment and landscape and

Policies, Plans and Schemes	Potential Source of Cumulative Effects
	townscape. The schemes are likely to result in positive cumulative effects the economy and employment, community safety and the prevalence of accidents.
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.

Policies, Plans and Schemes	Potential Source of Cumulative Effects
	An integrated sustainability assessment was undertaken in 2020 which has similar topics to those listed for this SA and identified 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. An 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	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

Policies, Plans and Schemes	Potential Source of Cumulative Effects
Kings Lyn Transport Strategy Transport for Norwich	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.

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

- **Air Quality (Objective 1)**: 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.
- **Objective 2 (Biodiversity and Geodiversity)**: 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.
- **Objectives 3 and 5 (Climate Change and Carbon Emissions)**: 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.
- **Objective 4 (Water, Soil and Mineral Quality 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 likely to be specific to each development, but there may be cumulative benefits if implemented county-wide. 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.

- **Objectives 6 and 12 (Quality, Safety and Injury):** There may be cumulative benefits (depending on scheme design) on fear of crime and transport related collisions, due to opportunities to improve safety standards on all forms of transport.
- **Objectives 7, 8, 10 and 11 (Community, inclusion 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.
- **Objective 9 (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.
- **Objective 12 (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, the A47 Corridor Improvement Programme DCOs, 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.
- **Objective 13 (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.
- **Objective 14 (Townscape and Landscape)**: 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.

- **Objective 15 (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.

6.3 Intra Project Effects

6.3.1 The SA assessment of the IP identified potential intra-project cumulative effects. These have been detailed by SA topic below. To avoid repetition, some of these SA objectives have been merged, where similar effects have been identified.

- **Objective 1 (Air Quality):** Temporary negative cumulative effects have the potential to result during the construction phase, if multiple larger scale developments (such as A10 West Winch Housing Access Road, A140 Long Stratton Bypass, Broadland Growth Triangle Link Road) with overlapping construction periods, were to come forward. Construction of these developments may reduce the air quality through an increase in particulate matter and dust. There is potential for actions that support the development of EVs, active travel and sustainable transport to cumulatively help reduce the negative impact of the transport network on air quality, however, it will be dependent upon the balance between these developments with larger road schemes.
- **Objective 2 (Biodiversity and Geodiversity):** There is the potential for negative cumulative effects on the natural environment and biodiversity if multiple large scale transport developments (such as A10 West Winch Housing Access Road, A140 Long Stratton Bypass, Broadland Growth Triangle Link Road, North Walsham Link Road, A47 Tilney to East Winch Dualling and A47 Tilney to East Winch Dualling) were to come forward. Depending upon the scale and type of options as well as their proposed location, there is potential for a cumulative loss of land, which could lead to damaged and segregated habitats.
- **Objectives 3 and 5 (Climate Change and Carbon Emissions):** Temporary negative cumulative effects have the potential to result during the construction phase if multiple large scale developments and infrastructure were to come forward. Construction of multiple schemes may increase levels of greenhouse gas emissions through the embodied carbon associated with the construction and maintenance of the development. The provision of public realm improvements and incorporation of green infrastructure as part of the design as well as maintaining and updating Norfolk Local Flood Risk Management Strategy, will help to build further resilience to climate change.
- **Objective 4 (Water, Soil and Mineral Quality and Resources):** If multiple schemes were to come forward, there is likely to be a large cumulative use of resources in construction. Depending upon location of these schemes there is potential for a cumulative loss of valuable agricultural land, this is particularly so for A140 Long Stratton Bypass, Broadland Growth Triangle Link Road, North Walsham Link Road as well as any development in the Norfolk Broads.

- **Objectives 6 and 12 (Quality, Safety and Injury):** The implementation of a combination of actions within the plan are likely to positively improve the safety of the transport network and reduce the number of accidents.
- **Objectives 7, 8, 10 and 11 (Community, Inclusion and Access):** The combination of actions within the IP are likely to provide positive effects on communities, inclusivity and access. If multiple schemes come forward which offer different transport modes for all groups, there is likely to be substantial increase in accessibility to community facilities, services, employment and recreation.
- **Objective 9 (Historic Environment):** There is the potential for negative cumulative effects on the historic environment if multiple transport and housing developments were to come forward in close proximity to heritage assets and Conservation Areas (areas such as Norwich King's Lynn, Cromer and Great Yarmouth. During construction of these new developments there is the potential for disturbance to the historic environment due to noise, vibration and temporary reductions in air pollution (dust soiling). Actions could also result in a cumulative increase in protection and preservation of heritage assets in the county. This could result in better understanding and appreciation of the historic environment. A cumulative reduction in air pollution as a result of some actions could reduce the long term deterioration of heritage assets from air pollution, however, it will be dependent upon the balance between these developments with larger road schemes.
- **Objective 12 (Economy and employment):**The IP proposes a number of initiatives that are likely to cumulatively improve access to employment within the county and beyond. This is likely to attract further inward investment to the county attracting new business and further employment opportunities.
- **Objective 13 (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. The introduction of more active travel schemes as part of the Local Cycling and Walking Infrastructure Plans may support a cumulative increase in the number of people undertaking active pursuits for commuting and recreation. There may also be cumulative negative effects on health relating to air quality and noise arising from a number of larger road schemes (such as Norwich Western Link, A140 Long Stratton Bypass and North Walsham Link Road).
- **Objective 14 (Townscape and Landscape):** There is the potential for negative cumulative effects on townscapes and landscapes if multiple transport and housing developments were to come forward in close proximity to areas with high landscape and townscape values such as the Norfolk Broads, Norwich, Cromer and Kings Lynn. During construction of these new developments there is the potential for disturbance and loss in tranquillity due to noise, vibration and temporary reductions in air pollution (dust soiling). Actions could also result in a cumulative increase in protection and preservation of townscapes and landscapes. A cumulative reduction in air and noise pollution as a result of some actions could improve tranquillity in these places and may provide better access

to important landscapes such as the Norfolk Broads. This will, however, be dependent upon the balance between these developments with larger road schemes.

- **Objective 15 (Noise):** There are likely to be cumulative effects arising from noise of increased development, particularly transport related development such as road and rail. this will be particularly pertinent during construction of schemes such as Norwich Western Link, A140 Long Stratton Bypass and North Walsham Link Road. The dualling of multiple schemes such as the A47 Tilney to East Winch Dualling and A47 Tilney to East Winch Dualling are also likely to cumulatively increase road noise in the county. The combination of active travel schemes, improve access to sustainable transport modes and EV vehicles, could result in a cumulative positive effects on noise pollution, however, it will be dependent upon the balance between these developments with larger road schemes.

7 Mitigation, Enhancements and Monitoring

7.1 Mitigation and Enhancements

7.1.1 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. Mitigation measures include both proactive avoidance of adverse effects and actions taken after potential effects are identified.

7.1.2 The mitigation measures proposed in **Table 7-1** are designed to avoid or reduce the negative and uncertain effects identified through the assessment of IP actions. Recommendations from HIA, EqIA and HRA have also been incorporated into the mitigation and enhancement measures. **Table 7-1** also includes enhancement measures, that aim to optimise positive impacts and enhance sustainability.

7.1.3 These mitigation and enhancement measures have built upon previous measures that were identified within the LTP4 SA Assessment. These measures, along with those identified within the SA Report for the LTP4, should be used to inform the subsequent development of specific schemes in line with the strategic objectives and policies.

Table 7-1 – Proposed Mitigation

SA Topic	Mitigation/Enhancement	Mechanism
Health and Population Inclusion and equality 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 Disability Discrimination Act 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.	Project level design and assessment
Health and Population Inclusion and equality	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
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	Project level design and assessment

SA Topic	Mitigation/Enhancement	Mechanism
Health and Population Inclusion and equality	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 Inclusion and equality	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.	Project level Community Safety Assessment, EqIA, HIA, BNG
Inclusion and equality	New active travel routes should be made wide enough to enable access for all users, including those with reduced mobility or disabilities.	Project level EqIA Disability and Discrimination Act compliance
Health, Population and equalities Inclusion and equality 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. This could include measures such as: ■ Fair pricing for public transport; ■ Consideration of grants and exemptions for electric vehicles, clean air zones and other vehicle restriction and charging schemes;	Project specific EqIA and HIA for projects Disability and Discrimination Act compliance

SA Topic	Mitigation/Enhancement	Mechanism
	■ Engagement with protected characteristic groups specifically to ensure the needs of these groups are identified;	
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. Where a transport project is likely to have a significant negative effect on the natural environment the avoidance-mitigation-compensation hierarchy should be considered. Where possible, less damaging alternatives should be considered with regards impacts to high value ecological and landscape receptors, including those of international, national and local importance (SACs, SPAs, Ramsar sites, SSSIs, AONB, county wildlife sites protected species).	Project levels biodiversity net gain assessment
Biodiversity Natural capital and ecosystem services Landscape and townscape Soil, land use, resource and waste	In order to maximise sustainability benefits, transport interventions must commit to biodiversity net gain and make use of the natural capital approach to ensure environmental net gain over and above that of decarbonisation.	Project level design and assessment
Landscape and Townscape	Transport solutions must seek to maximise sustainability benefits from existing landscape, townscape and heritage	Historic Landscape Characterisation

SA Topic	Mitigation/Enhancement	Mechanism
Cultural Heritage and the Historic Environment	assets by valuing them inherently and for the wider services they provide. Promoters and designers should liaise closely with NCC and Historic England to avoid or minimise negative impacts, such as land take and light pollution, whilst seeking to maximise benefits, such as tranquillity. Where transport infrastructure is being built and/or improved within, or 500m outside of a designated landscape, a landscape and visual impacts assessment should be undertaken to determine magnitude of impact and possible mitigation.	Project level design and assessment Project level landscape and visual impacts assessments
Noise	Developments coming forward as part of the LTP4 and IP should take noise into consideration at both the construction and operational phases. This could be provided through screening by natural landscape (such as earth mounds), using structures of noise tolerant uses (such as car parks and commercial developments) and including noise barriers. Effective land use planning should aim to avoid new highways cutting across residential areas or coming too close to sensitive areas (such as the Norfolk Broads).	Project level design and acoustic assessment

7.1.4 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;
- SA3: The overall reduction in carbon emissions;
- SA5: Adaptation to climate change;
- SA4: The potential loss of the County's best and most valuable agricultural land;
- SA9: The potential loss and degradation of the historic environment; and
- SA15: The potential increase in noise within the County's NIAs.

7.2 Monitoring

7.2.1 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.

7.2.2 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 the IP actions did not conclude any residual significant effects, monitoring has not been proposed for significant effects, however, **Table 7-**2 below outlines monitoring for some residual impacts that remain uncertain.

Table 7-2 – 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 Seek the achievement of the biodiversity net gain through application of Natural England's Biodiversity Metric 3.0 (or any updates) – click here for more information
The overall reduction in carbon emissions	Measure carbon emissions from the transport network in NCC annually, to monitor whether the LTP4 is resulting in a net reduction in carbon emissions.
Adaptation to climate change	The number LTP4 developments that benefit from climate resilient design. The number of instances of flooding on the transport network.
Potential negative effects on the historic environment	The number of historic assets (statutory and non-statutory) negatively affected by LTP4 schemes.

Potential Uncertain effect	What needs to be monitored?
	The number of historic assets (statutory and non-statutory) benefiting from conservation and enhancement measure as a result of LTP4.
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

8 Next Steps

8.1.1 This SA Report will be issued to consultees in March 2022 for a 6-week consultation period, alongside the IP.

8.1.2 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 IP.

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