Appendix A

Assessment of Implementation Plan Actions

Public

Norfolk County Council

Norfolk LTP4 Part 2 - Implementation Plan

Appendix A - Policy Implementation Actions Assessment

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Contents

Assessment of LTP4 Policy Implementation Actions

The assessment of the polices will predict the overall effect significance (negative, positive, uncertain, both positive and negative or negligible).

Table A1 below shows the key to effects that have been used within the assessments below.

Table A1 – Key to Effects

Effect Significance	Key
Potential for significant positive effects	++
Potential for minor positive effects	+
Potential for minor negative effects	-
Potential for significant negative effects	--
Potential for both positive and negative effects	+/-
Uncertain effects	?
Negligible / No effect	0

Although both the Implementation Plan (IP) and the Fourth Local Transport Plan (LTP4) Strategy represent one plan, due to the timescales on the development of these, the assessment has been undertaken separately. As the IP and LTP4 Strategy are intrinsically linked, the assessment of the IP will take the previous assessment of the LTP4 Strategy into consideration. Both the IP and the LTP4 Strategy and their assessments should be read in conjunction.

The previous policy assessments can be found in Appendix A of the SA Report. The SA Report can be found here.

Objective 1: Embracing the Future

Policy 1 of the adopted LTP4 Strategy under Objective 1:

We will plan and prepare the county for future challenges and changes to ensure the best for our society, environment and economy, and to actively review these developments through time.

Policy 1 Implementation Actions:

- Explore opportunities and funding for trials of new forms of transport and mobility (such as autonomous vehicles, or digitally connected vehicles);
- Explore the use of Artificial Intelligence and cognitive thinking to help plan for and manage transport networks;
- Review and revise the highway network performance report;
- Increase the focus on public transport, walking and cycling, electric vehicles and air quality;
- Monitor outcomes and indicators in the Asset Management Strategy Performance framework;
- Undertake vulnerability assessments of transport networks: Undertake Resilient Network Assessment on core A roads which identify vulnerability; and
- Review Winter Service Policy.

Table A2 – Embracing the Future – Policy 1 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+	++	0	++	++	+/-	+	+	++	++	++	++	+	++

These actions will help to prepare the county for future changes and challenges of climate change by providing practical solutions to tackling these impacts, which is likely to help build early climate resilience. Given the vulnerability of some areas and communities in Norfolk (particularly along the coast), , and the cross-cutting nature of climate change, making preparations for society, environment and the economy is likely to have positive effects across all SA objectives.

The implementation of new technology (autonomous vehicles, or digitally connected vehicles) and encouraging the use of the sustainable transport modes will help to reduce transport emissions and therefore improve air quality within the County, resulting in significant positive impacts to SA1 (Air Quality). As air pollution is a key factor in the degradation of surfaces of historical buildings and negatively impacts biodiversity and geodiversity assets, particularly by the deposition of nitrogen from NO2/NOx; the improvement to air quality will indirectly result in positive effects on SA9 (historic environment) SA14 (landscape and townscape) and SA2 (biodiversity/geodiversity). The encouragement of more sustainable transport modes will also result in a reduction in noise pollution caused by traffic noise due to the reduction of single occupancy journeys. This could increase tranquillity, contribute to overall sense of place and the unique setting of heritage assets, as well as lessening the impact of disturbance on the County's biodiversity.

Autonomous vehicles and digitally connected vehicles can also provide opportunities to improve connectivity to services and employment for people who currently have no access to transport. Therefore, significant positive effects have been identified for SA11 (access to jobs). However, the implementation of autonomous and digitally connected vehicles may disproportionally affect those in deprived areas who may be less able to adapt and accommodate changes for these vehicles, which has resulted in both positive and negative effects for SA7 (inclusion and equality).

Investment in innovative technology and sustainable supply chains will likely result in economic benefits. This could also help to increase further employment within the region, the longevity of which could be made more secure by a transport network that is ready for future challenges.

Improvements to safety of the transport network will be sought from the review of the Winter Service Policy which will help to reduce accidents related to winter weather conditions, therefore, resulting in significant positive effects on SA12 (Accidents).

Reviewing and revising the highway network performance and monitoring outcomes and indicators in the Asset Management Strategy Performance framework, will allow for better understanding and therefore, enable better planning and management of the transport network. This will likely have positive effects across all SA topics.

Policy 2 of the adopted LTP4 Strategy under Objective 1:

The priority for reducing emissions will be to support a shift to more sustainable modes and more efficient vehicles, including lower carbon technology and cleaner fuels; this includes the facilitation of necessary infrastructure.

Policy 2 Implementation Actions:

- Explore opportunities to participate in projects and trials to decarbonise the transport system;
- Explore opportunities for first mile / last mile delivery solutions by for example autonomous or semi-autonomous electric vehicles / pods to reduce the numbers of van related delivery trips;
- Deliver our Electric Vehicle (EV) strategy. The county council can play an important role in helping to increase the uptake of electric vehicles by ensuring that the necessary charging infrastructure is in place;
- Deliver 'Charge Collective,' a regional pilot looking to promote on-street charge points for electric vehicles. This is being conducted in partnership with our regional electricity network operators UK Power Networks;
- Take forward energy projects such as Local Area Energy Planning to ensure resilience of local energy networks required for a shift to electric vehicles;
- Support Beryl Bikes and e-scooter trials and look at opportunities at expanding out the Beryl offer;
- Develop Local Cycling and Walking Infrastructure Plans (LCWIPs) for countywide coverage;
- Work with Transport East on bringing forward EV infrastructure;
- Adopt Parking Standards to (amongst other things) ensure every new home with a parking space has an EV charge point; and
- Adopt EV parking standards for new workplaces and other new non-residential developments.

Table A3 – Embracing the Future – Policy 2 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+	++	0	+	+/-	+/-	++	+/-	++	++	+/-	++	+/-	++

These actions work towards the decarbonisation of the transport network by delivering a shift to EVs through the County's Electric Vehicle Strategy and 'Charge Collective' scheme which will ensure that the necessary charging infrastructure are provided, including on-street charging points. The Local Area Energy Planning will also ensure that local energy networks are robust enough for this shift in EVs.

Significant positive effects have been identified for SA1 (air quality) and SA3 (carbon emissions) due to a reduction in air pollution caused by traffic emissions, and SA15 (noise) as EVs are quieter than internal combustion engine vehicles which will help to reduce noise pollution. However, this can increase the risk of accidents, especially with pedestrians who may suffer with partial or complete hearing loss or those who are visually impaired. There are also potential issues with obstructive charging facilities (e.g. trailing cables), which can put pedestrians, particularly people with disabilities or those who use pushchairs, at risk.

Focusing on active travel modes and public transport is likely to have significant positive effects on safety (SA6). If carefully designed, the provision of new and improved routes for cyclists and pedestrians as part of the Local Cycling and Walking Infrastructure Plans (LCWIPs) will reduce the number collisions involving them, and road traffic accidents due to the reduced number of vehicles on the road network. Therefore, both positive and negative effects have been identified for SA6 (Safety) and SA12 (Accidents).

The introduction of EV vehicles may disproportionally affect those in deprived areas who may be less able to adapt and accommodate changes for EVs. However, the promotion of active transport (walking and cycling) as part of the LCWIPs and the supporting opportunities for Beryl Bikes and e-scooter trials will improve connectivity to services and employment for people who currently have no access to transport. Therefore, positive and negative effects have been identified for SA7 (Inclusion and Equality), and significant positive effects for SA8 (access and the economy) and SA11 (access to jobs). Active transport modes also provide beneficial effects on the physical and mental wellbeing of the population within the County due the encouragement of an active lifestyle. Therefore, significant positive effects have been identified for SA13 (health and wellbeing).

Significant positive effects to SA 8 (Access and Economy) due to the investment in innovative technology and sustainable supply chains which will likely result in economic benefits. This could also help to increase further employment within the region, the longevity of which could be made more secure by a transport network that is future ready.

The implementation of EVs and encouraging the use of active transport modes will help to reduce transport emissions and therefore improve air quality within the County, resulting in significant positive impacts to SA1 (air quality) and SA3 (carbon emissions). As air pollution is a key factor in the degradation of surfaces of historical buildings and negatively impacts biodiversity and geodiversity assets, particularly by the deposition of nitrogen from NO2/NOx; the improvement to air quality will indirectly result in positive effects on SA9 (historic environment) and SA2 (biodiversity/geodiversity). The encouragement of more sustainable transport modes will also result in a reduction in noise pollution caused by traffic noise due to the reduction of single occupancy journeys. This could increase tranquillity, contribute to overall sense of place and the unique setting of heritage assets, as well as lessen the impact of disturbance on the County's biodiversity.

However, the introduction of new infrastructure required for the implementation of EVs such as charging points, may negatively impact Norfolk's landscape and setting of historic assets. Therefore, positive and negative effects have been identified for SA9 (historic environment) and SA14 (landscape and townscape).

Local deliveries have increased due to the on-demand culture and increased prevalence of working from home. Therefore, further reductions to carbon emissions will result from the reduction in number of van related journeys from the potential use of autonomous or semi-autonomous electric vehicles / pods.

Policy 3 of the adopted LTP4 Strategy under Objective 1:

Innovation and new technologies will be embraced and used proactively in order to achieve our vision, including responding to new targets set by the recently adopted environmental policy.

Policy 3 Implementation Actions:

- Investigate the delivery of ‘Mobility as a Service’ solutions. Such solutions could range from car-sharing to phone apps that allow customers to make easy, multi-modal journeys. The customer simply enters details of the journey they wish to make, and the app plans the journey and makes a single charge to the customer;
- Seek opportunities to improve digital connectivity;
- Explore and utilise innovative monitoring equipment to show usage of the transport network (e.g. video technology that recognises different user types, use of GPS, mobile or telephone data);
- Investigate trial of a smart street, showcasing a range of technological innovations to enable better service delivery across a range of functions (e.g. street bins, air quality, street usage);
- Explore the use of low-cost air quality monitoring equipment including trialling the use of innovative, low-cost and portable devices;
- Work with Transport East on Regional Agent Base Model + travel and behaviour data. This is an innovative modelling tool; and
- Implement the Bus Service Improvement Plan objective of multi-operator ticketing.

Table A4 – Embracing the Future – Policy 3 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+	++	0	++	+	++	++	+	+	++	+	+	+	++

These actions allow the population of Norfolk to live more locally, which will provide beneficial effects on most SA objectives. The delivery of 'Mobility as a Service' solutions covers a range of services from car sharing to phone apps which allow users to make access, pay for, and get real-time information on, a range of public and private transport options. This will likely reduce single occupancy journeys and private car use which will provide additional benefits of reducing air pollution (SA1 - air quality), noise pollution (SA15 - noise) and transport related carbon emissions (SA3 - carbon emissions), as well as, helping to improve connectivity inclusively. However, consideration needs to be given to those who may not have the same understanding of or access to technology (for example the elderly, those with learning difficulties or in low-income groups).

Opportunities to improve digital connectivity will be especially beneficial for people who can work from home as there will be a reduction in the need to travel, reducing congestion and traffic emissions.

Air quality will be further enhanced by the exploration of low-cost air quality monitoring. This will result in beneficial effects on the County's biodiversity/geodiversity and the historic environment as air pollution is a key factor in the degradation of surfaces of historical buildings and negatively impacts biodiversity and geodiversity assets, particularly by the deposition of nitrogen from NO2/NOx. Therefore, positive effects have been identified for SA2 (biodiversity/geodiversity) and SA9 (historic environment).

The use of innovative monitoring equipment, a trial of a 'smart street', and working with Transport East on the Regional Agent Base Model, will enable Norfolk County Council (NCC) to obtain behavioural data which can be used for better understanding

of the transport network, how people use the transport network, and what changes are needed to be made. Therefore, this is likely to result in positive effects for most SA objectives, including SA14 (landscape and townscape) as there are opportunities for the townscape to become tidier and more appealing,

Improvements to public transport modes in Norfolk such as providing more frequent and reliable bus services offered and improvement to fares and tickets, as part of the Bus Service Improvement Plan, are likely to encourage more people to use them. This will lead to a reduction in congestion as a result of a reduction in private car use, which will help improve the safety of the road network, improve air quality, reduce transport related carbon emissions and noise pollution.

Policy 4 of the adopted LTP4 Strategy under Objective 1:

We will work with people to shape the way they travel, why they are travelling and whether they need to travel, encouraging behaviour change and interventions that can help to increase the use of sustainable transport.

Policy 4 Implementation Actions:

- Develop an online information hub under the brand of Travel Norfolk to encourage behaviour change. This will act as a journey planner that encourages sustainable travel as the preferred method of transport. This hub will also provide a high quality resource of information to help people break down barriers that remain to using sustainable transport;
- Promote behaviour change through Getting Norfolk Active: Active Norfolk's 2021-2026 strategy;
- Advocating for walking and cycling to be the first choice for short journey;
- Promoting physical activity's contribution to carbon reduction targets;
- Addressing other barriers that prevent this positive behaviour change;
- Deliver travel plans at residential development; and
- Monitor travel habits at residential developments through travel plans delivered via our AtoBetter programme.

Table A5 – Embracing the Future – Policy 4 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+	++	0	+	+	++	++	+	+	++	++	++	0	++

These actions work towards changing the behaviour of the population in Norfolk to use for sustainable transport modes, especially for shorter journeys, which will have positive effects on most SA objectives. The development of the online travel hub, 'Travel Norfolk' will help to encourage use of sustainable transport by acting as a journey planner and help break down barriers to sustainable transport. This will in help to reduce congestion on the road network due to the reduction in private car, single occupancy journeys, reduce stress related to traveling, improve access to employment, education and community services inclusively, and help to reduce carbon emissions. However, consideration needs to be given to those who may not have the same understanding of or access to technology (for example the elderly, those with learning difficulties or in low-income groups).

The behavioural change programme, 'Get Norfolk Active: Active Norfolk's 2021-2026 strategy', and delivering travel plans at residential development will also help in encouraging sustainable transport modes and addressing any barriers. The encouragement of active transport modes will provide significant positive effects on SA13 (health and wellbeing) due to supporting a more active lifestyle, and air quality within Norfolk will be improved due to a reduction in private car use. The increased use of sustainable transport modes will also lead to a reduction in the number of cars on the road, which is likely to help reduce levels of congestion and accidents and near misses. Therefore, significant positive effects on SA1 (air quality) and SA12 (accidents) were identified.

Implementation Actions Alternatives

- **Alternative 1:** Respond directly to government policy and apply technology only when it has been trialled and adopted nationally;
- **Alternative 2:** Leave electric vehicle technology roll-out to the private sector and not get involved; and
- **Alternative 3:** Wait for people's behaviour to change as they reacted to global or national trends; or changed behaviour because they found it difficult to use Norfolk's transport networks in their preferred way.

Table A6 – Embracing the Future –Implementation Actions Alternatives Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
?	?	- -	?	- -	-	0	-	?	- -	0	-	-	?	?

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

Waiting for people's behaviour to adapt to global and national trends is unlikely to result in transformative change. This could continue the existing reliance upon the use of private vehicles and may also make the county less resilient to climate change, resulting potentially significant negative effects on SA5.

The population in Norfolk continues to grow and is expected to be over one million by 2036. In addition to this the population is ageing. The growth in population will increase the volume of traffic on the road and place increased pressure and demand on the transport network. Failing to adapt to these projected changes early could result in a transport network that is unable to

cope and rising levels of congestion and subsequent air and noise pollution. Uncertain effects have therefore been identified for air quality (SA1) and noise (SA15).

Low carbon vehicles and new transport technology have potential for positive effects on air and noise pollution, through lower carbon and GHG emissions, quieter vehicles and recued levels of congestion. However, without NCC taking a leading role on this, there's no guarantee on the how many schemes will be implemented and the overall effectiveness on air and noise pollution.

Some of these missed opportunities may present major economic prospects, with the potential for significant job creation. Relying on others to deliver these schemes, could place Norfolk at an economic disadvantage, becoming less competitive and less attractive to inward investments. This has resulted in minor negative effects on SA8 (economy) and significant negative effects on SA10 (investment and growth).

Taking a back seat and leaving the provision of electric vehicle technology roll-out down to the private sector, could also result in Norfolk missing out on key opportunities for investments. These alternative approaches may not be tailored to the County's needs and could lead to negative effects on landscape, cultural heritage, biodiversity soils and geodiversity. Uncertain effects have been identified for SA2 (biodiversity), SA4 (water, soils and minerals), SA9 (historic environment) and SA14 (landscape), as at this stage, it is not clear what future proposals could entail.

Waiting for people’s behaviours to change may prevent an earlier shift to active transport and a healthy life choice that people feel confident about. This could result in minor negative effects on health and wellbeing (SA13), accidents (SA12) and quality and safety (SA6).

Objective 2: Delivering a Sustainable Norfolk

Policy 5 of the adopted LTP4 Strategy under Objective 2:

We will work with partners to inform decisions about new development ensuring they are well connected to maximise use of sustainable and active transport options. This will make new developments more attractive places to live, thus supporting a strong sense of the public realm.

Policy 5 Implementation Actions:

- Review the planning and health protocol to ensure principles of health and wellbeing are adequately considered in plan making, and when evaluating and determining planning applications. This will include considerations of connection to, and accessibility of, public and active travel options;
- Review the Norfolk Infrastructure Delivery Plan (NSIDP) to ensure it captures the full range of projects being delivered to support growth including decarbonisation projects, and transport projects focused on active travel, public transport and decarbonisation;
- Review and roll forward the market town Network Improvement Strategies;
- Take forward work with partners on infrastructure requirements to unlock growth, including:
    - North Walsham housing link road
    - East Norwich masterplan
    - West Winch masterplan
    - Thetford A11 junctions and successor to link road work
    - Bradwell
- Review Safe Sustainable Development (guidance document for new developments);
- Review Parking Standards;
- Work as part of the Greater Norwich Development Partnership and Greater Norwich Local Plan Partnership;
- Work with district councils as local plans are reviewed;
- Provide comments on neighbourhood plans to inform their development;
- Work with county council service providers on location of services, e.g. schools; and

- Work closely with Department for Transport (DfT), National Highways, Network Rail / Great British Railways and other local authorities to influence transport decisions in Norfolk to ensure good connectivity to new developments.

Table A7 – Delivering a Sustainable Norfolk – Policy 5 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	?	++	?	+	++	++	++	?	++	++	+	++	?	+

These actions aim to ensure that new developments are well located and connected to sustainable and active travel modes, which is likely to improve access for all groups inclusively and help support a more active lifestyle. People are more likely to choose active travel for journeys if there are suitable networks to travel on. Well-connected developments will reduce severance, improve accessibility to jobs, services, healthcare and amenities and improve safety. Significant positive effects have therefore been identified for most SA objectives.

Working with partners such as district councils, county council service providers, Greater Norwich Development Partnership and Greater Norwich Local Plan Partnership, DfT, National Highways and other local authorities will ensure good connectivity of services is developed and the use of sustainable transport modes are maximised. This could help to ensure that all groups, including vulnerable groups, are part of the conversation, which could lead to more inclusive transport for all. Involving the community will also help them to feel safe and empowered.

The review and development of important documents such as the Planning and Health Protocol, the Norfolk Infrastructure Delivery Plan, and Safe Sustainable Development will help to build in actions to achieve desired outcomes and benefits within the LTP4 to provide more liveable places, such as ensuring principles of health and wellbeing are considered in plan making,

development of decarbonisation projects, active and public travel provision, improved air quality and reducing the need to travel, is likely to result in positive effects for most SA objectives.

These actions help to support the future population growth in Norfolk, by providing the necessary transport infrastructure required for new residential developments including West Winch, North Walsham and East Norwich, and through understanding transport impacts of growth in market towns as part of the Market Town Network Improvement Strategies. These will provide potential opportunities to improve or create new economic corridors as well as improving connectivity between employment centres and housing markets which is likely to result in increased local spending. Therefore, significant positive effects have been identified for SA8 (access and economy) and SA11 (access to jobs).

However, this will require the use of raw materials and could result in the loss of land, including 'Best and Most Versatile' agricultural land, as well as modify and discharge into local waterbodies. This will depend on scheme level designs which come forward, as opportunities could arise, where practical, for works to reuse existing materials and promote waste minimisation. Therefore, uncertain effects have been identified for SA4 (Water, Soils and Minerals).

Uncertain effects for SA2 (biodiversity/ geodiversity), SA9 (historic environment) and SA14 (landscape and townscape) have also been identified due to the potential for these new developments to come forward as they may disturb biodiversity, historic assets and the County's unique townscapes and landscapes during construction and operation, deteriorate habitat quality and severance of ecosystems. However, opportunities may arise which could benefit both the natural and historic environment, such as improving habitat quality, implementing biodiversity net gain measures, and restoring and retaining historic assets, as part of these new developments.

The review of Parking Standards will ensure that sufficient spaces are provided to support a modal shift to more sustainable transport modes by providing appropriate cycle parking and new EV charging spaces, which is likely to encourage more people to use sustainable transport, therefore, resulting in positive effects to most SA objectives, such as reduced carbon emissions, improved air quality, and improvements to health and wellbeing by supporting an active lifestyle. The review will also ensure that on-street parking and safety problems are avoided as well as, fully catering for disabled drivers and/or disabled passengers. This will result in less congestion on the roads and safety issues involving parked vehicles causing an obstruction to pedestrian and other road users. Therefore, significant positive effects have been identified for SA6 (quality of life and safety) and SA7 (inclusion and equality).

Policy 6 of the adopted LTP4 Strategy under Objective 2:

We will work with the development community and local stakeholders to ensure greener transport solutions are embedded in land-use planning to significantly reduce traffic generation by private car. We will also work to ensure that the necessary infrastructure to support the transition to a clean transport network is in place. We will seek that that any carbon impacts are monitored and offset by locally applicable measures. As part of our ongoing work on developing guidance for how we will deal with new development we will amongst other things consider how to establish carbon plans and budgets and devise methodologies to achieve carbon neutrality.

Policy 6 Implementation Actions:

- Consider options for monitoring and offsetting carbon impacts arising from new development;
- Alongside this, develop carbon plans and budgets and devise methodologies to achieve carbon neutrality from new development;
- Write these into future reviews of our guidance documents for new developments;
- Work with other active travel groups to expand sustainable travel plans to schools;
- Engage with developers in pre-application discussions on major sites to secure sustainable transport links;
- In our role as statutory consultee on planning applications, seek sustainable transport links;
- Develop proposals for, and introduce, pre-application charges;
- Work with partners on the development of land-use planning documents;
- Review Safe Sustainable Development;
- Review Parking Standards; and
- Deliver travel plans at residential development.

Table A8 – Delivering a Sustainable Norfolk – Policy 6 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+	++	0	+	+	++	++	+	0	+	+	++	+	+

These actions help to prepare the County for future challenges of climate change by providing practical solutions to reduce carbon impacts from new development, through the monitoring and offsetting carbon impacts and the development of carbon plans and budgets, with the aim to become carbon neutral. This will result in significant positive effects on SA3 (carbon emissions) and SA1 (air quality) therefore, resulting in indirect positive effects on ISA5 (climate change).

Further reductions in carbon emissions and improvements to air quality will arise from securing sustainable transport links within new development and developing sustainable active travel plans to schools. This will help to reduce private car use, traffic congestion, noise pollution and help to improve access to facilities and education for all inclusively. The development of sustainable transport links will also encourage more people to either walk or cycle, especially for shorter journeys, which will result in significant positive effects on their health and wellbeing by promoting a more active lifestyle.

This will also have indirect positive effects on the historic environment (SA9) and landscape and townscape (SA14) as it may offer opportunities for positive placemaking. Reductions in noise and air pollution may help to increase tranquillity and improve the setting of heritage assets in the county. Minor positive effects have therefore been identified for SA9 (historic environment) and SA14 (landscape and townscape).

Reviewing the Safe, Sustainable Development Plan and creating new travel plans are also likely to result in increased safety for all users of the road network, including vulnerable users such as school children. This could help to reduce the number of accidents within the county and has therefore resulted in minor positive effects on SA6 (quality of life change) and SA12 (accidents).

Policy 7 of the adopted LTP4 Strategy under Objective 2:

In air quality management areas development will need to demonstrate its positive contribution to tackling the air quality problem.

Policy 7 Implementation Actions:

- Roll-forward our 2022 review of Safe Sustainable Development to adopt guidance on our expectations of how developers would need to demonstrate how development would address air quality or bring forward measures to address the issue; and
- Take account of any changes to UK law, best practice or guidance following new air quality guidelines announced by the World Health Organisation in 2021.

Table A9 – Delivering a Sustainable Norfolk – Policy 7 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+	+	0	+	+	0	0	+	0	0	0	++	+	0

These actions will help to improve the air quality within the County, which could result in positive effects across most SA topics. The actions aim to ensure that developments will make beneficial contributions to air quality issues and bring forward measures to address the issue as part of the Safe Sustainable Development guidance, as well as the adhering to the new guidelines announced by the World Health Organisation in 2021.

As air pollution is a key factor in the degradation of surfaces of historical buildings and negatively impacts biodiversity and geodiversity assets, particularly by the deposition of nitrogen from NO2/NOx; the improvement to air quality will indirectly result

in positive effects on SA9 (historic environment) and SA2 (biodiversity/geodiversity). Improved air quality is also likely to improve the county's townscapes and landscapes through increased levels of tranquillity and potential positive placemaking.

Significant positive effects have been identified for SA13 (health and wellbeing) as exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung cancer, leading to reduced life expectancy, therefore, taking action to improve air quality is likely to have significant benefits for air health and wellbeing of the County's residents, especially those more vulnerable members of the population.

Implementation Actions Alternatives

- **Alternative 1:** React to proposals only once others have worked on their development and put them in front of us for consultation; and
- **Alternative 2:** Put less resource and give a lower priority to reviews and refreshes.

Table A10 – Delivering a Sustainable Norfolk – Implementation Actions Alternatives Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
?	- -	?	- -	?	-	-	-	- -	0	-	-	-	- -	?

Alternative actions for Objective 2 could result in transport not being considered at an early-enough stage in planning proposals, potentially resulting in developments coming forward in unstainable and undesirable locations. A disjointed approach between transport and other developments, could lead to unnecessary or additional land take, which could result in the disturbance and fragmentation of habitats.

This approach may also result in the unsustainable use of resources, the loss of valuable agricultural land and damage soils as well as insensitive design, that does not take into account landscape and heritage settings. Given the importance of some of these assets in the county (in particular the Norfolk Broads, historic character of Norwich and high quality soils) significant negative effects on biodiversity (SA2), soils (SA4), the historic environment (SA9), and landscape and townscapes (SA14) have been identified.

Giving less priority to drafting, reviewing and refreshing guidance documents, could lead to outdated documents that do not reflect the latest national and international legislation and trends. This could mean that developments within the county are less informed on key issues such as carbon reduction, climate change, air quality and noise into consideration. Uncertain effects have therefore been identified in relation to air quality (SA1), carbon emissions (SA3), climate change (SA5) and noise (SA15), as development will still be required to meet the requirements of national legislation, however, they may not best take into account the specific issues within the county.

Inappropriately located developments and developments that may consider transport and access too late could result in developments which are 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, to access employment, services and recreation. This can also lead to socioeconomic marginalisation and could hinder healthy lifestyles. Developments may not also take the safety of all road users into consideration. This has resulted in minor negative effects on SA6 (quality of life and safety), SA7 (inclusion and equality), SA11 (access to jobs), SA12 (accidents) and SA13 (health and wellbeing).

Objective 3: Enhancing Connectivity

Policy 8 of the adopted LTP4 Strategy under Objective 3:

Our priority will be to improve major road and rail connections between larger places in the county, and to major ports, airports and cities in the rest of the UK.

Policy 8 Implementation Actions:

- Make the case for early electrification of the remainder of the rail network serving the county;
- Look to secure inclusion of rail, trunk road and major road networks in digitally-connected programmes;
- Remain an active member of Transport East and work with Transport East on development of its transport strategy and its subsequent delivery, and any review;
- Work with Transport East on Connectivity Study;
- Work with Transport East on Rail Connectivity;
- Continue to lead and coordinate the A47 Alliance;
- Review the Alliance programme and activities to include further focus on carbon and technology;
- Work with partners on Task Forces and other consortia making the case for rail improvements. These include:
    - East West Rail (EWR) Main Line Partnership (formerly the Consortium) to build the case and the evidence base for the East West Rail Main Line
    - Great Eastern Main Line (GEML) Task Force (Norwich to London)
    - Ely Task Force (to make the case for improvements that would unlock a range of passenger and freight services)
- Work with partners to understand the evidence base to identify and secure improvements to transport gateways; and
- Take forward schemes that are included in the current government large local major and major road network funding streams; and develop the forward pipeline of projects (A full detailed assessment of each of the schemes included within this objective are provided in **Appendix B**).

Table A11 – Enhancing Connectivity – Policy 8 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+	- -	+/-	?	+	++	++	++	?	++	++	+	+	?	+

All actions help to improve connectivity within Norfolk and beyond, which is likely to help to increase the capacity, connectivity and efficiency of the transportation network to support future population growth across Norfolk, resulting in significant positive effects for SA6 (quality of life and safety), SA7(inclusion and equality), SA8 (access and economy) and SA11 (access to jobs).

Improvements to connectivity across Norfolk, in particular the dualling of the A47, may enable greater economic opportunities, which could allow businesses to grow. These opportunities could also attract more businesses into the region, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy. Greater connectivity may also present growth in tourism opportunities for the County. Therefore, significant positive effects have been identified for SA10 (investment and growth).

Taking forward schemes included in the current government large local major and major road network (including Long Stratton Bypass, Norwich Western Link (NWL), West Winch Housing Access Road, A47/A17 Pullover Junction, King's Lynn), as well as the dualling of the A47, is likely to result in the use of raw materials. However, opportunities may exist, where practicable, for works to reuse existing materials and therefore, promote waste minimisation and sustainable use of materials. Construction of these new routes could result in the loss of land. The NWL, Long Stratton Bypass and the West Winch Access Road schemes intersect areas with high quality agricultural land (ALC Grades 1-3), therefore, there is potential for these areas to be lost as a result of development of these schemes. However, this will depend on scheme level designs which come forward. Therefore, uncertain effects have been identified for ISA4 (water, soils and minerals).

Given the biological significance of some areas of the county, taking forward schemes such as Long Stratton Bypass, Norwich Western Link (NWL), West Winch Housing Access Road, has potential to result in negative effects on biodiversity (SA2), soils (SA4), historic environment (SA9) and landscape (SA14). The landscape contains many significant areas of importance for wildlife, in particular the NWL has potential to negatively affect the River Wensum which is a site of international importance for wildlife. The scheme does, however, aim to achieve a biodiversity net gain which will include improvements to existing habitats and creation of new habitat, including woodland and wetland, and including green bridges and wildlife underpasses).

New transport infrastructure projects often require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, that can have a major visual impact, detracting from heritage assets and their unique setting, if designed inappropriately. Large land take and disturbance could also result in negative effects on the region's designated heritage assets, landscapes and townscapes, however, the improvement to air quality may indirectly benefit both the natural and historic environment. Uncertain effects have however been identified for these objectives, as effects will be determined by scheme level design.

Improvements to large local major and major road network may also result in an increase in carbon emissions through the embodied carbon associated with the construction and maintenance, and emissions from the operational use of the transport systems. There is also potential that this could support the continued reliance on private vehicles, which could worsen air quality and could compromise meeting carbon and climate change targets. However, as part of these actions NCC will assess carbon impacts of these schemes and incorporate low carbon connectivity and technology, such as LCWIPs and improvements to bus services as part of the Bus Service Improvement Plan, which will likely improve access for all groups inclusively, help to improve air quality, decrease carbon emissions, and promote an active lifestyle. Therefore, both positive and negative effects have been identified for SA3 (carbon emissions).

Landscapes and tranquillity are also under pressure from development throughout Norfolk which may result in negative effects on landscapes and townscape due to insensitive design and possible requirement for land take. However, public transport enhancements can take cars off the road, reducing congestion and having a potential benefit on the tranquillity, and the increased connectivity across the county could result in more people accessing and exploring the region's unique landscape and townscape. This could present opportunities to generate activity and vitality and help define the character of development distinctive to the surrounding areas and the wider region, which in turn could have beneficial effects on tourism and the economy.

The electrification of the remaining rail network and working on Task Forces (East West Rail [EWR] Main Line Partnership, Great Eastern Main Line [GEML] Task Force, and Ely Task Force) to invest in rail networks, will provide quicker, more frequent and reliable services. This will likely result in more people using public transport and therefore help to reduce private car use, congestion, noise pollution and improve safety of the road network. Further improvements to safety will arise from a digitally connected transport network, as part of the Roads Investment Strategy led by National Highways, which enable the use of safer connected vehicles, as well as lead to more efficient freight networks and frequent rail services.

Policy 9 of the adopted LTP4 Strategy under Objective 3:

Our priority for improved connectivity will be that the network is used by clean transport modes.

Policy 9 Implementation Actions:

- Assess the carbon impacts of schemes the county council brings forward;
- Investigate funding opportunities to deliver a range of initiatives to deliver clean freight including e-cargo bikes, freight consolidation centres (where last-mile deliveries are made by clean modes) and more innovative technologies such as drones or automated vehicles / pods;
- Prepare evidence to support the case for improvements, reviewing previous work to – in particular – update and build in low carbon objectives and the future role of the A47 given technological advancements;
- Work with National Highways to secure active travel and public transport improvements on the trunk road network;
- Actively seek funding investment from central government in partnership with bus operators to bring zero emissions buses to Norfolk and enable a transition to zero emissions vehicles;
- Implement a Behaviour Change Programme;
- Develop LCWIPs to set out policy for walking and cycling; and
- Deliver our EV strategy.

Table A12 – Enhancing Connectivity – Policy 9 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+/-	++	?	+	++	+/-	++	+/-	++	++	+	++	+/-	++

These actions help to improve connectivity within the County through the use of sustainable transport modes, which will result in positive effects for many SA objectives. Initiatives to introduce clean freight including e-cargo bikes, freight consolidation centres (where last-mile deliveries are made by clean modes) and technologies such as drones or automated vehicles / pods will help to reduce carbon emissions, congestion and improve air quality, especially in light of the increasing demand of online shopping and prevalence of working from home. Therefore, significant positive effects have been identified for SA3 (carbon emissions) and SA1 (air quality).

Working with National Highways to improve active travel and public transport on the trunk road network and developing LCWIPs alongside the behaviour change programme (Getting Norfolk Active) will encourage more people to reduce their use of private car and instead either walk, cycle or take the bus, especially for shorter journeys. This will help to reduce congestion, carbon emissions and improve air quality and safety of the road network. Carbon emissions will likely be reduced further from the opportunity to bring zero emissions buses to Norfolk through the funding investment from Department for Transport (DfT).

This will help to improve access for all groups inclusively (SA7-inclusion and equality) and help to promote a more active lifestyle, providing benefits to the health and wellbeing of the population of Norfolk (SA13 -health and wellbeing). The encouragement of more sustainable transport modes will also result in a reduction in noise pollution caused by traffic noise due to the reduction of single occupancy journeys. This could increase tranquillity, contribute to overall sense of place, and the unique setting of heritage assets, as well as lessen the impact of disturbance on the County's biodiversity.

The introduction of EVs, as part of the EV strategy, may cause varying effects on the SA objectives. As EVs are quieter than internal combustion engine vehicles noise pollution will be reduced, resulting in significant positive effects on SA15 (noise). However, this can increase the risk of accidents, especially with pedestrians who may suffer with partial or complete hearing loss or those who are visually impaired. There are also potential issues with obstructive charging facilities (e.g. trailing cables), which can put pedestrians, particularly people with disabilities or those who use pushchairs, at risk. The introduction of EVs may also disproportionally affect those in deprived areas who may be less able to adapt and accommodate changes for EVs. Therefore, both positive and negative effects have been identified for SA7.

EVs also provide benefits in reducing carbon emissions and improving air quality which will have indirect positive effects on the regions environmental and historic environment, as air pollution is a key factor in the degradation of surfaces of historical buildings and negatively impacts biodiversity and geodiversity assets, particularly by the deposition of nitrogen from NO2/NOx.

Further reduction in carbon emissions will arise from NCC reducing carbon impacts for schemes that come forward, including supporting the case to build in low carbon objectives into the future role of the A47. This will help to build early climate resilience, improve air quality, and provide benefits to the wider Norfolk economy by enabling investment into housing, employment, retail, leisure and other services.

However, these actions support the delivery of possible new transport infrastructure which is likely to result in the use of raw materials. However, opportunities may exist, where practicable, for works to reuse existing materials and therefore, promote waste minimisation and sustainable use of materials. Construction of new routes, could result in the loss of land, including ‘Best and Most Versatile’ agricultural land, as well as modify and discharge into local waterbodies. However, this will depend on scheme level designs which come forward. Therefore, uncertain effects have been identified for SA4 (water, soils and minerals).

New transport infrastructure projects often require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, that can have a major visual impact, detracting from heritage assets and their unique setting, if designed inappropriately. Large land take and disturbance could also result in negative effects on the region’s designated heritage assets and biodiversity/ geodiversity, however, the improvement to air quality may indirectly benefit both the natural and historic environment. Therefore, both positive and negative effects have been identified for SA2 (biodiversity/ geodiversity), SA9 (historic environment) and SA14 (landscape and townscape)

Policy 10 of the adopted LTP4 Strategy under Objective 3:

We will seek to improve connectivity between rural areas and services in urban centres.

Policy 10 Implementation Actions:

- Develop countywide Local Cycling and Walking Infrastructure Plans (LCWIPs);
- Consult on the draft Walking and Cycling Strategy;
- Implement the Bus Service Improvement Plan to improve public transport services and infrastructure connecting into settlements;
- Trial innovative technology in different parts of the network by developing prototypes, preferably with local companies;
- Deliver our EV strategy: Encourage stakeholders to deliver charge points at other key destinations including supermarkets and rail stations; and
- Investigate the delivery of 'Mobility as a Service' solutions.

Table A13 – Enhancing Connectivity – Policy 10 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+	++	0	++	++	+/-	++	+	+	++	+	++	0	++

Improving connectivity across Norfolk, including rural areas, through sustainable transport improvements such as the development of countywide LCWIPs and the Bus Service Improvement Plan will provide greater access for businesses, employment, and tourism. Access to education and community facilities and services will also likely improve for all groups inclusively, especially those who cannot drive or do not own a car.

Improvements to public and active transport modes such as providing more frequent and reliable bus services offered in rural areas and improvement to fares and tickets, as part of the Bus Service Improvement Plan, and providing safe and attractive opportunities for walking and cycling, as part of the Walking and Cycling Strategy, are likely to encourage more people to use them. This will lead in a reduction in congestion as a result of a reduction in private car use, which will help improve the safety of the road network, improve air quality, reduce transport related carbon emissions and noise pollution. The encouragement of using active transport modes (walking and cycling) will also result in significant positive effects on the population's health and wellbeing (SA13 - health and wellbeing) due to the promotion of an active life which can provide both physical and mental health benefits.

These improvements to active and sustainable transport modes alongside the delivery of 'Mobility as a Service', which covers a range of services from car sharing to phone apps which allow users to make access, pay for, and get real-time information on, a range of public and private transport options, will provide further benefits to multiple SA objectives. This will help to reduce single occupancy journeys and private car use which will provide additional benefits of reducing air pollution (SA1 -air quality) , noise pollution (SA15 - noise) and transport related carbon emissions (SA3 -carbon emissions), as well as, helping to improve connectivity inclusively. However, consideration needs to be given to those who may not have the same understanding of or access to technology (for example the elderly, those with learning difficulties or in low-income groups).

The introduction of EVs and delivery of EV infrastructure, as part of the EV strategy, may cause varying effects on the SA objectives. As EVs are quieter than internal combustion engine vehicles noise pollution will be reduced, resulting in significant positive effects on SA15 (noise). However, this can increase the risk of accidents, especially with pedestrians who may suffer with partial or complete hearing loss or those who are visually impaired. There are also potential issues with obstructive charging facilities (e.g. trailing cables), which can put pedestrians, particularly people with disabilities or those who use pushchairs, at risk.

The introduction of EVs may also disproportionally affect those in deprived areas who may be less able to adapt and accommodate changes for EVs. Therefore, both positive and negative effects have been identified for SA7. However, they also provide benefits in reducing carbon emissions and improving air quality which will have indirect positive effects on the regions environmental and historic environment, as air pollution is a key factor in the degradation of surfaces of historical buildings and negatively impacts biodiversity and geodiversity assets, particularly by the deposition of nitrogen from NO2/NOx.

Implementation Actions Alternatives

- **Alternative 1:** Scale down or cease our involvement in such groups in order to concentrate resources elsewhere;
- **Alternative 2:** Instead of committing to reviewing evidence bases in support of projects on the major networks to ensure that low carbon and technological advances are built-in and centre stage, we would focus on only meeting current requirements and guidance; and
- **Alternative 3:** Instead of taking forward schemes included in the current government large local major and major road network funding streams; and developing the forward pipeline of projects, we would review this programme.

Table A1 – Enhancing Connectivity – Implementation Actions Alternatives Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+/-	?	+/-	?	?	?	-	- -	?	- -	-	?	+/-	?	+/-

NCC have previously committed to developing a number of schemes and developments and the business cases demonstrate their overriding need. Some of them are at relatively late stages of development, therefore, reviewing them could mean other associated plans may not come forward, such as housing, employment space or other growth that is dependent on the infrastructure.

Given that accessibility is an ongoing issue within the county, not taking forward these schemes, could exacerbate these existing issues, making it harder for residents to travel to work, services and facilities. This could also mean that vital housing developments do not come forward, which could limit housing availability within the county driving up prices and potentially forcing residents to locate outside of the county. The county may also become less attractive to investors if developments do not have the appropriate infrastructure to support them. Not building these schemes and their associated infrastructure

themselves would also result in missed opportunities for substantial employment during construction and operation. This has therefore resulted in significant negative effects on SA8 (access and economy) and SA10 (investment and growth). Minor negative effects have also been identified for SA7 (inclusion and equality) and SA11 (access to jobs).

Both positive and negative effects have been identified for health and wellbeing (SA13). New road schemes could increase both noise and air pollution which has potential to negatively affect the heath of nearby residents, particularly those who may be more vulnerable (young, elderly and those with existing health issues). However, these schemes will help to provide vital links to some, allowing them to better access healthcare, employment and other services. These schemes may also offer opportunities for active travel, allowing residents to undertake more active pursuits.

By not ensuring that low carbon and technological advances are built-in to new developments and just focusing on meeting current requirements and guidance, could mean that NCC do not effectively balance the need for connectivity improvements on the major networks and ensuring that they are used in the most efficient and low carbon manner. This could increase the prevalence of cars on the transport network and result in the increase in carbon emissions, subsequently worsening both air and noise pollution. However, Alternative 3 could see large schemes not being taken forward which could have positive effects on these objectives. This has therefore resulted in both positive and negative effects on SA1 (air quality), SA3 (carbon emissions) and SA15 (noise).

Uncertain effects have been identified for biodiversity (SA2), soils (SA4), historic environment (SA9) and landscape (SA14), as it is not clear whether ‘reviewing’ these schemes will put a halt to development altogether. Schemes such as Long Stratton Bypass, Norwich Western Link (NWL), West Winch Housing Access Road, all have potential to negatively affect these objectives, however, as a result of ‘reviewing’ these schemes, alternative routes and solutions may be identified, which could lessen the impact, or the schemes may not go head at all.

Objective 4: Enhancing Norfolk's Quality of Life

Policy 11 of the adopted LTP4 Strategy under Objective 4:

When making changes and improvements to our transport network, and in working with users on how they choose to use the transport network, we will seek to understand the consequences of the decisions on meeting the collective challenge of protecting and improving our global environment to meet the environmental policy target of working towards carbon neutrality.

Policy 11 Implementation Actions:

- Undertake appropriate and proportionate whole life carbon assessments on proposed schemes including construction and use of the asset;
- Deliver net zero carbon on our own estate;
- Work with Transport East on the Decarbonisation analysis toolkit (being led by England's Economic Heartland);
- Work with Transport East on alternative fuels (being led by Midlands Connect);
- Develop our assessment criteria for schemes on the project pipeline to consider their impact across the range of LTP4 objectives;
- Consider implications of LTP guidance and take appropriate and necessary action on carbon as required in the guidance;
- Consider implication of LTP guidance on future reviews of the LTP;
- Investigate working with Broads Authority and other partners on decarbonising waterways; and
- Deliver a range of actions to reduce carbon. These include delivery of the EV strategy, investment in active travel networks, rollout of digital connectivity to reduce travel, and working with partners to influence the location and nature of development. These actions are detailed elsewhere in the implementation plan.

Table A15 – Enhancing Norfolk's Quality of Life – Policy 11 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+	+	++	++	+	+	++	++	+	++	0	0	+	0	+

These actions could help to decarbonise Norfolk's transport network, through a range of initiatives, which is likely to result in positive effects for most SA objectives, including significant positive effects on SA3 (carbon emissions). Making preparations the county for future changes and challenges is likely to help build early resilience and provide practical solutions to tackling the challenge of climate change, therefore making early preparations across the transport network is likely to have positive effects across all SA topics, both directly and indirectly.

Developing assessment criteria for schemes on the project pipeline and considering implications of LTP guidance will ensure that necessary actions on carbon reductions are made, and that interventions NCC bring forward focus on delivering key outcomes of the LTP4, resulting in positive effects on most SA objectives. Further positive effects on multiple SA objectives will arise from NCC undertaking appropriate and proportionate whole life carbon assessments on proposed schemes from construction to operation. This will help NCC to quantity carbon emissions and help to inform future scheme delivery that contributes to carbon reductions, such as helping NCC to achieve their environment policy target to achieve net zero on their own estate by 2030.

Significant positive effects to SA4 (Water, Soils and Minerals) could arise from NCC working with Broads Authority and other partners to decarbonise waterways as this is likely to help improve the quality of the waterbodies within and surrounding Norfolk, providing additional benefits to the County's biodiversity (SA2).

These actions are likely to result in the uptake of more sustainable transport modes, which in turn will help to reduce congestion, leading to reductions in transport related carbon emissions and improvements to air quality. Improving air quality

will have indirect positive effects on the regions environmental and historic environment, as air pollution is a key factor in the degradation of surfaces of historical buildings and negatively impacts biodiversity and geodiversity assets, particularly by the deposition of nitrogen from NO2/NOx. Sustainable transport also improves accessibility inclusively, especially for people who cannot drive or own a private car. However, to achieve this modal shift, these actions are likely to result in new infrastructure or upgrading and repurposing existing infrastructure, which will have embodied carbon.

Significant positive effects to SA8 (access and economy) will result due to the investment in innovative technology such as EV, and sustainable supply chains which will likely result in economic benefits. This could also help to increase further employment within the region, the longevity of which could be made more secure by a transport network that is future ready.

Policy 12 of the adopted LTP4 Strategy under Objective 4:

Our priority for tackling air quality will be to take action to improve air quality, including investigating vehicular restrictions or charging, where air quality falls below the threshold for Air Quality Management Areas. We will also embrace new ways of monitoring air quality to inform interventions, including in other areas, where this is deemed necessary.

Policy 12 Implementation Actions:

- Deliver Transport for Norwich (TfN) Strategy including development of feasibility work on a range of measures to reduce traffic (examination of amongst other things Clean Air Zone, Workplace parking place levy, Road charging / congestion charge, Vehicle bans (e.g. prohibiting petrol and diesel engine vehicles from the city centre);
- Review King's Lynn transport strategy;
- Review Great Yarmouth transport strategy;
- Promote behaviour change work;
- Work with bus operators and other transport providers to achieve a shift to clean fuels;
- Explore the use of low-cost air quality monitoring equipment, survey equipment;
- Develop and implement LCWIPs;
- Deliver our EV Strategy;
- Support District councils in monitoring Air Quality Action Areas;
- Develop action plans for transport interventions where transport is a cause of poor air quality. These action plans will consider more than simply traffic management changes: we will look to promote a range of measures to reduce travel and

achieve a shift to sustainable travel. These will include consideration of restrictions, behaviour change campaigns and network changes; and

- Seek funding to deliver and implement programmes of work.

Table A16 – Enhancing Norfolk's Quality of Life – Policy 12 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+	++	0	+	+/-	+/-	++	+	+	+	+/-	++	+	++

These actions could help to improve air quality within Norfolk, especially within Air Quality Management Areas (AQMAs) declared due to transport emissions and will likely result in positive effects across most SA objectives. Significant positive effects have been identified for SA13 (health and wellbeing) as exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung cancer, leading to reduced life expectancy, therefore, taking action to improve air quality is likely to have significant benefits for air health and wellbeing of the County's residents, especially those more vulnerable members of the population.

The review of King's Lynn and Great Yarmouth transport strategies alongside the potential use of low-cost air quality monitoring and surveying equipment will allow for better understanding of air quality impacts and effectively target areas which require action the most. This will lead to an increased focus on delivering key outcomes of the LTP4, for carbon reduction, air quality improvements and health.

The possibility of introducing measures such as a Clean Air Zone, workplace parking place levy, road charging / congestion charge, or vehicle bans (e.g. prohibiting petrol and diesel engine vehicles from the city centre) will help to reduce congestion on the road network, reduce carbon emissions, and encourage the use of public and active transport modes which will provide

additional benefits to health and wellbeing of the population and reduce noise pollution. Similar benefits will arise from the delivery of the EV strategy, development of LCWIPs, and behavioural change programmes to encourage more people to use public or active transport modes.

However, these vehicle bans, charges and introduction of EVs may disproportionally affect those in deprived areas who may be less able to afford, adapt and accommodate changes for more environmentally friendly vehicles. Though the improve to active transport modes will help to improve access to services and employment for people who currently have no access to transport or private car use. Therefore, positive and negative effects have been identified for SA7 (inclusion and equality), and significant positive effects for SA8 (Access and the Economy) and minor positive effects have been identified for SA11 (access to jobs).

Positive and negative effects have also been identified for SA12 (accidents) and SA6 (safety). EVs are quieter than internal combustion engine vehicles which can help with noise pollution; however, this increase the risk of accidents, especially with pedestrians who may suffer with partial or complete hearing loss or those who are visually impaired. There are also potential issues with obstructive charging facilities (e.g. trailing cables), which can put pedestrians, particularly people with disabilities or those who use pushchairs, at risk. Positive effects for SA12 will result from the provision of new and improved routes for cyclists and pedestrians, as part of the LCWIPs, which will reduce the number collisions involving them, and road traffic accidents due to the reduced number of vehicles on the road network.

As air pollution is a key factor in the degradation of surfaces of historical buildings and negatively impacts biodiversity and geodiversity assets, particularly by the deposition of nitrogen from NO2/NOx; the improvement to air quality will indirectly result in positive effects on SA9 (historic environment) SA14 (landscape and townscape) and SA2 (biodiversity/geodiversity). The encouragement of more sustainable transport modes will also result in a reduction in noise pollution caused by traffic noise due to the reduction of single occupancy journeys. This could increase tranquillity, contribute to overall sense of place and the unique setting of heritage assets, as well as lessen the impact of disturbance on the County's biodiversity.

However, these actions could result in the construction of new cycleways, footpaths segregated cycle and, bus lanes or public transport infrastructure. Insensitive design and large land take could result in negative effects on the region's designated heritage assets, landscape, townscape and biodiversity. However, given that is policy is focussed within existing urban areas, impacts on landscape and biodiversity are likely to be minimal. 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 landscape and townscape.

Policy 13 of the adopted LTP4 Strategy under Objective 4:

We will seek to improve quality of place, conserving and enhancing our built and historic environments, when we take action to improve the transport network.

Policy 13 Implementation Actions:

- Undertake proportionate assessments of schemes to consider their impact across the range of LTP4 objectives;
- Develop our assessment criteria for schemes on the project pipeline to consider their impact across the range of LTP4 objectives;
- Apply a Healthy Streets approach in Norfolk. This approach has been adopted for Norwich in the Transport for Norwich Strategy; and
- Identify opportunities for linear habitat creation along the active travel network as part of an integrated approach between active travel and Greenways to Greenspaces.

Table A17 – Norfolk's Quality of Life – Policy 13 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	++	+	0	+	++	++	++	+	+	+	++	++	++	++

NCC undertaking and developing proportionate assessments of schemes on the project pipeline, will help to identify impacts and required mitigation to meet a range of the LTP4 objectives, such as decarbonisation, which is likely to result in positive effects across most SA objectives.

The application of the Healthy Streets approach (human-centred framework embedding public health into transport, public realm and planning), as part of the Transport for Norwich Strategy, will result in more liveable communities, due to possible improvements to safety, accessibility and quality of place, including reduced air and noise pollution. Therefore, significant positive effects have been identified for SA13 (health and wellbeing), SA1 (air quality), SA15 (noise), SA6 (quality of life and Safety), and SA7 (inclusion and equality).

Opportunities for linear habitat creation alongside the active travel network will result in significant positive effects on SA2 (biodiversity/ geodiversity), as well as providing benefits to the physical and mental health of the population by encouraging the use of active transport modes and connecting people with nature.

These actions could present an opportunity to enhance the landscape and townscape as well as the historic environment particularly in the setting of heritage features through the creation of ‘better places’ and improving design and landscaping.

Implementation Actions Alternatives

- **Alternative 1:** Instead of committing to refreshing or reviewing our suite of supporting plans and strategies, such as our transport strategies for urban areas and market towns, following adoption of the local transport plan, we would concentrate on delivery of measures within current plans
- **Alternative 2:** Instead of committing to introducing proportionate assessments on a range of measures including whole life carbon in developing schemes, we would focus on only meeting current requirements and guidance

Table A18 – Enhancing Norfolk's Quality of Life – Implementation Actions Alternatives Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
?	?	-	?	-	?	?	?	?	?	?	?	?	?	?

Alternatives 1 and 2 could result in the failure of meeting the key objectives of the adopted LTP4 Strategy particularly for those focus areas of the Strategy– such as reducing carbon and increasing access to public transport and active travel. Giving less priority to reviewing and refreshing supporting plans and strategies, could lead to outdated documents that do not reflect the latest national and international legislation and trends.

Only focussing on meeting current requirements and guidance instead of committing to introducing proportionate assessments on a range of measures such as whole life carbon is likely to have negative effects on carbon emissions (SA3) and climate change (SA5). Negative effects are unlikely to be significant as they would still meet current requirements. For this reason, minor negative effects have been identified for these objectives.

Alternatives could mean that developments within the county are less informed on key issues such as carbon reduction, climate change, air quality and noise into consideration. Although developments will still be required to meet the requirements of national legislation, they may not best take into account the specific localised issues within the county. Alternatives could also result in other vital plans not being produced or refreshed which could include transport strategies in other urban areas within the county. This could mean that plans may not consider more localised issues and it may result in a less joined-up delivery of the LTP4. As it is not clear what the measures within current plans will entail, uncertain effects are identified for remaining SA objectives.

Objective 5: Increasing Accessibility

Policy 14 of the adopted LTP4 Strategy under Objective 5:

We will work in partnership with agencies in Norfolk to tackle accessibility problems, targeting those communities most in need. We will seek to ensure that accessibility is planned as part of service delivery.

Policy 14 Implementation Actions:

- Deliver the Bus Service Improvement Plan (BSIP). The BSIP includes a range of interventions including more frequent and reliable services, integration of services with other forms of transport, improvements to fares and ticketing and improvements to the bus passenger experience including 100 zero emission buses from 2025, and more accessible and higher quality buses;
- Make an Enhanced Partnership Plan and Enhanced Partnership Scheme;
- Facilitate the commercial operation of the bus network through physical design including busways, bus priority and advising local planning authorities on appropriate estate design;
- Support roll out of improved digital connectivity in rural areas;
- Represent the county council on the Board of Community Rail Norfolk;
- Work within the county council and with other partners to plan accessibility as part of service delivery;
- Work with Transport East on Regional rural mobility centre of excellence;
- Work with Transport East on Regional rural mobility case for investment (led by the Western Gateway);
- Explore opportunities to secure funding to develop and trial innovative rural mobility solutions; and
- Investigate the delivery of ‘Mobility as a Service’ solutions.

Table A19 – Increasing Accessibility – Policy 14 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+/-	+	0	+	++	++	++	+/-	++	++	++	+	+/-	+

These actions aim to improve connectivity within Norfolk, which is likely to help to increase the capacity and efficiency of the transportation network to support future population growth across Norfolk. Improvements to the public transport offered within Norfolk will be delivered as part of the Bus Service Improvement Plan (BSIP) and the Enhanced Partnership Plan and Scheme, which will include increasing the frequency and reliability of services,, improvements to fares and ticketing, and providing more accessible and higher quality buses, including 100 zero emission buses from 2025. This will help to encourage a modal shift to public transport, therefore reducing private car use, congestion, carbon emissions, noise pollution, and subsequently improving air quality.

Improvements to the rail services in Norfolk will also provide similar beneficial effects to most SA objectives. Representing NCC on the Board of Community Rail Norfolk will help to include the community to provide them a voice on decisions made within the county and help to target local needs. Therefore, significant positive effects on SA7 (inclusion and equality) 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 county's unique historic assets. The reduction in noise pollution from lower levels of traffic in some areas could result in increased tranquillity, contribute to overall sense of place and the unique setting of heritage assets.

The reduction in air quality emissions (particularly the deposition of nitrogen from NO2/NOx) will also indirectly benefit the biodiversity, geodiversity assets in Norfolk. The potential reduction in single occupancy journeys could lessen the impact of disturbance on the county's biodiversity, through decrease traffic noise.

Improvements to the bus services is also likely to include transport infrastructure such as signage, bus stops and additional lighting, which could lead to negative effects on SA14 (landscape and townscape), SA2 (biodiversity/ geodiversity) and SA9 (historic environment) due to potential for insensitive design and increased levels of disturbance. However, this is likely to be minimal as the appropriate estate design will be advised by local planning authorities.

These actions also help to improve accessibility in rural areas where accessibility levels are generally lower compared to urban areas. Improving digital connectivity in rural areas will help to reduce the need to travel and will help provide connections to more businesses and employment opportunities, a continue to support those who continue to work from home following the Covid-19 pandemic. This will also help to further reduce congestion and traffic emissions.

Exploring opportunities to secure funding to develop and trial innovative rural mobility solutions will help to provide initiatives that improve connectivity and access to services at a local level. The delivery of ‘Mobility as a Service’ solutions covers a range of services from car sharing to phone apps which allow users to access, pay for, and get real-time information on, a range of public and private transport options. This will likely reduce single occupancy journeys and private car use which will provide additional benefits of reducing air pollution (SA1) , noise pollution (SA15) and transport related carbon emissions (SA3)as well as, helping to improve connectivity inclusively. However, consideration needs to be given to those who may not have the same understanding of or access to technology (for example the elderly, those with learning difficulties or in low-income groups).

Providing more real time information on accidents, maintenance and congestion, will help to keep all road users more informed and allow them to plan their journeys more effectively. This is likely to help improve safety for all road users and has resulted in significant positive effects for SA6 (quality and safety) and SA12 (accidents).

Policy 15 of the adopted LTP4 Strategy under Objective 5:

We will work in partnership with agencies in Norfolk to tackle accessibility problems, targeting those communities most in need. We will seek to ensure that accessibility is planned as part of service delivery.

Policy 15 Implementation Actions:

- Prioritise space for certain types of user in urban areas, putting in dedicated, segregated lanes for public transport and / or cycling. We will do this when we implement transport strategies in urban areas and market towns;
- Develop countywide Local Cycling and Walking Infrastructure Plans (LCWIPs);
- Consult on the draft Walking and Cycling Strategy;
- Work with partners at an early stage of planning and development on accessibility to key regeneration, housing and employment sites;
- Work with National Highways to improve local connections along and adjacent to trunk roads as set out in the NSIDP;
- Promote the use of mobility solutions such as electric bikes;
- See also Policy 2 commitment to Beryl Bikes scheme; and
- Respond to the Norfolk Rural Economic Delivery Plan and support priorities, such as programmes to improve connectivity between coast and rural Norfolk, including market towns.

Table A20 – Increasing Accessibility – Policy 15 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+/-	++	0	+	++	++	++	+/-	+	++	++	++	+/-	+

These actions will help to improve connectivity and accessibility inclusively within Norfolk by helping to improve the public and active transport offerings. The development of LCWIPs, the implementation of electric and Beryl Bike schemes, and the prioritisation of space for certain types of users within urban areas, will likely encourage more people to use active transport modes which will provide beneficial effects to the population health and wellbeing through the promotion and provision of infrastructure to support active lifestyles, as well as helping to improve access to employment, education and community services, especially for people without the use of a private car. The reduction in the need for private car use will also help to reduce transport related carbon emissions and therefore, improve air quality. Further beneficial effects to SA objectives will result from NCC working with partners to plan accessibility as part of service delivery to key regeneration, housing and employment sites.

Focusing on active travel modes and public transport is likely to have significant positive effects on community safety (SA6). If carefully designed, the provision of new and improved routes for cyclists and pedestrians as part of the LCWIPs will reduce the number collisions involving them, and road traffic accidents due to the reduced number of vehicles on the road network. Therefore, significant effects have been identified for SA6 (Safety) and SA12 (Accidents).

These actions are likely to result in new infrastructure and development due to the construction of bus lanes, segregated cycle lanes and other associated transport infrastructure such as signage, bus stops and additional lighting. Insensitive design and large land take could result in negative effects on the region's designated heritage assets, landscape, townscape and biodiversity. However, given that is policy is focussed within existing urban areas, impacts on landscape and biodiversity are likely to be minimal. 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 landscape and townscape. For these reasons, both positive and negative effects have been identified for SA2 (biodiversity), SA9 (historic environment) and SA14 (townscape and landscape).

Policy 16 of the adopted LTP4 Strategy under Objective 5:

We commit to providing a network where transport and movement can be accessed, understood and used to the greatest extent possible by all people. We recognise that people who live, work in and visit Norfolk access the network in different ways, depending on their individual circumstances and characteristics, and that what enables good access for one person may act as a barrier to another. We will therefore robustly assess all schemes and pay due regard to the Public Sector Equality Duty (along with our other duties and responsibilities), to identify potential barriers and determine how best to overcome any barriers and facilitate access to the greatest extent possible for all. Where appropriate, on a case-by-case basis, we will make reasonable adjustments.

Policy 16 Implementation Actions:

- Undertake proportionate assessments of proposals to make sure they are suitable for all users including people with disabilities or restricted mobility; and
- Continue to support and review the Safe Sustainable Development in development management guidance, which gives due regard to equality as part of meeting the Equality Act 2010 and the Public Sector Equality Duty.

Table A21 – Increasing Accessibility – Policy 16 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
0	**0**	**0**	**0**	**0**	**++**	**++**	**++**	**0**	**0**	**++**	**++**	**++**	**0**	**0**

These actions aim to improve accessibility for all inclusively within Norfolk with attention to individual requirements and circumstances that may act as barriers to accessing transport and accessing education, employment and community services.

Therefore, this will result in significant positive effects for SA7 (inclusion and equality), SA8 (access and economy) and SA11 (access to jobs).

The review of the Safe Sustainable Development to give due regard to equality as part of meeting the Equality Act 2010 and the Public Sector Equality Duty will mean that potential impacts on people with protected characteristics and appropriate mitigation to reduce impacts will be identified, therefore providing an increased feeling of safety and potential to encourage more users to adopt sustainable transport modes and adopt healthier lifestyles. This has resulted in significant positive effects on SA6 (quality and safety), SA12 (accidents) and SA13 (health and wellbeing).

Implementation Actions Alternatives

- **Alternative 1:** Undertake detailed work to bring forward a statutory arrangement such as bus franchising where the county council is able to require a certain level of service from operators; and
- **Alternative 2:** Instead of favouring bus-based public transport solutions in urban areas, we would develop proposals for tram or rail-based solutions

Table A22 – Enhancing Norfolk's Quality of Life – Implementation Actions Alternatives Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+/-	**-**	**+/-**	**-**	**?**	**?**	**-**	**-**	**-**	**?**	**-**	**?**	**-**	**-**	**+/-**

The preference towards tram and/or rail-based solutions over bus-based public transport is likely to result in more significant need for infrastructure, land take and investment compared to bus-based public transport solutions. Townscape, sense of place, visual amenity, heritage assets and the settings of these could all be negatively affected through the development of light rail transit schemes in urban areas, in particular due to the introduction of overhead electrical wires. However, in the

future, with advances in technology, trams are more likely to run via battery without the need for overhead wires. This has therefore, resulted in minor negative effects on SA9 (historic environment) and SA14 (landscape and townscape)

There is unlikely to be any significant land take or works that could significantly impact on protected species or habitats as development of light rail, and improvements to bus stops and tram stations will generally occur within existing urban/transport footprints. The creation of new rail and tram lines may require widening existing carriageways into verges and resulting in loss of habitats, although these habitats are often of low quality and will not include large areas of habitat. Therefore, impacts on biodiversity are likely to be minor negative with limited opportunities for providing improvements.

Light rail and tram solutions have the potential to stimulate associated investment activity, such as urban renewal projects and residential and commercial development, however, evidence suggests that the urban centres in Norfolk are not of the type (size, population and employment density) that would mean there would be sufficient usage to pay for running the services. Uncertain effects have therefore been identified for SA10 (investment and growth) as it is not clear how successful these schemes would be.

Alternative 2 aims to bring forward a statutory arrangement for bus franchising. Evidence currently suggests that the county council does not have the knowledge, expertise or resources required to ensure a level of service that the public would expect from NCC on such an arrangement. This could see the number of current services reduced which could in turn, result in increased community severance for those who currently rely upon these existing services. This could make it more difficult to access health services, recreation, employment and other facilities, and 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). Both options could however bring about improved safety, by offering alternative solutions to the motor vehicles, however, it is not clear on the incorporation of safety measure within the scheme level design. Uncertain effects have therefore been identified for SA6 (quality and safety) and SA12 (accidents).

Both alternatives are likely to have positive effects on air quality and noise pollution, as they offer alternative solutions to motor vehicles, which are the main contributor to pollution in the county. However, these schemes are unlikely to be as effective as the proposed options, and as stated above, these may in some locations increase levels of severance, potentially increasing the number of cars on the road. In urban areas, there is potential for new rail and tram lines to increase levels of noise particularly at tram stops and stations. For these reasons, both positive and negative effects have been identified for SA1 (air quality) and SA15 (noise).

Both positive and negative effects have been identified for SA3 (carbon emissions). The introduction of new rail and tram lines is likely to be resource intensive which may also 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. Both alternatives may help to provide alternatives to private vehicles which could help to reduce carbon emission from the road network, however, these may not be the most effective solutions for the county and could result in increased car use in some locations.

Uncertain effects have been identified for climate change (SA5), although offering a solution to private vehicles may help reduce the effects of climate change, at this stage it is not clear on the measures that could be included to build resilience to the effects of climate change.

Objective 6: Improving Transport Safety

Policy 17 of the adopted LTP4 Strategy under Objective 6:

Using the safe systems approach, the county council and road safety partners will work together to contribute to a reduction in the number of people killed and seriously injured on the road network.

Policy 17 Implementation Actions:

- Deliver road safety through the Safe Systems Approach by agreeing annual plans with interventions focusing on education and behaviour change with Road Safety Partnership;
- Work in partnership with the Road Safety Partnership and Safety Camera Partnership to deliver the adopted Safe Systems approach. This is based on four pillars: safe roads; safe vehicles; safe road users, and safe speeds;
- Refresh the county council's speed limit strategy;
- Monitor casualty numbers on the network with the priority being to reduce the number of people killed and seriously injured;
- Continue to support the road safety partnership priorities supported by the Road Safety Communities Team;
- Deliver a range of projects including driver development, driver education and enforcement;
- Investigate the implementation of trials of technology and innovation to improve transport safety; and
- Roll out via the Road Safety team training programmes in schools for pedestrians and cyclists including Step on it, Crucial Crew and Bikeability.

Table A23 – Increasing Accessibility – Policy 17 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+	0	+	0	0	++	++	++	0	0	++	++	++	0	0

These actions work towards a safer transport network which will provide benefits to multiple SA objectives, with significant positive effects on SA12 (accidents) and SA6 (quality of life and safety). NCC will work with the Road Safety Partnership and Safety Camera Partnership to deliver the adopted Safe Systems approach which is based on four pillars: safe roads; safe vehicles; safe road users, and safe speeds. As part of this approach investment into road safety initiatives across Norfolk will be made, such as the deployment of speed cameras which will help to reduce speed related accidents and casualties.

As part of the Safe Systems Approach, interventions on education and behaviour change campaigns will also be implemented such as training programmes in schools for pedestrians and cyclists including Step on it, Crucial Crew and Bikeability, as well as driver development, driver education and enforcement projects. This is likely to result in more liveable communities where levels of fear and intimidation are reduced and users are encouraged to adopt more active transport modes, which will have additional health benefits for the County's population. It will also improve people's life chances by reducing or removing any barriers that would otherwise prevent or deter people from using the network to access opportunities such as employment or education. Therefore, significant positive effects have also been identified for SA7 (inclusion and equality), SA8 (access and economy), SA11 (access to jobs), and SA13 (health and wellbeing).

Significant positive effects to SA8 (access and economy) have been identified due to the investment in innovative technology and sustainable supply chains which will likely result in economic benefits. This could also help to increase further employment within the region, the longevity of which could be made more secure by a transport network that is future ready. Innovative technology could also provide further improvements to safety, such as the implementation of digitally connected vehicles

which can ‘speak’ to each other to avoid collisions, or using data collected from technology to inform drivers about road conditions.

Implementation Actions Alternatives

- **Alternative 1:** Instead of rolling out behaviour change alongside implementations to improve safety; we would concentrate behaviour change only on achieving a shift in the modes of travel that people choose; and
- **Alternative 2:** Instead of adopting a target of reducing the rates of killed and seriously injured casualties, we would adopt zero vision, where all traffic fatalities and severe injuries are eliminated, while safe, healthy and equitable mobility for all is achieved.

Table A24 – Increasing Accessibility – Implementation Actions Alternatives Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
?	**0**	**?**	**0**	**?**	**++**	**++**	**0**	**0**	**0**	**0**	**++**	**++**	**0**	**0**

Both alternatives are likely to result in increased safety on the transport network, through the introduction of behaviour change and targets. Ensuring a safer transport network, may reduce levels of fear and intimidation and encourage users to adopt more sustainable travel modes such as walking and cycling, which will have additional health benefits for the County's population. This has resulted in significant positive effects on SA6 (quality of life) and SA13 (health and wellbeing).

Alternatives may also offer positives for air quality (SA1), carbon emissions (SA3) and climate change (SA5) through increased uptake in sustainable travel alternatives from improved safety. However, alternative 1 is focussed more on the providing behaviour changes for modes of travel that people already chose and therefore could encourage continue reliance

upon motor vehicles. As it is not clear what modes this alternative would focus on, uncertain effects have been identified for these objectives.

Alternative 2 aims to adopt a ‘zero vision’ where all traffic fatalities and severe injuries are eliminated, while safe, healthy and equitable mobility for all is achieved. This is likely to result in significant positive effects on SA7 (inclusion and equality) and SA12 (accidents). It is likely to help reduce the number of accidents and make the transport network more inclusive and safer for all users, however, this may pose challenges when bringing this into force in the shorter term as it is unlikely to be achievable within the first few years of implementation. This in itself could mean that the campaign loses the public’s approval and adopting the vision may simply become a message, if it doesn’t include any measurable targets.

Objective 7: A Well Managed and Maintained Transport Network

Policy 18 of the adopted LTP4 Strategy under Objective 7:

Maintaining the current highway asset will be a key priority for funding. Works should be targeted to ensure A and urban / inter-urban routes are in good condition.

Policy 18 Implementation Actions:

- Vigorously exploit all funding opportunities to deliver the widest range of improvement and maintenance schemes, and other initiatives;
- Seek to secure funding for innovative schemes such as trials of new technology through exploiting opportunities;
- Annually update the Transport Asset Management Plan; and
- We will annually monitor the Asset Management Strategy and its performance framework.

Table A25 – A Well Managed and Maintained Transport Network – Policy 18 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+	0	+	++	++	++	0	+	+/-	+	0	++	+	+/-	+

These actions will help to ensure that the limited funding NCC receives is targeted towards the most important parts of the transport network, parts of which are most used, and ensuring these are in good repair through the delivery of improvement, maintenance and innovative technology schemes, as part of the annual monitoring of both the Transport Asset Management Plan and the Asset Management Strategy. This will allow NCC to better understand the transport network and effectively

target funding to achieve key outcomes and objectives of the LTP4 and meet the needs of users. Therefore, these actions are likely to result in positive effects on most SA objectives due to developing a safer transport network that is likely to be more robust to deal with climate and population impacts.

Having a well maintained road network, is likely to help to reduce levels of congestion and reduce journey times and improving access to key services and employment. Better maintenance can also lead to improved safety for all road users. Poor road markings and road surfaces, potholes and broken barriers are some of the key maintenance issues that can cause accidents. Further funding for maintenance is likely to help to reduce the number of accidents and has therefore resulted in significant positive effects on SA6 (quality and safety) and SA12 (accidents).

The climate generally negatively effects the operation of the transport system. With future trends on climate change predicting more extreme climatic conditions, it is likely that there will be more significant effects in the future. This could mean that the transport network will require more ongoing maintenance. Annually updating the Transport Asset Management Plan is likely to identify the maintenance needs for the county at an early stage and allow for prompt intervention, helping to build greater resilience. This has resulted in significant positive effects on SA5 (climate change).

Improved air quality could also result as poor road surfaces are linked to higher levels of particle emissions, so improvements and maintenance to the highway network could result in less abrasion and therefore, a reduction in particulate emissions which will provide benefits to health, particularly for those more vulnerable members of the population, as well as the natural and historic environment. Improvements to road surfaces also has the potential to reduce levels of noise pollution from the road network (SA15).

Poorly maintained roads can become unsightly and noisy which can deter from the historic environment as well as the tranquillity and setting of the landscape and townscapes. However, maintenance and new digital components can also introduce new infrastructure and components that could erode the historic landscape. Both positive and negative effects have been identified for SA9 (historic environment) and SA14 (landscape and townscape).

The approach to maintain the existing asset rather use this funding on new assets will also result in significant positive effects on SA4 (Water, Soils and Minerals) due to the reduction in the need for land take and infinite resources.

Policy 19 of the adopted LTP4 Strategy under Objective 7:

We will identify corridors important for sustainable and active transport and focus maintenance on provision for these users where its impact would be most beneficial in market towns and urban areas.

Policy 19 Implementation Actions:

- Include outcomes of prioritisation for active travel and public transport (See Policy 15), and from other initiatives such as LCWIPs (See Policy 15), in reviews of the Transport Asset Management Plan; and
- Consider banning parking on pavements.

Table A26 – A Well Managed and Maintained Transport Network – Policy 19 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
++	+/-	++	+/-	+	++	+	+	+/-	0	++	++	++	+/-	+

These actions aim to prioritise sustainable transport modes initiatives, such as the development of LCWIPs, as part of the review of the Transport Asset Management Plan which has potential to result in positive effects for most SA objectives.

People are more likely to choose active travel for journeys if there are suitable networks to travel on, therefore the provision of more / improved cycle and footpaths will help to reduce severance, improve accessibility to employment, education and community services inclusively, and promote a more active lifestyle. The encouragement of using more active transport modes will also help to reduce private car use which will simultaneously improve air quality, reduce transport related carbon emissions and noise pollution, which will provide beneficial impacts to both the County's natural and historic environment.

However, these actions could result in the construction of new cycleways, footpaths segregated cycle and, bus lanes or public transport infrastructure. Insensitive design and large land take could result in negative effects on the region's designated heritage assets, landscape, townscape and biodiversity. However, given that is policy is focussed within existing urban areas, impacts on landscape and biodiversity are likely to be minimal. 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 landscape and townscape. This has resulted in both positive and negative effects on SA2 (biodiversity), SA4 (water, soils and minerals), SA9 (historic environment) and SA14 (landscape and townscape).

Actions to consider banning parking on pavements will help to improve effectiveness of actions which encourage active transport modes, as this will help to improve access for pedestrians, especially those with mobility issues, wheelchair users and those who use pushchairs. It will also help to reduce accidents involving pedestrians having to walk on the road, and any potential damage to kerbs and footpaths that car parking can result in.

Policy 20 of the adopted LTP4 Strategy under Objective 7:

In urban areas we will focus on measures to improve public transport corridors to make those journeys quicker and, in areas identified as having less congestion, we will aim to make all journeys more reliable.

Policy 20 Implementation Actions:

- Implement the Bus Service Improvement Plan (See policy 15) and priority measures in urban areas (policy 19); and
- Monitor journey times and reliability to inform implementation

Table A27 – A Well Managed and Maintained Transport Network – Policy 20 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+	+/-	+	+/-	+	+	++	+	+/-	0	+	+	++	+/-	+

These actions help to improve public and active transport offerings within Norfolk which has resulted in positive effects for most SA objectives. The implementation of the Bus Service Improvement Plan will help to increased bus patronage by providing more reliable and accessible services, that are greener. This alongside actions to prioritise sustainable transport measures, such as LCWIPs, will help to improve accessibility to employment, education and community services inclusively, and promote a more active lifestyle. These actions will also help to reduce private car use which will simultaneously improve air quality, reduce transport related carbon emissions and noise pollution, which will provide beneficial impacts to both the County's natural and historic environment.

However, these actions could result in the construction of new cycleways, footpaths segregated cycle and, bus lanes or public transport infrastructure. Insensitive design and large land take could result in negative effects on the region's designated heritage assets, landscape, townscape and biodiversity. Although, given that is policy is focussed within existing urban areas,

impacts on landscape and biodiversity are likely to be minimal. 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 landscape and townscape. This has resulted in both positive and negative effects on SA2 (biodiversity), SA4 (water, soils and minerals), SA9 (historic environment) and SA14 (landscape and townscape).

Policy 21 of the adopted LTP4 Strategy under Objective 7:

The likely impacts of climate change on the highway network should be addressed to ensure assets are resilient. Where assets can't be made resilient to impacts of climate change, such as coastal erosion, we should have planned alternatives so we can respond faster and avoid disruption. We will use a risk-based approach to determine the priority for action.

Policy 21 Implementation Actions:

- Review the resilient network assessment (see Policy 1 action to identify vulnerability on the network); and
- Maintain an up to date Norfolk Local Flood Risk Management Strategy to manage risk of flooding due to climate change

Table A28 – A Well Managed and Maintained Transport Network – Policy 21 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+	?	+	?	++	++	0	0	?	0	0	+	+	?	0

These actions help to prepare NCC for future changes and challenges to ensure the best for society, environment and economy, which is likely to help build early resilience and provide practical solutions to tackling the challenge of climate change. Given the vulnerability of some areas and communities in Norfolk (particularly along the coast) and the cross-cutting nature of climate change, making preparations for society, environment and the economy is likely to have positive effects across all SA topics.

However, in order to achieve climate resilience, these actions could result in the construction of large infrastructure, which could result in negative impacts on the County's heritage assets, landscape, townscape, biodiversity and geodiversity, however, development is very much dependent upon the interventions required. This has therefore resulted in uncertain effects on SA2 (biodiversity), SA4 (water, soils and minerals), SA9 (historic environment) and SA14 (landscape and townscape).

Policy 22 of the adopted LTP4 Strategy under Objective 7:

New and innovative technology to collect data about the network, inform decisions, assess where to target funding on the network and share information with the public will be embraced and used proactively.

Policy 22 Implementation Actions:

- Explore the use of connected vehicle and mobile phone data;
- Trial artificial intelligence cameras to better capture walking and cycling data;
- Exploit key contracts with companies such as Microsoft to trial use of artificial intelligence technology to improve decision making;
- Implement and evolve the prototype for network management data using vehicle movement data;
- Trial sensor technology to collect information about air quality, network use, and road and weather conditions (Also see Policy 3); and
- Work with Transport East on the future of freight strategy.

Table A29 – A Well Managed and Maintained Transport Network – Policy 22 Implementation Actions Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+	?	+	?	++	++	?	++	?	++	+	++	+	?	0

These actions could help to better manage the transport network and improve decision making through the use of technology and data collection. This will enable NCC to efficiently target resources in the areas of the transport network that need it the most (either the most used or areas where maintenance is required) which will help to achieve objectives of the LTP4. This is likely to result in positive impacts across most SA objectives due to providing a safer transport network that is likely to be more robust to deal with climate change and population increase.

However, the use of new technologies may require access to and knowledge of how to use smart phones and other smart devices. Those elderly members of the population and/or those lower income groups without access to a smart device, may not benefit so greatly, therefore, digital divides could inhibit the widespread implementation of robust and reliable innovative solutions. These actions could also result in the construction of large infrastructure, which could result in negative impacts on the County's heritage assets, landscape, townscape, biodiversity and geodiversity, however, development is very much dependent upon the interventions required.

Due to the rise in e-commerce, on-demand culture and prevalence of working from home, the way people are accessing services and facilities is changing. Therefore, NCC working with Transport East on Future of Freight strategy will provide positive effects for most SA objectives as it will allow NCC to have a better understanding of the network use and more efficiently target resources where they are most needed. Significant positive effects on SA8 (access and economy) and SA10 (investment and growth) have been identified as the freight strategy will insure connections, linking people, business and freight to regional , national and international markets are maintained or improved.

Implementation Actions Alternatives

- **Alternative 1:** Instead of allocating some of our local transport plan integrated transport funding towards maintenance, we would concentrate more resources into integrated transport in order to bring forward more improvement schemes; and
- **Alternative 2:** Instead of concentrating our use of new technology to collect data about how people use the network, or how the network performs and use this to inform decisions about how we manage the network, we would engage directly with providers of apps or systems so that the information that is provided to transport users through these systems informs, or directs, people to use the transport network that is beneficial in achieving our objectives and aims.

Table A30 – A Well Managed and Maintained Transport Network – Implementation Actions Alternatives Assessment

SA1 (Air Quality)	SA2 (Biodiversity/ Geodiversity)	SA3 (Carbon Emissions)	SA4 (Water, Soils and Minerals)	SA5 (Climate Change)	SA6 (Quality of Life and Safety)	SA7 (Inclusion and Equality)	SA8 (Access and Economy)	SA9 (Historic Environment)	SA10 (Investment and Growth)	SA11 (Access to Jobs)	SA12 (Accidents)	SA13 (Health and wellbeing)	SA14 (Landscape and Townscape)	SA15 (Noise)
+/-	**0**	**+/-**	**0**	**-**	**+/-**	**-**	**+/-**	**-**	**0**	**+/-**	**+/-**	**+/-**	**-**	**+/-**

Spending the local transport plan grant in line with the current maintenance and integrated transport notional allocations (as per alternative 1) could result in additional money for improvements, allowing some additional lower-cost transport measures to be brought forward. However, it is likely to result in reduced funding for maintenance, leading to an increased rate of decline of the existing transport network.

The climate generally negatively effects the operation of the transport system. With future trends on climate change predicting more extreme climatic conditions, it is likely that there will be more significant effects in the future. This could mean that the transport network will require more ongoing maintenance that these alternatives may not sufficiently provide. For that reason, minor negative effects have been identified for SA5 (climate change).

Poor road surfaces are linked to higher levels of particle emissions, so reduced maintenance to the highway network could result in higher levels of abrasion and therefore an increase in particulate emissions. Poor road maintenance also has the potential to increase levels of noise pollution from the road network. Increased air quality emissions (such as NO2, NOx, PM10), may also negatively affect health, particularly for those more vulnerable members of the population.

Reduced maintenance and funding of the County's roads is likely to lead to reduced levels of safety, increased levels of stress and reduced driver experience. However, Alternative 2 aims to introduce new apps or systems to provide information to transport users. This may help support more efficient use of the transport network, alerting users of accidents and congestion, allowing them to make amendments to their journeys. This could help to reduce journey times, congestion and make the transport network safer for all and has therefore, resulted in both positive and negative effects on SA6 (quality of life and safety), SA8 (access and economy), access to jobs (SA11) and accidents (SA12).

Keeping drivers better informed and allowing them to avoid congestion, could result in positive effects on air quality, noise pollution and carbon emissions, however, due to the uncertainties surrounding funding for road maintenance, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions) and SA15 (noise).

The use of new technologies may require access to and knowledge of how to use smart phones and other smart devices. Those elderly members of the population and/or those lower income groups without access to a smart device, may not benefit so greatly, therefore, digital divides could inhibit the widespread implementation of robust and reliable innovative solutions. This has resulted in minor negative effects for SA7 (inclusion and equality).

Poorly maintained roads may become unsightly and noisy which could deter from the historic environment as well as the tranquillity and setting of the landscape and townscapes. New technologies may also require components and infrastructures (e.g., telephone masts) that may also negatively affect the visual amenity of these areas. Minor negative effects have therefore been identified for SA9 (historic environment) and SA14 (landscape and townscape).

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