Norfolk County Council

NORWICH TRANSPORT STRATEGY
SA Report

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1.   Introduction

1.1   Overview

Norfolk County Council (NCC) commissioned WSP to undertake a Sustainability Appraisal (SA) that incorporated the requirement of a Strategic Environmental Assessment (SEA) of the Draft Norfolk Local Transport Plan 4 Strategy (LTP4). This work also included a Health Impact Assessment (HIA) and Equalities Impact Assessment (EqIA) and was completed in July 2021.

The SA also included the assessment of the King's Lynn Transport Strategy and, the Great Yarmouth Transport Strategy. It was agreed that, once available, the assessment of the Transport for Norwich (TfN) Strategy will be undertaken and eventually appended to the main LTP4 SA. This is the main purpose of this report.

The TfN Strategy will replace the existing Norwich Area Transportation Strategy that was adopted in 2004, which set out a transportation strategy for the Norwich area until the year 2021. The draft TfN Strategy was prepared in June 2021 and this report provides the assessment of the Strategy's policies and alternatives.

The SA Report was issued alongside the TfN Strategy to the statutory consultees (Natural England, Historic England and the Environmental Agency) for a period of six weeks between August and October 2021. This later report, an update to the SA Report, has been prepared following that consultation period. This will be made available alongside the adopted TfN Strategy as well as the Post Adoption Statement, which will summarise how responses to consultation and the SEA have influenced the development of the Strategy.

2.2   Transport for Norwich

The TfN Strategy will form part of a suite of documents setting out transport policy in Norfolk. The LTP4 covers transport policy across the whole of the county, whilst the TfN Strategy will nest within this and provide the detail for the Norwich City area.

The TfN Strategy will cover the area of the city of Norwich, its suburbs and the first ring of surrounding villages, an area approximately 22km by 18km including the Norwich City Council administrative area and parts of the districts of South Norfolk and Broadland.

A wide range of local, regional, national and international policies have been taken into account in the Strategy's development. Core policy messages informing the TfN Strategy include the following themes:

The Environment

- Reducing carbon emissions, particularly from transport by facilitating electric vehicles, active travel, public transport and reducing the demand for travel;

- Protecting and improving the environment; and

- Improving air quality particularly in built up urban areas.

The Economy

- Supporting economic growth and recovery including from the impacts of the Covid-19 pandemic; and

- Providing and enhancing connectivity between key hubs and locations, such as key employment sites, rail stations, ports and airports, and key cities and places both within the

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county as well as nationally and internationally.

Society, Health and Equality

- Improving access to education and employment opportunities and tackling deprivation;
- Encouraging equality and equal access to travel for all;
- Improving the health of communities and increasing levels of physical activity;
- Improving air quality for the health of communities;
- Providing access to green space;
- Encouraging and enabling active travel by providing safe, continuous, direct, comfortable routes and engaging with communities; and
- Providing a safe, healthy and attractive environment for people to live and work in.

Technology

- Adapting to and embracing of new technologies in transport. For example, micro-mobility and autonomous vehicles.

The TfN Strategy brings these themes, from international to local policies and priorities together, in order to shape and set out a forward-thinking transport strategy for Norwich.

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2. Transport for Norwich Strategy Vision and Themes

The overall vision of the Transport for Norwich Strategy is: '***Norwich and the Strategic Growth Area around it will become a place to thrive because shared, clean, active and accessible travel are the first choice for journeys, and people within at least the urban area can access a range of services without a car***'.

The themes of the TfN Strategy include the following:

- **Norwich and Norfolk** – Businesses and people can succeed because they have clean, high-quality, modern and reliable connections. The health and well-being of people, and the success of the area and its places, is supported by a transport system that respects the environment.
- **A Zero Carbon Future** – Carbon is reduced: reductions in carbon emissions from transport in the Norwich area help achieve carbon neutrality by 2030 across all sectors in Norfolk. We have established a carbon baseline and developed a transport carbon budget.
- **Improving the Quality of our air** – Air quality is good. We have no air quality management areas and our plans mean air quality won't be an issue in the future.
- **Changing attitudes and behaviours** – People can move about freely, and they choose to do this primarily by active travel and public transport. At least 50% of journeys are undertaken by active travel; public transport provides a suitable alternative for other trips.
- **Supporting Growth Areas** – Sustainable growth in the right place is supported.
- **Meeting Local Needs** – The transport system supports the needs of everyone, being designed to take account the different needs of different people.
- **Reducing the dominance of traffic** – People and places are at the heart of what we do. The dominance of traffic will be reduced: Speeds are reduced to 20mph in residential neighbourhoods, traffic does not use the city centre unless it has a purpose to be there.
- **Making the Transport system work as one** – People have confidence in the transport system because they benefit from knowing that it is well thought out. The facilities available for different types of journey have been well-planned and prioritised and there is seamless interchange between different forms of transport.
- **Making it Happen** – Our vision is achieved through dialogue and action across people and partners.

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3. Sustainability Appraisal Methodology

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.

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.

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 the Draft Norfolk LTP4 Strategy follows that set out in the Practical Guide to SEA and the Planning Practice Guidance to SEA and SA. 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. Norwich) and subject matter (transport).
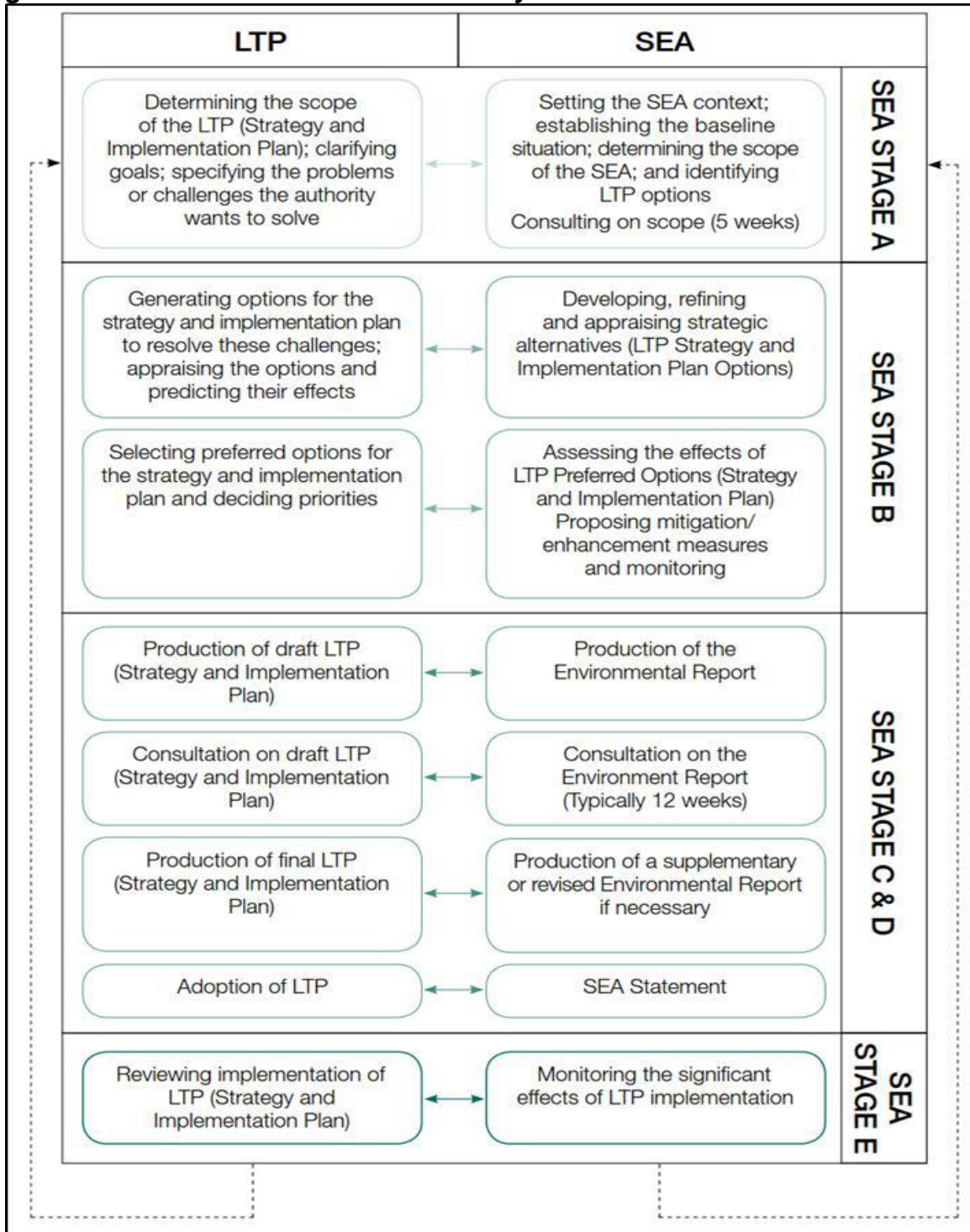
The key stages of the SEA process are the following:

- **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. Stage A, Scoping, was undertaken in 2019-2020 for the Norfolk LTP and supplementary strategies including the TfN Strategy. In line with the HIA and EqIA undertaken for the LTP4, this Report will also present assessment findings as well as specific mitigation and enhancement measures for both health and equalities.

The stages of the SEA process and their interactions with the LTP process are depicted in **Figure 3.1** below.

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Figure 3.1 - SEA/SA Process and Summary of the LTP Process

LTP	SEA	
Determining the scope of the LTP (Strategy and Implementation Plan); clarifying goals; specifying the problems or challenges the authority wants to solve	Setting the SEA context; establishing the baseline situation; determining the scope of the SEA; and identifying LTP options. Consulting on scope (5 weeks)	**SEA STAGE A**
Generating options for the strategy and implementation plan to resolve these challenges; appraising the options and predicting their effects	Developing, refining and appraising strategic alternatives (LTP Strategy and Implementation Plan Options)	**SEA STAGE B**
Selecting preferred options for the strategy and implementation plan and deciding priorities	Assessing the effects of LTP Preferred Options (Strategy and Implementation Plan) Proposing mitigation/ enhancement measures and monitoring	
Production of draft LTP (Strategy and Implementation Plan)	Production of the Environmental Report	**SEA STAGE C & D**
Consultation on draft LTP (Strategy and Implementation Plan)	Consultation on the Environment Report (Typically 12 weeks)	
Production of final LTP (Strategy and Implementation Plan)	Production of a supplementary or revised Environmental Report if necessary	
Adoption of LTP	SEA Statement	
Reviewing implementation of LTP (Strategy and Implementation Plan)	Monitoring the significant effects of LTP implementation	**SEA STAGE E**

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4. Sustainability Context

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.

Below summarises the key sustainability context of Norwich and the surrounding areas of the Broadland and South Norfolk Districts. Where possible, the baseline information has been updated to reflect current trends and issues.

Transport

- The A11 Corridor is of key strategic importance to Norwich, with rail and road routes providing key strategic access to London, Cambridgeshire and much of the UK.
- The A47 is an important road and bus route connecting Norwich to Great Yarmouth and Lowestoft to the east (which are also served by rail services) and providing access to King's Lynn, the Midlands and the north of the country to the west.
- There are also several key arterial routes and an inner and outer ring-road, providing access in and out of the city from surrounding settlements for all types of vehicle, including by bus and forms of active travel.
- National Cycle Network Route 1 goes through the centre of Norwich, with large parts traffic free and off road. This long distance route provides a connection between Dover and the North of Scotland.

Population

- Norwich, including the surrounding area of Broadland and South Norfolk Districts, has an estimated population of around 417,174 in 2020[5].
- In 2018, 55% of the population lived in the Norwich urban area, 10% lived in surrounding market towns such as Wymondham and Wroxham, and 35% lived in smaller towns and villages on Norwich's border.
- The population growth in Norwich and the surrounding area of Broadland and South Norfolk Districts has been significantly higher than regional and national averages. Between 2016 to 2020, the population of Norfolk (including Broadland and South Norfolk Districts) grew by 4.23% compared to a 2.29% growth in the East of England, and a 2.32% growth in England.
- Norwich has a population density of 3,604 people per km^2, Broadland District has a population density of 237 people per km2, and South Norfolk has a population density of 155 people per km.

Air Quality

- There is one Air Quality Management Areas (AQMAs) within Norwich; Central Norwich AQMA which was declared for exceedances of the NO_2 annual mean objective.
- The Norwich Air Quality Annual Status Report 2020 states that overall NO_2 concentrations within the Central Norwich AQMA are falling and no new hotspots for pollution have been identified.
- There are no AQMAs located within Broadland and South Norfolk Districts. The Broadland and South Norfolk Joint Air Quality Report 2019 states that the air quality is generally good. The key concern of pollution locally is associated with road traffic.

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Biodiversity

- There are three Special Areas of Conservation (SACs) within the Broadland and South Norfolk Districts - The Broads, River Wensum, Norfolk Valley Fens; and one SAC in Norwich - River Wensum.
- There are two Special Protection Areas (SPAs) in the Broadland District - Breydon Water and Broadland.
- There are 19 Sites of Special Scientific Interest (SSSIs) in Broadland District, 11 SSSIs in Norwich, and 31 SSSIs in South Norfolk District.
- There is one National Nature Reserves (NNR) in the Broadland District – Mid-Yare, and one NNR in South Norfolk District – Redgrave and Lopham Fen.
- There are 17 Local Nature Reserves located across Norwich and the Broadland and South Norfolk District.
- There are 1352 County Wildlife Sites (CWS) in Norfolk.
- There are multiple areas of Ancient Woodland in Norwich.

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.
- In 2019, the total CO_2 emissions from transport in Norwich was c.118kt, in the Broadland District the CO_2 emissions from transport was 263.7kt, and in South Norfolk it was much higher at c.408kt of CO_2. Both Norwich and the Broadland District have seen a decrease in CO_2 emissions since 2018, however, in South Norfolk there has been an increase of 2.67%.
- The A Roads in Norwich and the Broadlands and South Norfolk Districts generated the highest proportion of transport related CO_2 emissions in 2019, with c.52.6kt of CO_2 generated in Norwich, c.52.6kt in the Broadlands District and c.243.4kt of CO_2 in the South Norfolk District. This is closely followed by minor roads which generated c.51.2kt of CO_2 emissions in Norwich, c.95kt in the Broadland District and c.125.6kt in the South Norfolk District.
- Railways generated c.2.9kt of CO_2 emissions in Norwich, c.34.1kt in the Broadland District and c.4.4kt in the South Norfolk District[6].

Community and Access

- There are key services such as schools, shops, GP surgeries, hospital, and dentists located in Norwich and the Broadland and South Norfolk Districts.
- There are 17 LSOAs (neighbourhoods) in the city of Norwich amongst the top 10% most deprived neighbourhoods nationally in 2019. Norwich ranks 61 out of 317 local authorities nationally where a rank of 1 is the most deprived. South Norfolk is ranked 223 and Broadland is ranked 265 out of 317 local authorities.
- In 2020, the percentage of the population with no qualifications in the Broadland District was 6.6%, which is higher than regional (5.7%) and national (6.4%) averages.
- As the sample size was too small for reliable estimate in 2020, data was not available for Norwich and the South Norfolk District in 2020, but in 2019 the percentage of the population with no qualifications in Norwich was 10.6%, and in South Norfolk the percentage was 6.6%, compared to a regional average of 7.2% and national average of 7.7%.
- The percentage of children from low income families in Norwich is significantly worse than regional (14.1%) and national (17.0%) at 22.3%.
- In the Broadland and the South Norfolk Districts the percentage of children from low income

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families are significantly better than regional and national averages at 8.9%[15] and 10.4%[16] respectively.

- Job growth in Norfolk is targeted to increase by 55,000 for the period 2001-2021.

Cultural Heritage and the Historic Environment

- There are a total of 90 Conservation Areas within Norwich and the Broadland and South Norfolk District.

- There are 4,999 listed buildings, 84 Scheduled monuments and 20 Registered Parks / Gardens within Norwich and the Broadland and South Norfolk District.
- 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.

Economy and Employment

- Norwich is one of the fastest growing cities in the UK and contributes more than £3billion per annum to the national economy.
- The Norwich area strongly features most of the sectors identified as having high growth potential regionally which include: manufacturing and engineering at Hethel; agri-tech, health and life sciences at the Norwich Research Park and Food Enterprise Park; and IT and communications and digital creative industries in the city centre.
- Norwich also has an extensive leisure and cultural offer with a tourism industry supporting 54,000 skilled workers. Norwich and surrounding areas are experiencing growing numbers of day visitors, estimated at 40 million per year, and 12 million overnight visitors to historic buildings, parks and museums, cultural festivals and other regular events, along with access to the Broads and the coast.
- The population in Norwich and the Broadland District that are economically active is higher than the regional (80.5%) and the national average (79.1) at 84.5% and 83.4% respectively. The percentage of the population that are economically active in the South Norfolk District is lower than regional and national averages at 76.1%.
- The percentage of the population in Norwich that are unemployed is 4.3%, which is higher than the regional average (3.8%) and lower than the national average (4.6%). The percentage of the population in both the Broadland and the South Norfolk District that are unemployed is 3.1% which is lower than regional and national averages.
- Economic activity in males is higher than regional (84.7%) and national (82.9%) averages in Norwich (86.6%) and the Broadland District (84.9%), but lower in the South Norfolk District (78.5%).
- Economic activity in females is also higher than regional (76.0%) and national (75.3%) averages in Norwich (82.3%) and the Broadland District (81.8%), but lower in the South Norfolk District (74.1%).
- Average gross weekly earnings (full-time workers) are lower than the regional (£604.8) and national (£587.10) averages across Norwich and the Broadland and South Norfolk District. Average gross weekly earnings are highest in the South Norfolk District at £586.50, followed by the Broadland District at £554.1, and then Norwich at £510.10.
- Norwich is one of the largest centres of employment in greater south-east England and the destination for many commuters across the county.

Health

- Life expectancy in the Broadland and South Norfolk Districts for males and females are both significantly better than regional (males – 80.5 years, females – 83.9 years) and national (males – 79.8 years, females – 79.5 years) averages. In the Broadland District the life expectancy for males

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is 81.6 years and for females is 85.2 years. In the South Norfolk District, the life expectancy for males is 81.3 years and for females is 85.2 years.

- In Norwich, the life expectancy for males is significantly worse than national averages at 78.4 years and the life expectancy for females is similar to national averages at 83.1 years.
- Under 75 mortality rates from all causes in Norwich is significantly worse than regional (298 per 100,000 people) and national (326 per 100,000 people) averages at 397 per 100,000 people.
- The rates in the Broadland and South Norfolk District is significantly better than regional and national rates at 243 per 100,000 people and 242 per 100,000 people respectively.
- Under 75 mortality rates from all cardiovascular diseases in Norwich is significantly worse than regional (62.9 per 100,000 people) and national (70.4 per 100,000 people) averages at 86.8 per 100,000 people.
- The rates in the Broadland and South Norfolk District is significantly better than regional and national rates at 54.8 per 100,000 people and 47.5 per 100,000 people respectively.

- The number of people killed or seriously injured on the roads in Norwich and the Broadland District is similar to the regional (46.7 per 100,000 people) and national (42.6 per 100,000 people) average at 47 per 100,000 people, and 40.5 per 100,000 people respectively.
- The number of people killed or seriously injured on the roads in the South Norfolk District is significantly worse than regional and national averages at 54.4 per 100,000 people.

Landscape and Townscape

- There are five Landscape Character Areas (LCA) which span across Norwich and the Broadland and South Norfolk District: Mid Norfolk; Central North Norfolk; The Broads; North East Norfolk and Flegg; South Norfolk and High Suffolk Claylands.
- Norwich forms the major urban area within Norfolk. There are also a number of smaller settlements surrounding Norwich, which include Taverham, Hethersett, Swainsthorpe, Attleborough, Little Melton, Aylsham and Horsford.

Noise

- There are 26 road Noise Important Areas (NIAs) and 2 rail NIAs in Norwich. In the Broadland District there are 33 road NIAs, and in the South Norfolk District there are 37 road NIAs.
- An increase in noise from transport can have an adverse effect on general health, sleep and can be seen as a nuisance.

Soils and Resources

- Best and most versatile (BMV) agricultural land should be protected from significant, inappropriate or unsustainable development proposals. Areas of BMV agricultural land are located in the more rural outskirts of Norwich around the areas of Beeston (Grade 2) in the north, Little Plumstead and great Plumstead (Grade 1 and 2) towards the east of the city and Bixley (Grade 2) towards the south east of the city.
- There is one allocated waste site in Norwich, five in the Broadland District, and three in the South Norfolk District.
- There are three existing landfill sites in Norwich: Cantley Landfill; Spixworth Quarry; and Attlebridge Landfill.

- 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

- The River Bure, River Waveney, River Wensum, and the River Yare are key waterbodies within Norwich and the Broadland and South Norfolk Districts.

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- The Greater Norwich SFRA covers the Norwich City Council, Broadland District Council, South Norfolk Council and parts of the Broads Authority administrative areas. The SFRA has identified that parts of the Greater Norwich area are at high risk of flooding from both fluvial and surface water sources.
- Large areas to the east, south and west of the city are located within flood zone 3, however, most of this is dedicated floodplain. There are some areas within the city centre located within flood zone 2 and/ or 3. These are located around Coslany, Thorpe, The Close and Thorpe Hamlet.

Sustainability Appraisal Framework

A Sustainability Appraisal Framework has been produced to guide the assessment process of the plans and strategies. The framework (set out 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.

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.

Air Quality

Sustainability objective:
- SA1 - To improve air quality, particularly in areas affected by poor air quality.

Appraisal question:
- Reduce congestion and traffic levels particularly in AQMAs and congestion hot-spots?
- Encourage sustainability friendly transport?

Biodiversity

Sustainability objective:
- **SA2** - To maintain, protect and improve / enhance biodiversity and geodiversity.

Appraisal question:
- Cause damage to SAC's, SPAs, SSSIs, Local Nature Reserves (LNRs) and / or Local Wildlife Sites (LWS) though infrastructure provision, traffic or maintenance?
- Protect, maintain and enhance biodiversity within the Strategy/Plan area?
- Restore biodiversity and geodiversity?

Climate Change, Soils and Resources and Water Resources and Flooding

Sustainability objective:
- **SA 3** - To reduce carbon emissions
- **SA 4** - To maintain and improve water, soil and mineral quality and resources
- **SA 5** – To adapt to the effects of climate change

Appraisal question:
- 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?

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- Ensure the transport system is more resilient to the impacts of climate change?

Community and Access

Sustainability objective:
- 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.

Appraisal question:
- 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

Sustainability objective:
- **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.

Appraisal question:
- 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?

Economy and Employment

Sustainability objective:
- **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

Appraisal question:
- Increase connectivity and help alleviate congestion, reducing journey times?
- Improve access to employment centres?

Health and Population

Sustainability objective:
- **SA12** - To reduce death and injury
- **SA13** - To encourage healthy lifestyles and wellbeing

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Appraisal question:
- Improve the safety of the transport system?
- Increase walking and cycling?
- Improve mental health and wellbeing?
- Improve access to green spaces?

Landscape and Townscape (including seascape)

Sustainability objective:
- **SA14** - To protect and maintain townscapes and landscapes of visual importance, including the rural environment and town centres.

Appraisal question:
- Cause changes in traffic flows in areas valued for theirlandscape or visual character?
- Cause direct impacts through development or maintenanceon any areas valued for their landscape, townscape, intrinsic value or visual character?
- Consider the setting of the rural environment?

Noise

Sustainability objective:
- **SA15** - To minimise the effects of noise in the identified Noise Important Areas (NIAs)

Appraisal question:
- Maintain the noise baseline in NIAs?

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5. Sustainability Appraisal

5.1 INTRODUCTION

This section presents the findings of the assessment of the TfN Strategy objectives covering the proposed policies and policy alternatives.

Mitigation and enhancement measures for negative or positive significant effects are set out below in **Section 6** below.

5.2 Assessment of Alternatives

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

The assessment considers the development and eventual adoption of the policies contained in the TfN Strategy. Where possible, each of the TfN policies had at least one proposed policy alternative, with a total of 27 policy alternatives being assessed. The policy alternatives have been assessed asa whole package under each of the key themes.

In general, the alternatives have generated a higher number of uncertainties and significant negative effects than the proposed TfN policies. The assessments can be found in **Section 5.5** below.

5.3 Assessment of Draft Norwich Transport Policies

The assessment of the TfN Strategy objectives and composite policies is summarised below. The assessment will be guided by questions which have been outlined above.

The proposed policies have been assessed as a whole package under each of the key themes.

Below provides an overview of the performance of the TfN policies and alternatives

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5.4 Assessment Overview

In general, the TfN Strategy policies have performed well against most SA objectives, with no significant negative effects being identified. They have also generally resulted in more positive effects and less uncertainties than their policy alternatives.

Options that increase connectivity, particularly via public transport and active travel modes have resulted in significant positive effects on quality and safety (SA6), access to jobs and services, economy (SA8 and SA11) and health and wellbeing (SA13). It is thought that these options will provide residents with opportunities to pursue active lifestyles and improve connections to healthcare services, jobs and recreation. Options that aim to better manage traffic and reduce delay and congestion on the transport network, have resulted in potential for both positive and negative effects on air quality (SA1), biodiversity and geodiversity (SA2), historic environment (SA9), landscape and townscape (SA14) and carbon emissions (SA3).

Easement of congestion will help to reduce levels of noise, air pollution and carbon emissions; however, improvements could result in greater capacity and convenience for car users, which could in turn increase levels of noise, air pollution and carbon emissions.

There were some uncertain effects identified due to the unknown nature of developments which may come forward following the implementation of the TfN Strategy. These were identified for biodiversity and geodiversity, water, soils and mineral resources, historic environment, landscape and townscape, and noise.

Health Impacts

The TfN Strategy is likely to result in positive health outcomes, due to its focus on encouraging active and sustainable transport modes, improving connectivity, reductions in noise pollution and commitments to improving road safety.

Improving connectivity between the rural hinterland and Norwich and creating well connected new developments is likely to result in positive health outcomes, through the reduction in severance, improved accessibility to jobs, services, healthcare, amenities and the environment. However, enhancing connectivity and increasing accessibility could result in some negative outcomes on health, particularly for air quality, noise and road safety, due a potential increase in the number of vehicles on the road.

Exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung cancer, leading to reduced life expectancy. The improvement to air quality through increased use of active transport modes and cleaner vehicles will help to improve the air quality in Norwich, and subsequently, have a significant positive effect on the population's health and wellbeing, especially for those more vulnerable members of the population.

Focusing on active travel modes is likely to have significant positive effects on improving the quality and safety of where people live. If carefully designed, the provision of off-road routes for cyclists and pedestrians will reduce the number of collisions involving them. In addition, focusing on sustainable and active travel is likely to improve access for all groups inclusively and help support more active lifestyle. People are more likely to choose active travel for journeys if there are suitable networks to travel on.

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Potential mitigation and enhancement measures for health impacts have been drawn out of the LTP4 HIA Report and included within **Table 5-12** in **Section 5.6** below.

Equalities Impacts

Overall, the TfN is likely to have a positive impact on the general public that are living, working or visiting Norwich and the surrounding hinterland by providing a safer, resilient, sustainable and convenient transport opportunities. 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.

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).

Some proposed schemes and interventions such the inclusion of electric vehicles and low emission zones may disproportionally affect those in deprived areas who may be less able to adapt, accommodate and afford the changes required for electric vehicle use.

The potential wide area ban on pavement parking will improve bus travel due to reduced journey times, reduce obstructions of pavements which force pedestrians to walk on the road, cycle routes and the transport network in general. Some residential areas may be at a disadvantage as some residents do not have a choice but to park on the pavement due to narrow roads and insufficient parking spaces. This may also disproportionally affect those with disabilities or pushchairs parking further from their homes. However, this can be used as an opportunity to ensure sustainable alternatives are provided such as car clubs, or active transport networks, as a priority in these areas.

Potential mitigation and enhancement measures for equalities impacts have been drawn out of the LTP4 EqIA Report and included within **Table 5-12** in **Section 5.6** below.

As interventions and projects are progressed as part of the TfN Strategy, they will (in some instances) be subject to project level EqIA, to help minimise negative impacts that proposals may have on certain protected groups and to estimate whether such impacts disproportionately affect such groups. Further details have been provided within **Section 5.7 – Mitigation and Enhancements**.

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5.5 Assessment of Policies and Alternatives

Norwich and Norfolk

Policies for the Norwich and Norfolk theme include:

- **Policy 1:** Strategic connections and hinterland access will be promoted to enhance Norwich as the regional capital.

  Alternatives for the Norwich and Norfolk theme include:

  i) No policy
  ii) We will ensure that the economic potential of Norwich and its growth areas as a regional hub is realised.

  Below presents the assessment for both the policy and alternative for the Norwich and Norfolk Theme.

Norwich and Norfolk Policy and Policy Alternative Assessment

Proposed TfN Policy(ies)

The promotion and improvement of transport connections for some modes of transport would improve air quality (SA1) and reduce carbon emissions (SA3). However, development of new highways infrastructure would 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 potential that this could support the continued reliance on private vehicles, which could worsen air qualityand could compromise meeting carbon and climate change targets. Policy 1 does however aim to include greater accessibility to public transport and active travel modes, which could support a modal shift in transport, reducing levels of pollution. For these reasons, uncertain effects have been identified for SA1 (air quality), SA3 (carbon emissions) and SA5 (climate change).

The reduction in air quality emissions (such as the deposition of nitrogen from NO_2/NO_x) in AQMAs, may also indirectly benefit the biodiversity in Norwich. The potential reduction in single occupancy journeys could lessen the impact of disturbance on the areas's biodiversity, through decrease traffic noise and GHG emissions. There is a potential for the new highways infrastructure developmentsto result in loss of habitats and/or disturbance to habitats and species during construction and operation due to their scale and linear nature. However, as part of the key actions of the policy individual schemes will need to mitigate their environmental impacts through the detailed work on these projects, which would reduce the impact on biodiversity/geodiversity.

Policy 1 promotes the improvements to existing transport infrastructure, which is predicted to have a positive impact on SA4 (water,soils and minerals) through a reduction in the need for land take and soil loss. However, the development of new strategic connections and highways infrastructure as part of Policy 1, could result in land take and soil loss. The extent of this impact will depend on the nature of the developments that come forward, therefore, there are uncertain effects on SA4.

The enhancement of public transport use, walking, and cycling, to strategic employment sites is likely to improve access for all groupsinclusively (SA11) and help support a more active lifestyle (SA13). People are also more likely to choose active travel for journeys if there are suitable networks to travel on. For these reasons, positive effects have been identified in relation to these topics.

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Development of the Norwich Western Link, the Long Stratton Bypass and A47 improvements will reduce journey times, congestion, and may also improve the safety of pedestrians by reducing the likelihood of rat running and accidents. Therefore, this would result in positive effects for SA objectives SA6 and SA12.

Economic benefits will arise from improved strategic connections to the Norwich travel to work area, and to international airports and cities where connections to markets and development outside the county can be made, such as the Cambridge-Norwich tech corridor. These connections could also attract more businesses into the area, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy. This has resulted in significant positive effects on SA8 and SA11.

Air pollution is a key factor in the degradation of surfaces of historical buildings and monuments and the impact of pollutants emitted into the atmosphere on materials is significant and often irreversible. The promotion and improvement to sustainable modes of transport could result in reducing air pollution and noise levels, which will help to prevent further degradation of some of the Norwich's unique historic assets (such as Norwich Castle, the City's Wall and towers and the Dominican Friary) and improve tranquillity, contributing to overall sense of place and the unique setting of heritage assets as well as townscapes and landscapes.

There are a high number of historical assets (listed buildings and scheduled monuments) within Norwich. New transport infrastructure projects often require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, that can have a visual impact, detracting from heritage assets and their unique setting, if designed inappropriately. However, this will depend on the nature of the developments that come forward.

The potential to increase connectivity across the county could result in more people having access and explore Norwich's unique historic assets, landscapes and townscapes. This could present opportunities to generate activity and vitality and help define the character of development distinctive to the surrounding areas and the wider region. This in turn could have beneficial effects on tourism in Norwich and the local economy. Policy 1 therefore has the potential to bring about both positive and negative effects on the historic environment (SA9), townscape and landscape (SA14). The effect of this policy on noise (SA15) would depend on the nature of the developments that come forward. A reduction in traffic congestion would help to decrease noise pollution. However, the new infrastructure developments to assist in this reduction would have associated noise impacts during construction and operation phases and may increase the noise pollution in areas where noise levels have previously been low. These new connections may increase private car use due to the reduced congestion and increased ease of traveling by car, therefore, increasing noise pollution.

Proposed TfN Alternative/s

The policy alternative may result in greater economic opportunities across Norwich and its wider hinterland as well as Norfolk and the wider region. This could allow businesses to grow regionally, nationally and internationally, attracting more inward investment into the city, supporting further economic growth, provide employment opportunities and ensure a strong and sustainable local economy. This policy alternative is therefore likely to result in significant positive effects on SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

The presence of no policy is unlikely to have any significant effects as it is assumed that policies within the LTP (in particular policies 8, 9 and 10) will ensure that the economic potential is realised across the whole of Norfolk, including Norwich.

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A Zero Carbon Future

Policies for the zero carbon future theme include:

- **Policy 2:** We will reduce carbon emissions from transport in Norwich to make the necessary contribution to the national target of reducing emissions from all sources by 78% by 2035 compared to 1990 and achieving net zero emissions by 2050. A carbon budgetwill be developed for the transport programme to demonstrate how it will ensure emissions are contained within the budget.

Alternatives for the Norwich and Norfolk theme include:

i.) No target date

ii.) Not have a policy. This could be left to other overarching policy. However, would not embed net zero into the strategy which will be amajor factor in interventions.

iii.) We will work towards achieving carbon neutrality from surface transport in Norwich and its growth areas by 2030 and achieve netzero by 2050.

Below presents the assessment for both the policy and alternative for a Zero Carbon Future Theme.

A Zero Carbon Future Policy and Policy Alternative Assessment

Proposed TfN Policy(ies)

This policy works towards reducing transport emissions, through decarbonisation of the transport, and encouraging the use of sustainable transport modes. This is likely to have significant positive effects on the Norwich's air quality and help to build resilience toclimate change. This has therefore resulted in significant positive effects on air quality (SA1), carbon emissions (SA3) and climate change (SA5).

The development of the active travel networks, such as the pedalway network, and the increased availability of hire bikes and e- scooters, would improve the accessibility to jobs, in particular for people that cannot drive, and would help improve the population's physical and mental health by supporting an active lifestyle. This would support a modal shift to more active travel modes and could lead to reduction in the number of cars on the road, which is likely to help reduce levels of congestion, noise pollution, and improve airquality. This would have additional positive effects on health and wellbeing and community safety. This is likely to result in significant positive effects for SA8 (access and economy), SA11 (access to jobs) and SA13 (health and wellbeing).

The policy proposes supports further use of electric vehicles which would help to improve air and noise pollution, however, there are potential safety issues when electric vehicles are used. Electric vehicles are quieter than combustion vehicles, which aids in reducing noise pollution, but can increase the risk of accidents (SA12), especially with pedestrians who may suffer with partial or complete hearing loss or those who are visually impaired. There are 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. The reduced number of cars on the roads and the introduction of active travel modes could help to reduce the number of accidents and improve the safety of the transport network. There is therefore potential for both positive and negative effects on SA6 (quality and safety) and SA12 (accidents).

This scheme may also disproportionally affect those in deprived areas who may be less able to adapt and accommodate changes for electric vehicle use, though this may provide opportunities to ensure suitable active transport networks, like cycle paths, are prioritisedin these areas as part of the Local Cycling and Walking Infrastructure Plan. The potential impact on SA7 (inclusion and equality), will be dependent upon the proposals that come forward, and for this reason uncertain effects have been identified.

Air pollution is a key factor in the degradation of surfaces of historical buildings and monuments and the impact of pollutants emitted into the atmosphere on materials is significant and often irreversible. Reducing emissions by shifting to more sustainable modes and more efficient vehicles, which could result in a reduction in single occupancy journeys, reducing air pollution, and helping prevent further degradation of some of the Norwich's unique historic assets. The reduction in noise pollution from lower levels of traffic in some areas and use of electric vehicles could result in increased tranquillity, contribute to overall sense of place and the unique setting of heritage assets, particularly within the historic core of the city. However, these effects will be determined on the nature of thedevelopments that come forward following further research.

The reduction in air quality emissions (particularly the deposition of nitrogen from NO_2/NO_x) would also indirectly benefit thebiodiversity, geodiversity assets in Norfolk. The potential reduction in single occupancy journeys could lessen the impact of disturbance on the area's biodiversity, through decrease traffic noise and improved air quality.

The size and scale of the infrastructure required for the transition to electric vehicles, including buses, is unknown but has the potential to negatively affect the townscape and landscape, and biodiversity and geodiversity through land take and potential loss invisual amenity. Infrastructure can be resource intensive and may require land take, which could have a negative impact on soils andresources (SA4) however, the significance of this impact will depend on the type and location of the new development that comes forward. To minimise these impacts, brownfield sites or previously developed land could be used.

Well-designed active travel routes could present opportunities to enhance habitats and ecological networks through habitat creationand improve the quality of visual amenity of the landscape and heritage assets by managing public access to or from the historic features and through the County's towns and villages.

Implementation of the Transforming Cities programme could help to increase the capacity, connectivity and efficiency of the transportation network to support the future population growth across the Norwich and Norfolk. Economic benefits of decarbonisingboth the transport network could be sought through investment in innovative technology development, and development of sustainable supply chains. Policy 2 could also help to increase further employment within Norwich and the region, the longevity of which could be made more secure by a transport network that is future ready.

Proposed TfN Alternative/s

Not setting a target date for achieving net zero, could mean that the Norwich could be in danger of not meeting the UK government's legal binding net zero target, of at least 100% reduction by 2050. However, this is unlikely given the overarching LTP4 policies and thecouncil's carbon cutting pledge to achieve net zero carbon by 2030, which was adopted as part of the authority's Environmental Policyin 2019.

Policy alternative iii would work towards achieving carbon neutrality from surface transport in Norwich and its growth areas by 2030 and achieving net zero by 2050. This is in line with both the UK government's target and the countywide target. Significant investmentin current and new clean technologies would be required in order to reach net zero emissions. This policy alternative could therefore result in indirect minor positive effects on SA10 (investment and growth) and SA11 (access to jobs).

Reduced levels of GHG emissions from the transport network are likely to have indirect minor positive effects on Norwich's biodiversity, geodiversity and natural capital (SA2). It is assumed that by achieving net zero will require a model shift and encouragement of sustainable transport modes. This may reduce the number of single occupancy journeys which could lessen theimpact of disturbance on the County's biodiversity, through decrease traffic noise and levels of air pollution.

Similarly, reduced levels of GHG emissions from the transport network are likely to have indirect minor positive effects on health andwellbeing (SA13). Support for net zero will require a modal shift which could also ensure further opportunities for active transport.

It's not clear what interventions will be required to achieve carbon neutrality from surface transport, however, there is potential for these to include cleaner and quieter transport modes, which could in turn significantly reduce the noise from the transport network.This has therefore resulted in indirect minor positive effects on SA15 (noise).

Improving the Quality of our Air

Policies for improving the quality of air theme include:

- **Policy 3:** Air quality in Norwich and its growth areas will improve so that we will:
  - Remove the need to have AQMAs
  - To improve air quality across the Norwich and its strategic growth areas in the long term.

Policy alternatives for improving the quality of air theme include:

- Commit to progressing Air Quality Management Plan (AQMP)

Below presents the assessment for both the policy and alternative for the Improving the Quality of Our Air Theme.

Proposed TfN Policy(ies)

This policy helps to tackle the air quality issues currently within the Norwich area and consequently will help to build resilience to climate change. This has therefore, resulted in significant positive effects on air quality (SA1), carbon emissions (SA3) and climatechange (SA5).

Exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung cancer, leading to reduced life expectancy. The improvement to air quality (SA1) through increased use of active transport modes and cleaner vehicleswill help to improve the air quality in Norwich, and subsequently, have a significant positive effect on the population's health and wellbeing (SA13), especially for those more vulnerable members of the population.

Limiting or restricting the use of the private car within the city will help to reduce congestion and improve air and noise pollution. Thiswill help to increase tranquillity and contribute to overall sense of place (SA14), as well as, making the city centre more pedestrian friendly, reducing the risk of traffic related accidents (SA12). However, some interventions that could come forward as a result of thispolicy, for example vehicle charging points, may have a negative impact on the historic environment and visual amenity, if not well designed.

Implementation of a Clean Air Zone, congestion charges, or vehicle bans, may disproportionally affect those in deprived areas who may not be able to afford these charges or an electric vehicle. Care should also be taken to ensure that charges are reasonable for those who may need access in restricted areas for small businesses and tradespeople, who are likely to be less able to absorb such costs. Therefore, there are both positive and negative impacts on inclusion and equality (SA7) that may arise following implementationof this policy.

Reduction in single occupancy journeys and the transition to electric vehicles could lessen the impact on the area's biodiversity through a decrease in traffic noise and improvement of the air quality. However, it is uncertain of size and scale of the infrastructurerequired for the transition to electric fleet vehicles and traffic management schemes but has the potential to negatively affect biodiversity and landscape/townscape through land take. The area's biodiversity may also be affected during the construction and operation of these traffic management schemes through disturbance of habitats and protected species.

Proposed TfN Alternative/s

Committing to progressing an AQMP is likely to result in significant positive effects on the air quality SA objective (SA1). Looking at the existing AQMP it is assumed that this plan would work towards improving air quality, reducing congestion and traffic levels andencouraging the use of public transport. Improved air quality is likely to help to reduce carbon emissions (SA3)

and lessen the potential adverse effects poor air quality can have on human health (SA13).

Air pollution is a key factor in the degradation of surfaces of historical buildings and monuments and the impact of pollutants emitted into the atmosphere on materials is significant and often irreversible. Given the prevalence of historic assets in Norwich and the widerhinterland, there's the potential for the AQMP to reduce the potential air pollution in these areas, indirectly benefitting historic assets.

Similarly, the potential reduction in air quality emissions (particularly the deposition of nitrogen from NO2/NOx) will also indirectlybenefit the biodiversity, geodiversity assets in Norwich.

There is potential for the AQMP to include proposals that could introduce sustainable transport modes, which are likely to help reducetraffic volumes and help encourage a modal shift, leading to reductions in noise pollution from the transport network. However, at thisstage it is not clear whether the AQMP would include proposals that would contribute to lowering noise pollution.

Changing Attitudes and Behaviours

Policies for the Changing Attitudes and Behaviours theme include:

- **Policy 4:** We will develop a sustained and coordinated approach to informing and influencing attitudes and behaviours towards sustainable travel choices.
- **Policy 5:** Working with partners, we will use a range of enforcement such as moving traffic offences and parking to support to help us successfully deliver journey time, parking policy and promote active travel.

Policy alternatives for the Changing Attitudes and Behaviour theme include:

- i) Not to have a policy leave it to LTP
- ii) Enforcement of stationary and moving traffic contraventions will be better aligned to the TfN Strategy

Below presents the assessment for both the policy and alternative for the Changing Attitudes and Behaviours theme.

Changing Attitudes and Behaviours Policies and Policy Alternative Assessment

Proposed TfN Policy/ies

This policy aids the progression to a more sustainable transport network by influencing the population to make sustainable travel choices through the use of information provision, engagement, incentives and disincentives, and enforcement. Changing behaviours and encouraging use of more sustainable transport modes would likely indirectly benefit air quality (SA1), carbon emissions (SA3), help build resilience to climate change (SA5) and reduce noise from the transport network (SA15). Minor positive effects have therefore been identified, however, dependent upon the success, there is potential for these effects to be significant.

Introducing new powers to enforce moving traffic offences (banned turns, yellow box junctions etc), as per Policy 5, would help make journeys more reliable and safer (SA6), by reducing the number of traffic related accidents (SA12). There is potential that policy 4 could result in a reduction in the number of cars on the road, which is likely to help reduce levels of congestion and accidents and near misses (involving cars, and non-motorised users). This has therefore resulted in significant positive effects for these SA objectives.

Improvements to sustainable transport facilities and encouraged uptake is likely to support better health and wellbeing (both mental and physical) (SA13) by supporting more active lifestyles. The prioritisation of active travel modes may also reduce air quality emissions (such as NO_2, NO_x, PM10), which would also result in a beneficial impact to health. People are more likely to choose active travel for journeys if suitable networks are provided. Access to jobs, community facilities, and green space would also be increased through behaviour change to use sustainable transport modes, especially by people who do not drive or own a car. The continued partnership with Norfolk Constabulary would help to improve the safety of Norwich's population and visitors and reduce the number of accidents by implementing fixed and mobile safety camera enforcement, and Community Speedwatch. These interventions will also help people feel safer on the roads and may encourage more people to use active transport modes.

The potential wide area bans on pavement parking (Policy 5) would improve bus travel due to reduced journey times, reduce obstructions of pavements which force pedestrians to walk on the road, cycle routes and the transport network in general. Some residential areas may be at a disadvantage as some residents do not have a choice but to park on the pavement due to narrow roads and insufficient parking spaces. This may also disproportionally affect those with disabilities or pushchairs parking further from their homes. However, this can be used as an opportunity to ensure sustainable alternatives are provided such as car clubs, or active transport networks, as a priority in these areas. This has therefore resulted in both positive and negative effects on SA7 (inclusion and equality).

The reduction in air quality emissions (particularly the deposition of nitrogen from NO_2/NO_x) would also indirectly benefit the biodiversity, geodiversity assets in Norfolk. The potential reduction in single occupancy journeys could lessen the impact of disturbance on the area's biodiversity, through decrease traffic noise. Minor positive effects have therefore been identified in relation to SA2 (biodiversity and geodiversity).

Proposed TfN Alternative/s

Not including a policy (alternative i) within the TfN that supports the changing behaviour towards sustainable travel could result in poorer uptake and a less effective modal shift. Although, the LTP will support this shift with a number of overarching policies, (such as policies 4,15 and 19) without specific policies to Norwich, the overall effectiveness may be reduced. This has therefore resulted in uncertain effects on air quality, carbon emissions and climate change, as it would be highly dependent upon how the LTP will be implemented within Norwich.

A no policy approach could also result in uncertain effects on SA6 (quality and safety), SA12 (accidents) and SA13 (health wellbeing) as behaviour change is also essential to improving safety on the transport network, as people make individual choices that lead to unsafe outcomes. The outcome of behavioural changes in Norwich would again be highly dependent upon how the LTP policies are implemented in Norwich.

There is potential for enforcement of stationary and moving traffic contraventions to help reduce congestion, which in turn would improve public safety and improve air quality. Improved air quality will have additional benefits for health and wellbeing (SA13) and the historic environment (SA9), whilst reductions in congestion will improve the City's unique townscape (SA14). However, at this stage it is not known what traffic contraventions will be or how better aligning them to the TfN Strategy will materialise, therefore uncertain effects have been identified.

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Supporting Growth Areas

Policies for the Supporting Growth Areas theme include:

- **Policy 6:** We will proactively plan to meet the transport requirements of planned growth areas, regeneration areas and strategicemployment areas and their associated transport commitments
- **Policy 7:** New development will be located and designed to support the objectives of the TfN Strategy, and the primary focus will be onachieving connectivity through walking, cycling and public transport and maximising the proportion of trips made by these modes

Policy alternatives for the Supporting Growth Areas theme include:

- i) The policy could be more challenging of the commitments of growth areas and take the opportunity to review the strategicrequirements in developing the implementation plan
- ii) We will support the transport requirements of planned growth areas, regeneration areas and strategic employment areas and their associated transport commitments
- iii) Not to have a policy and leave it to the planning process.
- iv) New development will be located to support the objectives of the TfN Strategy and primary focus will be on connectivity through walking, cycling and public transport

 Below presents the assessment for both the policy and alternative for the Changing Attitudes and Behaviours theme.

Supporting Growth Areas Policies and Policy Alternative Assessment

Proposed TfN Policy(ies)

Policy 6 and 7 address the planned growth of new homes and jobs in Norwich and its strategic growth area, as part of the draft Greater Norwich Local Plan, by ensuring the required transport infrastructure is delivered (Policy 6) and new development is encouraged where there are good transport hubs (Policy 7). Well-connected developments will reduce severance, improve accessibility to jobs, services, healthcare and amenities and improve safety. This has resulted in significant positive effects on SA7(inclusion and equality), SA8 (access and economy), SA10 (investment and growth), and SA11 (access to jobs).

Policy 6 emphasises the promotion of connectivity through public transport, walking and cycling. This would help to reduce carbon emissions and air and noise pollution, through reduction of vehicles on the road and single occupancy journeys, therefore, helping tobuild resilience to climate change.

Focusing on active travel modes is likely to have significant positive effects on improving the quality and safety of where people live (SA6) and health and wellbeing (SA13). If carefully designed, the provision of off-road routes for cyclists and pedestrians will reduce the number of collisions involving them. In addition, focusing on sustainable and active travel is likely to improve access for all groupsinclusively and help support more active lifestyle. People are more likely to choose active travel for journeys if there are suitable networks to travel on.

The impacts of the new development associated with Policies 6 and 7 will depend on the nature of the development and transport infrastructure that comes forward. These could have a negative impact on biodiversity, water, soils and minerals and historic environment through land take, insensitive design, increased noise in construction and operation phases, increase in GHG emissionsthrough the carbon associated with construction, maintenance and operational use of the new development. Insensitive design couldresult in negative effects on the Norwich's landscape and townscape. However, at this strategic stage it is uncertain. The addition of cycle routes and footpaths could also present opportunities to enhance the habitats and ecological networks, as well as making positive contributions to the landscape and townscape.

Proposed TfN Alternative/s

With the exception of policy alternative iii, all alternatives would help to support economic growth within the Norwich and the wider area. This could provide greater access to both jobs and housing and attract further inward investment and has therefore resulted in significant positive effects on SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

Policy alternative iii would leave development down to the planning process. Although this would likely be dictated by the LTP4, this alternative could give rise to new developments that are poorly located and inaccessible by sustainable transport, which can result in residents relying on private cars and having to undertake long and possibly expensive journeys on congested roads.

This could also lead to socioeconomic marginalisation, hinder healthy lifestyles and lead to the degradation of the natural environment. A disjointed approach between transport and other developments, could lead to unnecessary or additional land take,which could result in the disturbance and fragmentation of habitats.

This approach may also give way to insensitive design, that does not take into account landscape and heritage settings. New developments and transport infrastructure projects often require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, which can also have a major visual impact, that has the potential to erode the townscape character and thesetting of built heritage. This could be significant if insensitive design arose within the historic core of the city in close proximity to assets such as Norwich Castle, the City's Wall and towers and the Dominican Friary.

Policy alternative 'iv' aims to locate new development in locations with good connectivity to walking, cycling and public transport options. This could help to work towards a modal shift and help to reduce traffic and congestion resulting in a reduction in the overalllevels of noise and air pollution from the transport network.

Prioritising active travel modes is likely to have positive effects for community safety (SA12). If carefully designed, the provision of off-road routes for cyclists and pedestrians will reduce the number of collisions. In addition, focusing on sustainable and active travel is likely to improve access for all groups inclusively and help support more active lifestyles. People are more likely to choose active travel for journeys if there are suitable networks to travel on.

Meeting Local Needs

Policies for the Meeting Local Needs theme include:

- **Policy 8:** We will reduce the harms of road traffic associated with road causalities and the tackle the fear of road traffic affecting vulnerable road users.
- **Policy 9:** The barriers to travel will be overcome and there will be a socially inclusive approach to transport matters.

Policy alternatives for the Meeting the Local Needs theme include:

- i) Not to have a policy leave it to LTP
- ii) We will slow traffic by reducing speed limits, design our streets to protect cyclists and pedestrians from harm and enforce the rules. Our approach will recognise that children, the old and people with disabilities are particularly vulnerable
- iii) The strategy will improve accessibility to jobs and services so that transport is not a barrier to people's lives

Below presents the assessment for both the policy and alternative for the Meeting Local Needs theme.

Meeting Local Needs Areas Policies and Policy Alternative Assessment

Proposed TfN Policy(ies)

Policies 8 and 9 help to address local transport needs in order for the transport network to run effectively. Adopting these policies would help to support most of the SA objectives.

Transport is an important facilitator for social inclusion and well-being which can affect economic and social outcomes, and therefore levels of inequality. By adopting the Healthy Streets Approach (Policy 8) the streets of Norwich could deliver a safer, healthier and more inclusive environment for all users. This has therefore resulted in significant positive effects for SA6 (quality and safety), SA7(inclusion and equality) and SA13 (health and wellbeing).

Improving the safety of the roads in Norwich (Policy 8) by removing extraneous traffic from neighbourhoods and reducing speed limitsto 20mph across the whole urban area would help to reduce the number of road traffic accidents. Adopting a safe systems approach aims to ensure that lives would not be compromised by the need to travel, making Norwich a safer place for residents and visitors andhas resulted in significant positive effects for SA12 (accidents).

Improving the safety of the road network may encourage more people to use active transport modes which will reduce private car usage, and therefore, reduce congestion, improve air and noise pollution, and have additional beneficial effects on the health and wellbeing of the population. However, as this may just result in localised improvements, minor positive effects have therefore been identified for SA1 (air quality), SA3 (carbon emissions) and SA15 (noise).

Reductions in traffic, improvements of safety and adoption of a healthy streets approach, has potential to indirectly have beneficialeffects on townscape, landscape, health, biodiversity and the historic environment through increased levels of tranquillity and contributions to placemaking.

Policy 9 helps to address the barriers to transport accessibility faced by people with protected characteristics under the Equality Act 2010, those on low incomes, those living in the rural hinterland, and people without access to a private car. The changes to make the use of sustainable transport modes simpler to understand and use cannot be fully assessed until these changes are clarified further. However, the proposed encouraged use of technology and apps may exclude certain groups, particularly the elderly, those with learning difficulties and those in low income groups, to keep up with changes and experience the benefits.

Proposed TfN Alternative/s

The presence of no policy (alternative i) is unlikely to have any significant effects as it is assumed that policies with the LTP would be suitable to help meet local needs (in particular policies 14, 15, 16 and 17) of people in Norwich and the surrounding area, however, these may offer more generic solutions/ interventions.

Policy alternative ii aims to slow traffic by reducing speed limits and design streets that protect cyclists and pedestrians from harm. Ensuring a safer transport network, may reduce levels of fear and intimidation and encourage users to adopt more sustainable travel modes such as walking and cycling, which would have additional health benefits. This has therefore resulted in significant positive effects on SA6 (quality and safety), SA12 (accidents) and SA13 (health and wellbeing).

Reductions in speed limits is also likely to indirectly help to reduce emissions from the transport network and help to improve air quality and noise pollution. However, as this may just result in very localised improvements, minor positive effects have been identified for SA1 (air quality), SA3 (carbon emissions) and SA15 (noise).

This alternative policy also aims to recognise that children, the old and people with disabilities are particularly vulnerable. Consideration of these vulnerable groups will ensure that the transport network is safe for all users and potentially reduce social exclusion and barriers to accessing all transport options. This has therefore resulted in significant positive effects for SA7 (inclusion and equality).

Policy alternative iii aims to improve accessibility to jobs and services ensuring that transport network is not a barrier to people's lives. This is likely to help more people reach employment opportunities, recreation, health services and other facilities across Norwich and the wider area. This has resulted in significant positive effects for SA7 (inclusion and equality), SA11 (access to jobs) and SA13 (health and wellbeing).

Uncertain effects have been identified in relation to both SA9 (historic environment) and SA14 (townscape) and landscape, as the introduction of road safety measures could introduce new infrastructure and other associated components, which can also have a visual impact, particularly within the city's historic core and other areas of historic importance. This has the potential to erode the townscape character and the setting of built heritage, which could have negative effects given the unique character of Norwich.

However, traffic calming and limiting car access could improve the townscape and landscape and provide a more tranquil environment allowing people to enjoy the unique setting. For this reason, uncertain effects have been identified as it will be dependent upon implementation.

Reducing the Dominance of Traffic

Policies for the Reducing the Dominance Traffic theme include:

- **Policy 10:** Changes to the transport network will seek to enhance the character and quality of places with historic, architectural or natural landscape character and ecological value
- **Policy 11:** We will develop a coordinated approach for managing freight and deliveries to support clean modes of deliveries and minimise the impact of the movement of freight within the urban area with regard to emissions and traffic intrusion
- **Policy 12:** We will work with local communities, elected members and stakeholders to reduce the impact of unnecessary traffic in neighbourhoods and provide connections that meet local needs and support active travel.

Policy alternatives for the Reducing the Dominance Traffic theme include:

- i) We will reduce the dominance of traffic to improve place and amenity
- ii) Places with historic or natural landscape character will be enhanced and new development will be aligned to the TfN Strategy. Anyharms to the highway network will be mitigated
- iii) We will support clean modes of deliveries and minimise the impact of the movement of freight within the urban area with regard to emissions and traffic intrusion
- iv) We will work with local communities, elected members and stakeholders to devise neighbourhood transport plans that are aligned to the TfN Strategy

Below presents the assessment for both the policy and alternative for the Reducing the Dominance Traffic theme.

Reducing the Dominance of Traffic Policies and Policy Alternative Assessment

Proposed TfN Policy(ies)

Norwich has a considerable historic importance with highly values natural landscapes, streets and buildings. Policy 10 ensures thattransport schemes will be designed to maintain or enhance places of historical, landscape or architectural importance, including conservation areas, if they are developed within these areas. This would improve the quality of place achieved which would likely result in better perceptions of better wellbeing and health (mental and physical).

The policy also ensures the use of good quality materials; though it is unsure whether these materials are from sustainable sources. Enhancing the character and quality of place (Policy 10) could encompass improvements to the water environment and agricultural land. Therefore, it is currently unknown what the effects to SA4 will be.

Norwich has seen an increased in freight vehicles due to the pandemic from more people shopping online. This is adding to the dominance of traffic making the streetscape less attractive for walking and cycling and increasing congestion on the roads. Policy 11 aims to tackle this increase in delivery and freight vehicles by investigating the possibility of Clean Air Zone and freight consolidation centre. This would reduce emissions and improve air quality; however, careful planning and mitigation will need to be used to ensure the clean air zones do not negatively impact those who might be disadvantaged (poorer residents and small businesses). Reduction injourney times and congestion will be a positive impact on Norwich and wider region's economy. The new e-cargo may present new job opportunities and potential investment, and Clean Air Zones could generate revenue through charging. Therefore, the positive effects could be significant depending on the implementation or uptake.

Policy 10 also aims to consider the layout of streets and spaces, and the facilities provided, so that the transport network meets theneeds of all users. It has been assumed that this could include measures such as pedestrianisation, pavement widening for use for wheelchairs and public realm improvements. This will help to increase levels of accessibility for all groups inclusively and has therefore resulted in significant positive effects on SA7 (inclusion and equality).

The infrastructure required for EV charging points for freight vehicles can have negative impacts on biodiversity, historic environment and landscape due to potential land take. However, the decrease in noise and air pollution may increase the sense of tranquillity and sense of place within Norwich and have a positive impact on biodiversity and historic assets. There are associated safety concerns with electric vehicles due to them being quieter than combustion vehicles and increase in possible trip hazards due to trailing chargingcables, especially for wheelchairs and pushchairs.

To help support low traffic neighbourhoods and active travel (Policy 12), 20mph zones will be introduced across parts of the city as well as reduce through traffic, point closures and bus gates. This would improve the safety of the population through reduction of roadtraffic collisions, and therefore, may encourage more people to use active transport modes, improving air quality through a reduction in emissions (SA1 and SA3). However, there may be associated negative effects on some of the SA objectives from the traffic management schemes, such as land take, noise during construction and operation and poor design. However, these impacts willdepend on the schemes that come forward.

Working with local communities, elected members and stakeholders to reduce impacts within neighbourhoods, could help to ensurethat local priorities at the neighbourhood plan level are met. Engaging with local communities can help to empower people to play a central role in decision making will help NCC better understand local issues.

Proposed TfN Alternative/s

Air pollution is a key factor in the degradation of surfaces of historical buildings and monuments and the impact of pollutants emittedinto the atmosphere on materials is significant and often irreversible. Therefore, reducing the dominance of traffic and movement of freight within urban areas (alternatives i and ii) could result in reduced air and noise pollution, increasing levels of tranquillity and reduced impacts on the historic environment. Alternative iii also aims to enhance places with historic or natural landscape characterwill be enhanced, which could lead to further improvements to the historic environment and the landscape and townscape. This hasresulted in significant positive effects on both SA9 (historic environment) and SA14 (landscape and townscape).

There are a number of designated sites (of international, national and local importance) outside of the Norwich including the River Wensum SAC, Broadland Ramsar, Mid Yare NNR, numerous SSSIs, local nature reserves and areas of ancient woodland. Reducing traffic within urban areas could increase traffic in areas of higher biodiversity value, however, this will be dependent upon the types ofproposals that come forward. Mitigating the impacts on the highway network appears to give priority to the highways network, rather than the historic or natural landscape. Therefore, this has resulted in uncertain effects on SA2 (biodiversity and geodiversity).

Reducing the dominance of traffic will also help to improve safety within urban areas and help to create less polluted and more attractive environments for people to enjoy. Ensuring a safer transport network, may reduce levels of fear and intimidation and encourage users to adopt more sustainable travel modes such as walking and cycling, which will have additional health benefits. Thishas therefore resulted in positive effects on SA6 (quality and safety), SA12 (accidents) and SA13 (health and wellbeing).

Reducing levels of freight and traffic movements has potential to have both positive and negative effects on air quality, carbon emissions and noise pollution. Reducing freight and traffic dominance in one location could result in increased levels of traffic in otherlocations outside of the city centre. This could lead to localised air and noise pollution issues in more rural parts of the plan area.

Alternative iv aims to work with local communities, elected members and stakeholders to devise neighbourhood transport plans that are aligned to the TfN Strategy, could help to ensure that local priorities at the neighbourhood plan level are met. Engaging with local communities can help to empower people to play a central role in decision making will help NCC better understand local issues. Thishas resulted in positive effects on SA7 (inclusion and equality).

Making The Transport System Work As One

Policies for the Making the Transport System Work as One theme include:

- **Policy 13:** We will adopt a road network and travel mode hierarchy that will support mobility requirements of people and recognises theplace function as well as movement function of different parts of the network
- **Policy 14:** Bus services will continue to be a vitally important transport solution. We will work in partnership with operators to deliverservices that meet people's travel needs
- **Policy 15:** Car parking will be minimised for the city while continuing to support its economic vitality and meeting essential needs.Parking policy and practice for on-street and off-street public parking will be developed to complement park and ride and support promotion of active travel.
- **Policy 16:**The role and form of park and ride will be developed and reviewed to support longer distance connectivity
- **Policy 17:** Journey times and reliability will be improved on the local highway network with particular emphasis to support fast and frequent bus services.
- **Policy 18:** We will promote and prioritise active travel by walking and cycling to ensure that half of all journeys in Norwich are cycled orwalked by 2030.

Policy alternatives for Making the Transport System Work as One theme include:

- i) Not to have a hierarchy
- ii) Have a hierarchy defined by destinations (e.g. neighbourhoods)
- iii) Provide for parking needs within the city
- iv) Bus service improvements will be developed through the Norfolk Bus Strategy
- v) Norwich Park and Ride will continue to be a vitally important local transport solution.
- vi) Journey times and reliability will be improved on the local highway network

Below presents the assessment for both the policy and alternative for the Making the Transport System Work as One theme.

Making the Transport System Work as One Policies and Policy Alternative Assessment

Proposed TfN Policy(ies)

All these policies help support the general shift to sustainable transport modes and ensuring the transport network works as one. These are supported by the Transforming Cities Fund, Norwich's Local Cycling and Walking Infrastructure Plan, Norfolk Greenways toGreenspace Strategy, and Norwich's Beryl Bike and E-Scooter share scheme. Policy 18 aims to ensure that half of all journeys in Norwich are cycled or walked by 2030. This demonstrates the council's commitment to active travel and reducing the reliance upon motorised modes of transport.

The introduction of mobility hubs will help encourage the use of sustainable transport by increasing the ease and accessibility of thesemodes. Policy 13 aims to explore micro-mobility transport solutions which may open up new transport solutions for short-distance travel increasing accessibility further across the city. This would improve access to employment, health facilities, retail, greenspaces, and education for people who cannot drive or own a car which will have a positive impact on inclusion and equality (SA7) and access to jobs (SA11). Mobility hubs also bring about opportunities for active travel which will reduce emissions, improve noise and air pollution, and have a positive impact on the health and wellbeing of the population. However, as mobility hubs could be large in scale,there is the possibility that land take is required. This may have a negative impact on the biodiversity and geodiversity of Norwich due to habitat loss, fragmentation and noise impacts, particularly during construction.

Policy 13 aims to support the mobility requirements of people which would help improve the inclusivity and equality of the transportnetwork in Norwich which will have a significant positive impact on SA7.

Norwich Park and Ride and provision of extra parking outside of the city centre (Policy 15) would help to relieve congestion within the city centre and roads leading into the city. This is likely to help to reduce levels of air and noise pollution and has the potential to result in positive effects for SA1 (air quality), SA3 (carbon emissions), SA5 (climate change) and SA15 (noise). The Park and Ride will have a significant reduction in travel times, increase reliability in journeys to work and provide a greater access to jobs and services, which will have a significant positive effect to SA8 (access and the economy) and SA11 (access and jobs). However, Park and Rides and extra parking are often located outside of the city centre where ecological value has the potential to be higher; there are a number of designated sites (of international, national and local importance) outside of Norwich including the River Wensum SAC, Broadland Ramsar, Mid Yare NNR, numerous SSSIs, local nature reserves and areas of ancient woodland. Therefore, there is the possibility that negative effects may arise to biodiversity and geodiversity (SA2) through disturbance from the increase in traffic. Similar impacts will also affect SA4 (water. minerals and soils). Air and noise pollution will be reduced due to a reduction in single car occupancy and private vehicle use, and increased use of sustainable travel modes. The magnitude of these impacts will be dependent on the nature of the schemes that come forward following further investigations into options.

Proposed TfN Alternative/s – Travel Hierarchy (i and ii)

To not include a travel hierarchy (as per alternative i) could see reliance upon motorised vehicles and could prevent a modal shift to more sustainable transport modes. This could have negative implications on air quality, carbon emissions, climate change, safety, health and wellbeing and noise pollution. This could be detrimental to the success of the transport strategy as well as meeting both local and national climate change and emissions targets. For this reason, significant negative effects have been identified for SA1 (air quality), SA3 (carbon emissions) and SA5 (climate change).

![WSP logo]

Having a hierarchy based on destinations could help with a modal shift to more sustainable modes of transport in some locations, however, it may depend upon the priorities in each location. This alternative could lead to conflicts in some locations and accessibility across the plan area could become disjointed and may need to use of multiple transport modes, some of which may be not be sustainable or accessible to all. This could lead to poorer levels of accessibility and therefore minor negative effects have been identified for SA7 (inclusion and equality) SA8 (access and economy) and SA11 (access to jobs).

For all other SA objectives (with the exception of SA4), uncertain effects have been identified as it is not clear on what sort of proposals could come forward and what transport modes would be preferred.

Proposed TfN Alternatives – Parking (iii and iv)

Providing for parking needs within the city could result in increased reliance upon private vehicles, by making travelling by car the more convenient option. Providing greater availability of car parking, may enable greater capacity and, therefore, allow for more road users which could increase air and noise pollution from vehicles. Policies may also result in the need for new infrastructure or upgrades to existing infrastructure, will have embodied carbon. This has therefore resulted in significant negative effects for SA1 (air quality), SA3 (carbon emissions), SA5 (climate change) and SA15 (noise).

Air pollution is a key factor in the degradation of surfaces of historical buildings and monuments and the impact of pollutants emitted into the atmosphere on materials is significant and often irreversible. Therefore, increasing the dominance of traffic within urban areas to decrease levels of tranquillity and increase negative impacts on the historic environment and townscape.

Meeting parking needs could result in additional land take to accommodate more spaces and could have visual impacts which could detract from both the historical environment and the unique townscape. This could be significant if these arose within the historic core of the city in close proximity to assets such as Norwich Castle, the City's Wall and towers, the Old Assembly Rooms and the Dominican Friary. These policies have therefore resulted in significant negative effects on both SA9 (historic environment) and SA14 (landscape and townscape).

If additional land take is required to accommodate more parking in the city, there is potential for development to have negative impacts on soil and mineral resources, through extensive use of resources, generation of waste and potential loss of 'Best and Most Versatile' agricultural land. However, there is potential for positive effects if development were proposed on existing brownfield land.

Priority of private vehicle could result in the exclusion of some vulnerable groups, which could compromise their ability reach jobs, facilities and services within the city. Potential increases in noise and air pollution is also likely to have negative effects on people's health and wellbeing. This has therefore resulted in minor negative effects on SA7 (inclusion and equality), SA8 (access and economy), SA11 (access to jobs) and SA13 (health and wellbeing).

Increased prevalence of private vehicles on the roads could increase levels of traffic and congestion, which may have negative implications for the safety of pedestrians, cyclists and other non-motorised users. This has therefore resulted in significant negative effects on SA6 (safety) and SA12 (accidents).

Proposed TfN Alternative/s – Bus services and travel times (vi and vii)

Norwich Park and Ride will help to relieve congestion within the city centre and roads leading into the city. This is likely to help to reduce levels of air and noise pollution and has the potential to result in positive effects for SA1 (air quality), SA3 (carbon emissions), SA5 (climate change) and SA15 (noise). Alternative vii aims to improved journey times and reliability on the local highway network. Although this could bring about positive effects on air and noise pollution and the prevalence of carbon emissions, it is unclear on what these proposals could look like and whether options could support the continued reliance upon private vehicles.

The reduced levels of noise and air pollution from Norwich Park and Ride could help to create a more tranquil and less polluting environment within the city centre, which has potential to bring about positive effects on both the townscape and historic environment. Alternative vii aims to improved journey times and reliability on the local highway network. Although this could bring about positive effects on air and noise pollution and the prevalence of carbon emissions, it is unclear on what these proposals could look like and whether options could support the continued reliance upon private vehicles, which could continue to erode the historic environment and unique townscape setting.

Both alternatives could help to significantly reduce travel times, providing increased reliability in journeys to work and could provide greater access to jobs and services. For this reason, significant positive effects have been identified in relation to SA8 (access and the economy) and SA11 (access and jobs). Due to potential better access to facilities and services, minor positive effects have been identified in relation to SA7 (inclusion and equality) and SA13 (health and wellbeing).

Improving the reliability of the local highway network could bring about improved levels of safety through reduced congestion and potential for accidents. This has therefore resulted in minor positive effects on SA6 (quality and safety) and SA12 (accidents).

Making it Happen

Policies for the Making the Transport System Work as One theme include:

- **Policy 19:** We will ensure the governance of transport activity in Norwich is improved to take forward the challenges and ambition of the Transport of Norwich Strategy in partnership with the delivery agencies.

Policy alternatives for Making the Transport System Work as One theme include:

- i) We could rely on existing governance
- ii) We will ensure that the governance model for the TfN Strategy and its implementation is fit for purpose

Below presents the assessment for both the policy and alternative for the Making it Happen theme.

Making it Happen Policies and Policy Alternative Assessment

Proposed TfN Policy(ies)

Policy 19 would help to ensure the successful delivery of the TfN Strategy, which is likely to result in positive outcomes across the SA objectives. The outcome for some SA objectives will be dependent upon the proposals and interventions that come forward as a result of the Strategy and how they are delivered.

Working with local communities, elected members and stakeholders to reduce impacts within neighbourhoods, could help to ensure that local priorities at the neighbourhood plan level are met. Engaging with local communities can help to empower people to play a central role in decision making will help NCC better understand local issues.

This policy responds to the challenges of Covid-19, economic recovery and carbon reduction targets, and the need to provide strong and robust governance to tackle these issues and bring forward suitable solutions across the transport network. As the policy makes TfN has a successful track record of delivering interventions across the area. This has primarily been taken forward through established governance arrangements with a joint committee that includes Norwich City Council, Broadland District Council, South Norfolk Council, Norfolk County Council and New Anglia Local Enterprise Partnership.

Continuation of this existing governance (alternative i) is therefore likely to result in successful delivery of the new strategy, however, with new challenges such as Covid-19, economic recovery and climate change, it's not clear if this existing governance will be adequate to address these challenges. For this reason, uncertain effects have been identified in relation to SA1 (air quality), SA3 (carbon emissions), SA5 (climate change), SA7 (inclusion and equality), SA10 (investment and growth) and SA13 (health and wellbeing).

Ensuring that governance is fit for purpose (alternative ii) could however, help to bring about stronger and more robust leadership to tackle these challenges.

5.6 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.

A review of plans and policies identified a number of plans for cumulative effects assessment, in addition to cumulative effects within the Transport Strategy. This is set out in **Section 6.6** within the main SA Report for the LTP4 and considered the impact of the following plans, strategies and schemes:

- Cambridge – Norwich Tech Corridor;
- East-West Rail (Eastern Section);
- England's Economic Heartland Regional Transport Strategy;
- Norfolk Minerals and Waste Plan;
- Neighbouring LTPs (Suffolk, Cambridgeshire and Peterborough and Lincolnshire);
- King's Lynn and Great Yarmouth Transport strategies; and
- Local plans in Norfolk (Breckland, Broadland, Norwich and South Norfolk, Great Yarmouth, NorthNorfolk and the Broads).

The review of the above plans and policies identified a number of areas for cumulative effects. Cumulative benefits on air quality, climate change, community and access, health and population, economy, and noise that could emerge from development initiatives in Norfolk and surrounding areas. These included the increase in efficient transport modes, introduction of active travel options and actions to build climate resilience and tackle air pollution.

The cumulative effects assessment also identified the potential for negative effects on the biodiversity, soils and resources, water, cultural heritage, and landscape and townscape. These predominantly arose for the potential cumulative large scale land take required for new transport and housing developments across Norfolk and the wider East of England region.

Cumulative effects arising from individual projects and plans should be revisited as part of a project level assessment. For example, noise, dust and visual have a combined effect which can only be determined at the project level. In addition, current events such as COVID-19 are leading to rapid short-term changes in the transport sector, as well as creating greater uncertainty about future transport approaches in the medium to longer term (post 2020), so review of cumulative effects at project level is recommended.

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5.7 Mitigation and Enhancements

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

Below outlines proposed mitigation. Additional enhancement measures can be found in **Section 6.7** of the main LTP4 SA Report.

Proposed Mitigation

Biodiversity
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.

Mechanism: Project level design and assessment.

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.

Where land take is required, preference should be given to brownfield land / previously developed land as well as avoiding BMV agricultural land.

Mechanism: Project level design and assessment.

Climate Change, Soils and Resources and Water Resources and Flooding

For a proposed new development, a risk assessment should be undertaken to establish any possible pollutant pathways into neighbouring soils and waterways.

Mechanism: Project level risk assessment.

Biodiversity

The incorporation of natural features such as tree planting, green roofs on bus stops, hedgerows and wildflower planting along walk/cycleways to enhance connections to nature and reduced stress levels, contributing to mental health and wellbeing benefits.

Larger infrastructure schemes should incorporate design measures to lessen the impact on biodiversity and ensure biodiversity net gain.

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Where a transport project is likely to have a significant effect on the natural environmentthe avoidance-mitigation-compensation hierarchy applies, for example, less damaging alternatives should be sought with regards impacts to high value ecological and landscape receptors.

Mechanism: Project levels biodiversity netgain assessment.

Landscape and Townscape
Cultural Heritage and the Historic Environment

Transport solutions must seek to maximise sustainability benefits from existing landscape, townscape and heritage assets by valuing them inherently and for the widerservices they provide.

Promoters and designers should liaise closely with NCC and Historic England to avoid orminimise 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 within the zone ofinfluence of a designated landscape, a landscape and visual impacts assessment shouldbe undertaken to determine magnitude of impact and possible mitigation.

Mechanisms: Historic Landscape Characterisation. Project level design and assessment. Landscape and Visual Impact Assessment.

Health and Population
Community and Access
Economy and Employment

Ensure the needs and aspirations of groups with protected characteristics are considered in delivering transport solutions, in addition, including those from low incomehouseholds. This could include measures such as:

- Fair pricing for public transport;
- Consideration of grants and exemptions for electric vehicles, clean air zones andother vehicle restriction and charging schemes;
- Engagement with protected characteristic groups specifically to ensure the needs ofthese groups are identified;
- Consideration needs to be given to those who may not have the same understandingof or access to technology (for example the elderly, those with learning difficulties or in low income groups);
- Ensure that active travel routes enable access for all users, including those withreduced mobility or disabilities.

Mechanisms: Project/ scheme specific EqIA and HIA. Disability and Discrimination Act compliance.

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Health and Population
Community and Access
Biodiversity

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.

The incorporation of natural features such as tree planting, hedgerows and wildflower planting along walk/cycleways to enhance connections to nature and reduced stress levels, contributing to mental health and wellbeing benefits.

Mechanisms: Project level EqIA, HIA, BNG

5.8   Monitoring

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.

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. 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: To reduce carbon emissions;
- SA4: The potential loss and degradation of soils;
- SA9: The potential loss and degradation of the historic environment; and
- SA15: The potential increase in noise.

Below outlines monitoring proposals to deal with these negative effects.

Potential negative effects on biodiversity and geodiversity

Need to monitor:

- The number of habitats lost or segregated as a result of development

- The number of biodiversity enhancement schemes implemented through the TfN Strategy.

- Seek the achievement of the biodiversity net gain through application of Natural England's Biodiversity Metric 3.0.

Potential increase in carbon emissions from strategic road schemes

Need to monitor:

- Baselining and measuring the Norwich plan area's aggregated carbon estimate.

- Percentage increase / decrease in overall carbon emissions.

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The potential loss and degradation of soils

- The loss of BMV land.

Potential negative effects on the historic environment

- The number of historic assets (statutory and non-statutory)negatively affected by the TfN Strategy.

- The number of historic assets (statutory and non-statutory) benefiting from conservation and enhancement measure as aresult of the TfN Strategy.

Potential increases in noise

- To monitor levels of noise with existing NIAs and the Norwich Urban Area Noise Agglomeration and ensure they don't exceed existing baseline levels.

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6. Next Steps

The SA Report was issued to consultees, in August 2021 for a six-week consultation period, alongside the TfN Strategy. This later report, an update to the SA Report, has been prepared following that consultation period.

This Report will be made available alongside the final TfN Strategy as well as the Post Adoption Statement, which will summarise how responses to consultation and the SEA have influenced the development of the Strategy. This is the last formal output of the SA process.

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CONSULTATION COMMENTS

Consultation Comments

1. Historic England - in reference to: TfN Strategy
   The strategy is fairly high level and provides broad policies for transport in Norwich.
   No action required.

2. Historic England - in reference to: TfN Strategy
   We welcome the references in the document tothe historic environment including the regeneration of historic areas through traffic management measures
   No action required.

3. Historic England - in reference to: TfN Strategy
   We broadly welcome the paragraphs 11.7 – 11.9 as well as the Places Policy which references places of historic value.
   No action required.

4. Historic England - in reference to: SA - General Comment
   The SEA Local Objectives are generally appropriate. We welcome the wording and use of the term "setting" within SEA local objectives and questions on page 12.
   No action required. Noted, setting is included within SAobjective 9.

5. Historic England - in reference to: SA - Assessment of Policies
   Although the assessment does address aspects of the historic environment and heritage assets, this is in a very general way and is quite vague and at times contradictory (e.g., positive and negative effects / uncertain effects). Please ensurethat the assessment is specific as it can be in relation to effects on the historic environment.
   Action required. The assessment has been amended to provide a clearer more specific assessment on the historic environment.

1. Natural England - in reference to: SA - General Comment
   Natural England welcomes the commitments inthe plan to addressing air quality issues and carbon reduction. We are supportive of work to increase the use of sustainable transport and improving air quality in urban areas.
   No action required.

2. Natural England - in reference to: SA – Sustainability Context
   Table 4-1 SA Topic - Biodiversity - County Wildlifeand Ancient Woodland should be included in the bulleted points.

Action required. County Wildlife Sites and Ancient Woodland sites have been added to Table 4-1.

3. Natural England - in reference to: SA – Sustainability Context
Table 4-1 SA Topic - Biodiversity - Note under thefirst bullet point a comma is required between 'River Wensum' and 'Norfolk Valley Fens'.
Action required; comma inserted.

4. Natural England - in reference to: SA – Sustainability Context
Table 4-1 -SA Topic - Soil and Resources - Reference to best and most versatile (BMV) agricultural land should be made since this finite resource could potentially be impacted by some of the policies.
Action required. BMV agricultural land has been addedinto Table 4-1

5. Natural England - in reference to: SA – Sustainability Appraisal Framework
Table 4-2 Biodiversity - In the table the Sustainability Objective is written as: SA 2 - To maintain and protect and biodiversity and geodiversity. Presumably this is a typo and should read: SA 2 - To maintain and protect and improve / enhance biodiversity and geodiversity?
Action required. The SA objective has been updated to read '*To maintain, protect and improve / enhance biodiversity and geodiversity'.*

6. Natural England - in reference to: SA – Sustainability Appraisal Framework
Table 4-2 Biodiversity - We support the first appraisal question for biodiversity in the table. It isunclear and of what value the second question: Maintain biodiversity in Norfolk? is given the geographical scope of the strategy. A better and more relevant question would be: Protect, maintain and improve biodiversity within the Strategy / Plan area? The aim should be to improvebiodiversity in accordance with the principles of biodiversity net gain, not simply to maintain it.
Action required. The SA Appraisal question has been updated to read '*Protect, maintain and enhance biodiversity within the Strategy / Plan area?'*

7. Natural England - in reference to: SA – Sustainability Appraisal Framework
Table 4-2 Biodiversity - We note that there is noreference to the restoration or enhancement of biodiversity, with the issues referring only to avoiding damage. We recommend that the restoration or enhancement of biodiversity is included in line with the National Planning PolicyFramework.
Action required. An additional appraisal question has been added – restore biodiversity and geodiversity?

8. Natural England - in reference to: SA – Sustainability Appraisal Framework

Table 4-2 - Climate change, Soils and Resourcesand Water Resources and Flooding -
the third appraisal question does not make sense due to missing text.
Action required. Appraisal question has been updated to read – ***Ensure the transport system is more resilient to the impacts of climate change?***

9. Natural England - in reference to: SA – Sustainability Appraisal Framework
Table 4-2 - either under Community and Access or Health and Population there could be an appraisal question to examine whether the strategy will increase or improve access to greenspaces. We note that there is no reference to improving people's access to nature (be that to linear routes or open space). This should be included as a key issue.
Action required. Added an additional appraisal question to health and population -*Improve access to greenspace?* **Access to greenspace has beenassessed as part of the SA assessment.**

10. Natural England - in reference to: SA – Assessment of Policies and Alternatives
It is unclear how well some of the scoring in Table 5-2 – Assessment of Overview of TfN Policies and Alternatives and the assessments in the following sections 5.4 and 5.6 reflects accurately the significance of effects. Policy 1: Strategic connections and hinterland access will be promoted to enhance Norwich as the regional capital, is scored against SA 2, as 'the effect is likely to be both positive and negative'. However, the indirect positive effect onbiodiversity due to a reduction in air quality emissions is likely to be minor positive, at best. Whilst the effects of new highways infrastructure developments, resulting in loss of habitats and/ordisturbance to habitats and species, during construction and operation due to their scale andlinear nature, are most likely to be a major negative effect.

Action required. The supporting text within the policy ensures that individual schemes will mitigate their environmental impacts,and for this reason we have kept thescore as it is.

11. Natural England - in reference to: SA – Assessment of Policies and Alternatives, 5.7 Mitigation and Enhancements, and 5.8 Monitoring

Against SA 4 - To maintain and improve water, soil and mineral quality and resources, all the policies score either 'Negligible or no effect' or 'The effect is uncertain'. As some of the policiessupport the development of new highways infrastructure developments or other transport improvements, there will be land take and inevitable soil loss. This needs to be accuratelyreflected in the SA, including in sections 5.7 MITIGATION AND ENHANCEMENTS and 5.8 MONITORING.

Action required. The scoring for SA4 has been updatedfor Policy 1 and additional mitigation measures have been added to Table 5-12.

12. Natural England - in reference to: SA – Assessment of Policies and Alternatives

Policies 6 and 7 : Supporting Growth Areas scoreas 'The effect is uncertain' against SA 2 (Biodiversity and Geodiversity) and SA4 (Water, Soils and Minerals) as well as SA9, SA14 and SA15. The Greater Norwich Local Plan, recentlysubmitted to the Planning Inspectorate for examination, contains detailed information about planned growth areas, regeneration areas and strategic employment areas, which should be used to inform the TfN Strategy and specifically this SA.

No action required. As this Transport Strategy is looking atthe potential transport options to and from these strategic sites, the effect remains uncertain, as it is not necessarily clear where these interventions will arise. The SA can only assess the TfN Strategy and its policies. A separate SA will be undertaken for the Local Plan.

13. Natural England - in reference to: SA – Assessment of Policies and Alternatives

Where uncertainty remains, then the policies' wording should reflect this and provide mechanisms for addressing this.

Action required. TfN policy wording has been updated where appropriate.

14. Natural England - in reference to: SA – 5.7 Mitigation and Enhancements and 5.8 Monitoring

Table 5-12 - Proposed Mitigation - The SA Topicslisted in under the column heading 'SA Topic' in the first row do not marry up fully with those listedin Table 4-2 - Sustainability Appraisal Framework.We support the mitigation identified i.e.: *In order to maximise sustainability benefits, transport interventions must commit to biodiversitynet gain and make use of the natural capital approach to ensure environmental net gain over and above that of decarbonisation.*
The mechanism identified in the table to deliver the above mitigation is to embed (it) into TfN policies and narrative. Having read the TfN strategy it is unclear and uncertain which policies,if any, contain the identified mitigation, either in the policy wording or supporting text. Werecommend that this issue is addressed.
No action required. The SA topics in Table 5-12 have been updated to ensure consistency with the SA topics those listed in Table 4-2. The TfN strategy has been updated following consultation and proposed mitigation measures identified in the SA has been taken into account. As the TfN strategy remains at a highlevel, the outlined mitigation and monitoring measures will be taken forward as part of the forthcoming Action and Implementation Plans.

15. Natural England - in reference to: SA – 5.7 Mitigation and Enhancements and 5.8 Monitoring
Table 5-13 Monitoring Proposals - The table needs to be amended to include monitoring proposals to assess negative effects on biodiversity and geodiversity from the TfN strategy, as well as the stated measuring of biodiversity increases through net gain, which we welcome. The table should also include monitoring of the loss of BMV land.
~~**Action required. Table 5-13 has been updated to include these suggestions.**~~

16. Natural England - in reference to: SA – General Comment
The SA report identifies uncertain effects for air quality, noise, biodiversity and geodiversity, water,soils and landscape. The construction and operation of transport infrastructure may have a negative effect on biodiversity including priority habitats and protected species. New transport infrastructure could have positive or negative effects depending on the location of the projects and mitigation and enhancement measures incorporated into the design.
Natural England advises that this iterative processshould be used to ensure that projects taken forward are capable of avoiding / being designed to avoid adverse impacts to designated sites as far as possible – and if avoidance measures are not possible that appropriate mitigation can be implemented and secured to satisfactorily addressadverse impacts. Robust transport policy should reflect this approach and secure delivery of appropriate mitigation measures and biodiversity net gain.
Action required. The outlined mitigation and monitoringmeasures will be taken forward as partof the forthcoming Action and Implementation Plans, which will be used to minimise adverse effects identified in the SA.

17. Natural England - in reference to: HRA – General Comment
Natural England is satisfied that the report entitledInformation to Inform Habitats Regulations Assessment (WSP, August 2021) has provided a robust assessment of the Transport for Norwich Strategy, in accordance with the requirements of the Conservation of Habitats and Species Regulations 2017 and having regard to relevant case law.
No action required

18. Natural England - in reference to: HRA
We welcome recognition of the importance of considering Functionally Linked Land (FLL) in relation to Habitats sites in Tables 4-3 and 4-4.
No action required.

19. Natural England - in reference to: HRA
Table 4-4 *Potential Effects and Conclusion on LSE* - For Policy 1, similar wording should be used here as elsewhere within the table, to clearlyrecognise that (a) it is not possible to conclude that there will be no Likely Significant Effects on the integrity of Habitats sites; and (b) there is alsolikely to be in-combination effects with other plansand projects.
Action required. Text added.

20. Natural England - in reference to: HRA
Under 4.5.2, the final sentence should read: "These are: Policies 1, 6, 7,12,13,16 and 18."
Action required. Text amended.

21. Natural England - in reference to: HRA
We support and agree that the following over-arching statement must be incorporated within the Transport for Norwich Strategy directly (rather than in any accompanying supplementaryguidance) : *Any new transport or improvement scheme that would be likely to have a significant effect on a Habitats Site either alone or in combination with other plans or projects, will be subject to assessment under part 6 of the HabitatsRegulations at project application stage.*
Action required. Advised to NCC and recommendation on where this text could sit in the TfN Strategy has been provided.

1. Environment Agency - in reference to: General
We have reviewed the Norwich Transport Strategy report as submitted and can confirm thatwe don't have any comments to make on the content.
No action required.

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