Appendix B

Assessment of Major and Significant Transport Schemes

Norfolk County Council

Norfolk LTP4 Part 2 - Implementation Plan

Appendix B – Assessment of Major and Significant Transport Schemes

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Assessment of LTP4 Draft Schemes

The assessment of the draft schemes (as part of actions within Policy 8 of the Implementation Plan) will predict the overall effect significance (negative, positive, uncertain, both positive and negative or negligible).

Table B1 below shows the key to effects that have been used within the assessments below.

Table B1 – 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

Large Local Major Schemes

Norwich Western Link

Norwich Western Link (NWL) is a proposed new section of dual carriageway to connect the Broadland Northway at Taverham to the A47 in the west of Norwich.

Table B2 – Norwich Western Link 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 development of the NWL will help to reduce traffic congestion and rat running issues through the village of Weston Longville. This is likely to result in significant positive effects on SA6 (safety) and SA12 (accidents) due to the reduction in transport related accidents. The reduction in congestion will also help to reduce journey times, leading to increased productivity through quicker and more reliable journeys, resulting in less stress for the people using the road network (SA13) as well as economic benefits (SA8).

Further economic benefits will arise as the NWL supports the future growth of the population, employment and housing requirements in Norfolk due to improving the capacity of the road network to enable this growth. NWL will help to improve connectivity which will result in significant positive effects for SA7(inclusion and equality) and SA11 (access to jobs). Improved connectivity may also provide new opportunities for economic markets and a chance for businesses to grow. These opportunities could 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 SA8 (access and economy) and SA10 (investment and growth).

The development of the NWL could encourage more people to use private transport which may lead to an increase in transport related carbon emissions, noise pollution, and air pollution in areas where pollution may not have been experienced before. Carbon emissions may also increase due to the embodied carbon associated with the construction and maintenance. However, by diverting the traffic away from residential areas within the village of Weston Longville, air quality and noise pollution are likely to improve.

As part of NWL, active transport links are also targeted to be improved. This alongside reductions in traffic in the local area of Weston Longville may encourage more people to take up walking and cycling which will result in beneficial effects on air quality, carbon emissions, noise pollution, and health and wellbeing. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions), SA13 (Health and wellbeing), and SA15 (Noise). A reduction in noise pollution and improvements to air quality will also indirectly benefit the regions biodiversity and historic environment, as air pollution is a key factor in the degradation of surfaces of historical buildings and can negatively affect biodiversity particularly by the deposition of nitrogen from NO2/NOx.

The area surrounding and within the NWL scheme has high biological significance. NWL has the potential to negatively affect the River Wensum Special Area of Conservation (SAC) which is a designated site of international importance for wildlife. Construction has potential to lead to the disturbance and fragmentation of key habitats and species. Due to the significance of these sites, significant negative effects have been identified in relation to SA2 (biodiversity). 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.

The development of NWL will most likely 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. The NWL is anticipated to introduce a major road into the landscape, which would cut through the landscape, disrupting field patterns, removing woodland and changing local land cover. This would

likely result in a noticeable change in the landscape pattern. This has resulted in significant negative effects on landscape (SA14). Uncertain effects have been identified in relation heritage assets (SA9) as although there are a limited number of designated assets in close proximity, there may be a large number of buried non-designated assets, that are not yet known.

New development will require the use of finite resources which may negatively affect SA4 (Water, Soils and Minerals). 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 intersects areas with high quality agricultural land (ALC Grades 1-3a), therefore, there is potential for these areas to be lost. Significant negative effects have therefore been identified, as it is unlikely that this valuable resource can be reinstated.

Table B3 – Norwich Western Link Alternative 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**	**+/-**

Future population, employment and housing growth is dependent on the infrastructure being there to support and enable growth. Therefore, not taking forward NWL may lead to Norfolk missing out on opportunities for new economic markets and a chance for businesses to grow, supporting economic growth and a strong sustainable local economy. This could also mean that vital housing developments do not come forward, which could limit housing availability within the county driving up prices and potentially forcing residents to locate outside of the county. 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 minor negative effects on SA8 (access and economy) and SA10 (investment and growth).

Given that accessibility is an ongoing issue within the county, not taking forward NWL could exacerbate these existing issues, making it harder for residents to travel to work, services and facilities. Therefore, minor negative effects have also been identified for SA7 (inclusion and equality) and SA11 (access to jobs).

Not taking forward NWL will mean that there will be no improved access to health care facilities or opportunities for active travel. As exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung cancer, not taking forward NWL will mean that that the air quality and noise pollution within the village of Weston Longville will not be improved. However, by not diverting traffic elsewhere will help to reduce the risk of reducing air quality and increasing noise pollution elsewhere where pollution has not been experienced before. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions), SA13 (health and wellbeing), and SA15 (noise).

Major Road Network Schemes

A10 West Winch Housing Access Road

The West Winch Housing Access Road (WWHAR) is required to facilitate planned housing growth in the Southeast King's Lynn Growth Area. The scheme includes some improvements at the Hardwick junction, a new signalised roundabout on the A47 and dualling of a short length of the A47.

Table B4 - A10 West Winch Housing Access Road 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 WWHAR will support the development of 4,000 new homes in the Southeast King's Lynn Growth Area due to improving the capacity and connectivity of the road network to enable this growth in the population. This will result in in significant positive effects for SA7(inclusion and equality) and SA11 (access to jobs). Improved connectivity may also provide new opportunities for economic markets and a chance for businesses to grow. These opportunities could attract more businesses into the region, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy, resulting in significant positive effects on SA8 (access and economy) and SA10 (investment and growth).

The development of WWHAR will help to alleviate congestion and severance from the existing A10 as it passes through the West Winch village. This will help to reduce stress levels when driving (SA13 - health and wellbeing) and traffic related accidents (SA12 -accidents), especially by the implementation of the signalised roundabout on the A47. Further benefits to the

population's health and wellbeing will arise from improved connectivity to new community facilities, including health facilities, recreation and open spaces, which can provide physical and mental health benefits, as part of the wider Southeast King's Lynn Growth Area. As part of these connections, improvements will be made to walking and cycling routes that will help to encourage a more active lifestyle, and pedestrians are likely to feel more safe crossing and walking alongside the A10 road. Therefore, minor positive effects are identified for SA7 (inclusion and equality) and SA6 (quality of life and safety). The encouragement to use active transport modes will also help to improve air quality and noise pollution from the reduction in congestion and associated carbon related emissions.

However, the development of the WWHAR could encourage more people to use private transport could encourage more people to use private transport which may lead to an increase in transport related carbon emissions, noise pollution, and air pollution in areas where high levels of pollution may not have been experienced before. Carbon emissions may also increase due to the embodied carbon associated with the construction and maintenance. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions), and SA15 (noise).

The WWHAR will require new infrastructure, including two bridges, which will be constructed on an existing open field, which would likely change the character of the local landscape and may be visually intrusive to residential properties located in close proximity. Land take will also be required intersecting areas with high quality agricultural land (ALC Grade 3a), therefore, there is a high chance these significant areas will be lost. This has resulted in significant negative effects on SA4 (water, soils and minerals). Landscape and heritage assets may also be disturbed from new levels of transport related emissions and noise pollution. There is also the potential for adverse effects on unknown and buried archaeological assets where the WWHAR is located on undeveloped land. Uncertain effects have however been identified for these objectives (SA9 and SA14), as effects will be determined by scheme level design. The scheme could provide opportunities through environmental design measures including landscape planting, and for works to reuse existing or sustainable materials, and infrastructure that is ready for future challenges of climate change.

Negative effects have been identified for SA2 (biodiversity and geodiversity) due to the WWHAR being developed on undeveloped land, which may lead to habitats and species being disturbed or fragmented. These have only been identified as minor negatives due to the scheme not transecting or being located near to any designated sites.

Table B5 - A10 West Winch Housing Access Road Assessment Alternative

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	+/-

The WWHAR supports the future population, employment and housing growth by improving the capacity and connectivity of the road network to enable this growth. Therefore, not taking forward WWHAR may lead to Norfolk missing out on opportunities for new economic markets and a chance for businesses to grow, supporting economic growth and a strong sustainable local economy. This could also mean that vital housing developments do not come forward, which could limit housing availability within the county driving up prices and potentially forcing residents to locate outside of the county. The county may also become less attractive to investors if developments do not have the appropriate infrastructure to support them. Not building the WWHAR and its associated infrastructure could also result in missed opportunities for substantial employment during construction and operation. This has therefore resulted in minor negative effects on SA8 (access and economy) and significant negative effects on SA10 (investment and growth).

Negative effects were identified for SA5 (climate change) as opportunities to make the transport network ready for future challenges of climate change, for example flooding, may be lost by not taking forward WWHAR which may lead to issues effecting most SA objectives.

Not taking forward WWHAR could exacerbate existing issues of congestion and severance from the existing A10, as it passes through West Winch, making it harder for residents to travel to work, services and facilities and increasing stress levels. Therefore, minor negative effects have also been identified for SA7 (inclusion and equality) and SA11 (access to jobs).

Not taking forward WWHAR will also mean that there will be no improved access to healthcare facilities or opportunities for active travel. As exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung

cancer, not taking forward WWHAR could mean that that the air quality and noise pollution within the village of West Winch will not be improved. However, by not diverting traffic away from the village could help to lessen the impact of increasing air and noise pollution elsewhere, where levels of pollution have not been experienced before. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions), SA13 (health and wellbeing), and SA15 (noise).

A140 Long Stratton Bypass

The A140 Long Stratton Bypass will be a single carriageway road that will provide a new junction at Church Lane to the north where it will re-join the existing A140 just south of Oakside Farm. This bypass has long been a priority within Norfolk and is considered to be a prerequisite to provide for the needs of the proposed growth of at least 1,800 dwellings in Long Stratton in the period 2008-2026.

Table B6 - A140 Long Stratton Bypass 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 A140 Long Stratton Bypass will provide access to the new development without adding traffic on the A140 and in the Long Stratton town centre. The scheme will also help to improve severance along the A140, where it currently passes through Long Stratton, due to current speed restrictions, signal-controlled junction and pedestrian crossings which act to slow down through traffic. The implementation of the A140 Long Stratton Bypass will improve efficiency and reliability of journeys and reduce safety issues on the road network, especially addressing junctions that currently do not meet standards for layout and visibility. Therefore, significant positive effects have been identified for SA6 (quality of life and safety) and SA12 (accidents).

The increased efficiency in journey times will result in less driver stress for the people using the road network (SA13) as well as economic benefits (SA8). Further economic benefits will arise as the A140 Long Stratton Bypass supports the future growth of the population, employment and housing requirements in Norfolk due to improving the capacity of the road network to enable this growth. A140 Long Stratton Bypass will help to improve connectivity which will result in significant positive effects for SA7(inclusion and equality) and SA11 (access to jobs). Improved connectivity may also provide new opportunities for economic markets and a chance for businesses to grow. These opportunities could attract more businesses into the region, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy.

As part of the A140 Long Stratton Bypass opportunities will be sought to improve conditions for active travel and public transport, making the town centre more accessible for cyclists and pedestrians. This will have significant beneficial effects for SA7 (inclusion and equality) as access will be improved for people who cannot drive or do not own a car. The encouragement of more sustainable transport modes will help to improve air quality and reduce noise pollution within the built-up area of Long Stratton, which will also indirectly benefit the health and wellbeing of the population. However, there is a risk of shifting air and noise pollution to areas where high levels of pollution have not been experienced before during construction and operation of the A140 Long Stratton Bypass.

Significant negative effects have been identified for SA2 (biodiversity) and SA9 (historic environment) as a result of the A140 Long Stratton Bypass. The areas where the A140 Long Stratton Bypass transects has high biodiversity value with known bat activity, including the rare barbastelle bat. The development of the A140 Long Stratton Bypass could therefore lead to direct habitat loss and fragmentation and disturbance during construction and operation. There is also the potential for the A140 Long Stratton Bypass to physically disturb or change the setting of historic assets, as the Long Stratton Conservation Area located immediately adjacent to the proposed A140 Long Stratton Bypass.

The development of the A140 Long Stratton Bypass will introduce a new road corridor, highway infrastructure and associated development into a predominantly rural landscape which is likely to change the character of the local landscape and may be visually intrusive to residential properties located in proximity. Land take will also be required, intersecting areas with high quality agricultural land (ALC Grade 3a), therefore, there is a high chance these will be lost. This has resulted in significant negative effects on SA4 (water, soils and minerals).

The scheme is anticipated to use green infrastructure within the design and opportunities may arise, where practical, for works to reuse existing materials and infrastructure that is ready for future challenges of climate change. Therefore, uncertain effects have been identified for SA5 (climate change)and SA14 (landscape and townscape).

Table B7 - A140 Long Stratton Bypass Alternative 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	+/-

The A140 Long Stratton Bypass supports future population, and housing growth by improving the capacity and connectivity of the road network. Therefore, not taking forward A140 Long Stratton Bypass may lead to Norfolk missing out on opportunities for new economic markets and a chance for businesses to grow, supporting economic growth and a strong sustainable local economy. This could also mean that vital housing developments do not come forward, which could limit housing availability within the county driving up prices and potentially forcing residents to locate outside of the county. 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 minor negative effects on SA8 (access and economy) and significant negative effects on SA10 (investment and growth).

Negative effects were identified for SA5 (climate change) as opportunities to make the transport network ready for future challenges of climate change, for example flooding, may be lost by not taking forward A140 Long Stratton Bypass which may lead to issues effecting most SA objectives.

Not taking forward A140 Long Stratton Bypass could exacerbate existing issues of congestion and severance where the A140 currently passes through Long Stratton. Therefore, making it harder for residents to travel to work, services and facilities and

increasing stress levels. Therefore, minor negative effects have also been identified for SA7 (inclusion and equality) and SA11 (access to jobs).

Not taking forward A140 Long Stratton Bypass will also mean that there will be no improved access to healthcare facilities or opportunities for active travel. As exposure to air pollution can cause chronic conditions such as cardiovascular, respiratory diseases and lung cancer, not taking forward A140 Long Stratton Bypass will mean that that the air quality and noise pollution within the town centre of Long Stratton may not be improved. However, by not diverting traffic away from the village could help to lessen the impact of increasing air and noise pollution elsewhere, where levels of pollution have not been experienced before. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions), SA13 (health and wellbeing), and SA15 (noise).

A17/A47 Pullover Junction, King's Lynn

The A17/A47 Pullover Junction improvement is required to reduce congestion and delay in the King's Lynn area and to support the planned growth set out in the adopted Local Plan. This includes the significant allocation of 4,000 new homes in the South East King's Lynn Growth Area (SEKLGA). The roundabout is a known pinch point on the A47 trunk road at the junction with the A17. This junction has been identified as a priority scheme by Transport East.

Table B8 - A17/A47 Pullover Junction, King's Lynn 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 A17/A47 Pullover Junction improvement will help to reduce congestions and delay in the King's Lynn areas and support the planned growth of around 4,000 new homes in the SEKLGA. This will help to reduce idling traffic in built-up residential

areas, leading to improved efficiency and reliability of journeys. By improving the flow of traffic, the number of traffic related accidents are likely to decrease. Therefore, significant positive effects have been identified for SA6 (quality of life and safety) and SA12 (accidents). However, improving the road network may encourage the use of private transport will negatively affect SA1 (air quality), SA3 (carbon emissions) and SA15 (noise).

The increased efficiency in journey times will result in less driver stress for the people using the road network (SA13) as well as economic benefits (SA8). Further economic benefits will arise as the A17/A47 Pullover Junction supports the future growth of the population, employment and housing requirements in Norfolk due to improving the capacity of the road network to enable this growth.

The A17/A47 Pullover Junction will help to improve connectivity which will result in significant positive effects for SA7 (inclusion and equality) and SA11 (access to jobs). Improved connectivity may also provide new opportunities for economic markets and a chance for businesses to grow, especially as this junction is considered a gateway to the Midlands. These opportunities could attract more businesses into the region, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy.

Work is currently starting on strategic outline business case for the A17/A47 Pullover Junction, meaning the preferred option is not decided, however, it is likely to involve either a bridge or flyover with associated slip roads. Therefore, it is not clear if the scheme involves any improvements to active and public transport modes which would provide beneficial effects to SA13 (health and wellbeing) , SA7 (inclusion and equality), as well as improving air quality (SA1) due to the reduction in carbon emissions (SA3) and noise pollution (SA15). Therefore, uncertain effects have been identified for these objectives.

As the preferred option is not decided, uncertain effects have also been identified for SA2 (biodiversity/ geodiversity), SA4 (water, soils and minerals), SA5 (climate change), SA9 (historic environment), and SA14 landscape and townscape) as these effects will depend on scheme level design and mitigation measures.

Table B9 - A17/A47 Pullover Junction, King's Lynn Alternative 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	?

The A17/A47 Pullover Junction supports future population, and housing growth in the SEKLGA by improving the capacity and connectivity of the road network. Therefore, not taking forward A17/A47 Pullover Junction could lead to Norfolk missing out on opportunities for new economic markets and chances for businesses to grow, especially as this junction is considered a gateway to the Midlands, supporting economic growth and a strong sustainable local economy.

This could also mean that vital housing developments do not come forward, which could limit housing availability within the county driving up prices and potentially forcing residents to locate outside of the county. 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).

Not taking forward the A17/A47 Pullover Junction could exacerbate existing issues of congestion and severance on the A47 trunk road at its junction with the A17, , making it harder for residents to travel to work, and access services, healthcare, recreation and other facilities. Therefore, minor negative effects have been identified for SA7 (inclusion and equality), SA11 (access to jobs) and SA13 (health and wellbeing).

A11 Thetford Bypass Junctions

The A11 forms the main road from London to Norwich and is the main link to the south for most of Norfolk. There is proposed growth at Thetford providing 5,000 homes and 5,000 jobs, however, even without this proposed growth the junctions on the A11 are forecast to operate over their theoretical capacity by 2026, with the Mundford Road (A134) junction experiencing the worst congestion. It is likely that the agreed scope of work will comprise traffic signals on the roundabouts and speed limits on the A11.

Table B10 - A11 Thetford Bypass Junctions 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**

Improving the A11 Thetford Bypass Junctions with speed limits and traffic signals will help to improve the safety of the road network and reductions idling traffic and congestion on the junction, which could lead to a reduction in traffic related accidents. Therefore, positive effects have been identified for SA6 (quality of life and safety) and SA12 (accidents). Positive effects have also been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access and jobs) as reducing journey times is likely to lead to increased productivity, better access to employment and will also help to support the predicted growth in Thetford. These effects are only minor as the scheme will not significantly increase the capacity of the road network.

Reducing traffic idling and congestion will also help to improve local air quality through a reduction in carbon emissions, however, this may encourage more people to use private transport modes. Therefore, both positive and negative effects have been identified for SA1 (air quality) and SA3 (carbon emissions)

Table B11 - A11 Thetford Bypass Junctions Alternative 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

If the improvements to the A11 Thetford Bypass Junctions are not taken forward, issues relating to congestion on the junction will continue and potentially get worse with the increased population in Thetford therefore, it is likely that the risk of transport related accidents are likely to increase and the feeling of safety using the junction will decrease.

Without junction improvements, journey times are likely to increase, which could lead to increased driver stress, reduced accessibility to employment and services and reduce productivity. This has therefore resulted in minor negative effects on SA8 (access and economy), SA10 (investment and growth) and SA11 (access and jobs).

Air quality issues will also likely continue or worsen without these improvements due to congestion and traffic idling increasing, which in turn could increase transport related carbon emissions. This has resulted in minor negative effects on SA1 (air quality) and SA3 (carbon emissions).

A47 Wisbech Bypass Junctions

There are currently significant congestion issues on the A47 Wisbech Bypass especially at the pinch point junctions of the B198 (east and west) and A1101 which are the responsibility of National Highways. There are also safety concerns at the A47/Broadend Road which requires a new junction by developers to deliver housing in Wisbech.

Improvements to the A47 Broadend Road junction to replace the existing arrangements with a roundabout and minor improvements to the existing Elm High Road / A47 roundabout will be brought forward with the Growth Deal Funding from the Cambridgeshire Peterborough Combined Authority.

Table B12 - A47 Wisbech Bypass Junctions 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**

Improvements to the A47 Wisbech Bypass Junctions will help to congestion issues on the A47 Wisbech Bypass and safety concerns at the A47/Broadend Road will be addressed by the implementation of a new roundabout. This has resulted in significant positive effects for SA6 (quality of life and safety) and SA12 (accidents). Minor positive effects have also been identified for SA8 (access and economy) SA10 (investment and growth) and SA11 (access to jobs) due to the improvements in reducing journey times, leading to increased productivity, and helping to support the predicted growth of housing in Wisbech. These effects are only minor as the scheme will not significantly increase the capacity of the road network.

The potential improvements in reducing traffic idling and congestion will also help to improve local air quality through a reduction in carbon emissions, however, this may encourage more people to use private transport modes. Therefore, both positive and negative effects have been identified for SA1 (air quality) and SA3 (carbon emissions).

These improvements are going to implement new infrastructure, including a roundabout, which will require the use of finite resources. However, there may be opportunities to reuse existing materials and infrastructure. Therefore, uncertain effects have been identified for SA4 (water, soils and minerals).

Table B13 - A47 Wisbech Bypass Junctions Alternative 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

If the improvements to the A47 Wisbech Bypass Junctions are not taken forward, issues relating to congestion on the junction will continue and potentially get worse with the increased population in Wisbech therefore, it is likely that the risk of transport related accidents are likely to increase and the feeling of safety using the junction will decrease.

Without junction improvements, journey times are likely to increase, which could lead to increased driver stress, reduced accessibility to employment and services and reduce productivity. This has therefore resulted in minor negative effects on SA8 (access and economy), SA10 (investment and growth) and SA11 (access and jobs).

Air quality issues will also likely continue or worsen without these improvements due to congestion and traffic idling increasing, increasing transport related carbon emissions. This has resulted in minor negative effects on SA1 (air quality) and SA3 (carbon emissions).

A47 Tilney to East Winch Dualling

The long-term objective of NCC and other partners is for complete dualling of the A47 along the full length of the trunk road from the A1 at Peterborough to Lowestoft. However, it is recognised that this may need to be achieved through a phased approach to improvements. The A47 Alliance agreed that A47 Tilney to East Winch are its priority.

Table B14 - A47 Tilney to East Winch Dualling 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)
+/-	- -	+/-	- -	?	++	+	++	- -	++	++	++	+	- -	- -

Dualling of the A47 from Tilney to East Winch will improve access and capacity, which will help the road network to cope with the predicted growth in population and housing. As this route carries traffic from the Midlands and the north of England, improved connectivity may also provide new opportunities for economic markets and a chance for businesses to grow. They may also attract more businesses into the region, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy, especially by improving access and journey times to and from the King's Lynn Port. Therefore, significant positive effects have been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

By improving the flow of traffic, people are likely to be less stressed while using the road network and the number of traffic related accidents are likely to decrease, especially those accidents that involve overtaking vehicles. According to the A47 Alliance, the dualling could prevent up to 31 fatal and 205 serious casualties over the life of the scheme Therefore, significant positive effects have been identified for SA6 (quality of life and safety) and SA12 (accidents) and positive effects for SA13 (health and wellbeing).

Reduction in congestion will also help to improve local air quality. However, improving the road network may encourage the use of private transport, therefore uncertain effects have been identified for SA1 (air quality) and SA3 (carbon emissions) and SA5 (climate change). Positive effects on these objectives will arise from the incorporation of sustainable transport modes as part of this scheme. Uncertain effects have been identified for climate change, as it is not clear on whether the design will be built to be resilient to the future challenges of climate change.

Dualling is likely to result in increased levels of noise from the transport network, as cars will be able to travel at higher speeds. There may be potential for design to mitigate this with appropriate noise screening (such as earth banks and fencing), however, at this stage, significant negative effects have been identified.

Dualling of the A47 from Tilney to East Winch will require the use of finite resources and will be developed in a predominantly rural landscape which is likely to change the character of the local landscape. Land take will also be required, intersecting areas with high quality agricultural land (ALC Grade 2-3a), therefore, there is potential for this valuable land to be lost. This has therefore resulted in significant negative effects on SA4 (water, soils and minerals). However, opportunities may arise, where practical, for works to reuse existing materials and infrastructure – this will be determined by scheme level design.

Significant negative effects have also been identified for SA9 (historic environment) and SA14 (landscape and townscape). Historic assets (designated and undesignated including buried assets) as well as landscape and landscapes are likely to be negatively affected during construction from noise, vibration, temporary reductions in air quality (including dust spoiling) as well as loss of visual amenity. Dualling is likely to include components that will permanently degrade the unique landscape and historic environment.

Habitats and species, may be disturbed during the construction and operation of this scheme, especially as the A47 intersects the River Nar SSSI between Tilney to East Winch. Due to the requirement of land take, the dualling of the A47 from Tilney to East Winch may lead to direct habitat loss and fragmentation. This has therefore resulted in significant negative effects on biodiversity (SA2), however, opportunities may arise for biodiversity net gain and methods for any loss to be mitigated against – this will be down to scheme level design.

Table B15 - A47 Tilney to East Winch Dualling Alternative 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	?

Dualling of the A47 Tilney to East Winch supports future population, and housing by improving the capacity and connectivity of the road network. Therefore, not taking forward this scheme may lead to Norfolk missing out on opportunities for new economic markets and a chance for businesses to grow, especially with links the Midlands and the North, supporting economic growth and a strong sustainable local economy. This could also mean that vital housing developments do not come forward, which could limit housing availability within the county driving up prices and potentially forcing residents to locate outside of the county.

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 minor negative effects on SA8 (access and economy) and significant negative effects on SA10 (investment and growth).

Not taking forward this scheme could exacerbate existing issues of congestion and safety along this route. Therefore, making it harder for residents to travel to work, services and facilities and increasing stress levels. Therefore, minor negative effects have also been identified for SA7 (inclusion and equality), SA11 (access to jobs), and SA13 (health and wellbeing). It is also anticipated that this traffic and congestion will negatively effect upon SA6 (quality of life and safety) and SA12 (accidents), considering that there are existing safety issues associated with this road, significant negative effects have been identified. .

Uncertain effects for SA1 (air quality), SA3 (carbon emissions) and SA15 (noise) have been identified as not taking this scheme forward is likely to increase issues of poor air quality and noise pollution, however, improving the road network may encourage the use of private transport, which could exacerbate these issues further.

A47 Acle Straight Dualling

The long-term objective of NCC and other partners is for complete dualling of the A47 along the full length of the trunk road from the A1 at Peterborough to Lowestoft. However, it is recognised that this may need to be achieved through a phased approach to improvements. The A47 Alliance agreed that A47 Acle Straight Dualling is a priority.

Table B16 - A47 Acle Straight Dualling 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)
+/-	?	+/-	- -	?	+	+	++	- -	++	++	+	?	- -	- -

This route is a key link for Great Yarmouth to Norwich, the midlands and the North. Dualling of this route will help to support the growing population in Great Yarmouth and Waveny borough by increasing the capacity of the road network and reduce journey times. This will result in less stress for the people using the road network (SA13) as well as economic benefits (SA8) due to increased efficiency of journeys.

Dualling of the A47 Acle Straight will help to improve connectivity which will result in significant positive effects for SA7(inclusion and equality) and SA11 (access to jobs). Improved connectivity may also provide new opportunities for economic markets and chances for businesses to grow nationally. These opportunities could attract more businesses into the county, supporting further economic growth, employment opportunities and help to ensure a strong and sustainable local economy.

Dualling of the A47 Acle Straight will also help to improve traffic flow and reduce congestion. This is likely to help reduce traffic related accidents and improve safety as a whole on the road network. Therefore, significant positive effects have been identified for SA6 (quality of life and safety) and SA12 (accidents). However, improving the road network may encourage the use of private transport, therefore, both negative and positive effects have been identified for SA1 (air quality), SA3 (carbon emissions) and SA5 (climate change). Positive effects on these objectives will arise from the incorporation of sustainable transport modes as part of this scheme. Uncertain effects have been identified for climate change, as it is not clear on whether the design will be built to be resilient to the future challenges of climate change.

Dualling is likely to result in increased levels of noise from the transport network, as cars will be able to travel at higher speeds. There may be potential for design to mitigate this with appropriate noise screening (such as earth banks and fencing), however, at this stage, significant negative effects have been identified.

Dualling of the A47 Acle Straight will require the use of finite resources and will be developed in a predominantly rural landscape which is likely to change the character of the local landscape. Land take will also be required, intersecting areas with high quality agricultural land (ALC Grade 3a), therefore, there is potential for this valuable land to be lost. This has therefore resulted in significant negative effects on SA4 (water, soils and minerals). However, opportunities may arise, where practical, for works to reuse existing materials and infrastructure – this will be determined by scheme level design. Significant negative effects have also been identified for SA9 (historic environment) and SA14 (landscape and townscape). Historic assets (designated and undesignated including buried assets) as well as landscape and landscapes are likely to be negatively affected during construction from noise, vibration, temporary reductions in air quality (including dust spoiling) as well as loss of visual amenity. Dualling is likely to include components that will permanently degrade the unique landscape and historic environment.

Significant negative effects have also been identified for SA21 (biodiversity), Habitats and species, are likely to be disturbed during the construction and operation of this scheme, especially as the A47 Acle Straight runs adjacent to the Breydon Water Ramsar and SSSI towards Great Yarmouth. Due to the requirement of land take, the dualling of the A47 Acle Straight may lead to direct habitat loss and fragmentation. However, opportunities may arise for biodiversity net gain and methods for any loss to be mitigated against.

Table B17 - A47 Acle Straight Dualling Alternative 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	?

Dualling of the A47 Acle Straight supports future population and housing growth in Great Yarmouth and Waveny, by improving the capacity and connectivity of the road network. Therefore, not taking forward this scheme may lead to Norfolk missing out on opportunities for new economic markets and a chance for businesses to grow, especially with links key link to the Midlands and the North, supporting economic growth and a strong sustainable local economy.

This could also mean that vital housing developments do not come forward, which could limit housing availability within the county driving up prices and potentially forcing residents to locate outside of the county. 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 negative effects on SA8 (access and economy) and SA10 (investment and growth).

Not taking forward this scheme could exacerbate existing issues of congestion and safety along this route. Therefore, making it harder for residents to travel to work, services and facilities and increasing stress levels. Therefore, minor negative effects have also been identified for SA7 (inclusion and equality), SA11 (access to jobs), and SA13 (health and wellbeing). It is also anticipated that traffic and congestion will negatively effect upon SA6 (quality of life and safety) and SA12 (accidents).

Uncertain effects for SA1 (air quality), SA3 (carbon emissions) and SA15 (noise) have been identified as not taking this scheme forward is likely to increase issues of poor air quality and noise pollution, however, improving the road network may encourage the use of private transport, which could exacerbate these issues further.

Norwich to London Rail (Norwich in 90)

Subject to government funding approval a Strategic Outline Business Case will be completed on a package to deliver performance and journey time benefits, undertaken by the Great Eastern Main Line Task Force. This includes timetable performance work for the line and potential infrastructure improvements on the existing line to ensure all services, or at least services every hour, run in 90 minutes. These improvements might comprise signalling improvements or additional loops (lengths of line running adjacent to the existing line to allow faster trains to pass slower ones).

Table B18 - Norwich to London Rail (Norwich in 90) 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	+/-	-

Norwich to London Rail scheme will include improvements to existing services and lines between Norwich and London. Faster services will reduce journey times and improve efficiency, resulting in economic benefits. Further economic benefits will arise from the improving connectivity with London. This may provide new and improved opportunities for economic markets and a chance for businesses to grow. These opportunities could attract more businesses into the region, supporting further economic growth, and employment and tourism opportunities inclusively, ensuring a strong and sustainable local economy. Therefore, significant positive effects have been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

Faster trains are also considered to be safer and reducing the journey times between Norwich and London will make using public transport a more attractive option, encouraging increased use. Consequently, this will lead to a reduction in the number

of vehicles on the road network, reducing the number of transport related accidents. Therefore, significant positive effects have been identified for SA6 (quality of life and safety) and SA12 (accidents).

Encouraging the use of rail travel will also result in significant positive effects on air quality (SA1) due to the reduction in transport related carbon emissions (SA3), which will provide further indirect benefits to the natural and historic environment through a reduction in noise disturbance and air pollution caused by road traffic as well as, improve tranquillity of the landscape. However, the implementation of faster trains is likely to increase noise pollution which could lead to increased disturbance on habitats and protected species, and the setting of historic assets. Therefore, both positive and negative effects have been identified for SA2 (biodiversity/ geodiversity), SA9 (historic environment), and SA14 (landscape and townscape).

Table B19 - Norwich to London Rail (Norwich in 90) Alternative 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	0

Not taking forward Norwich to London Rail may mean that Norfolk misses out on opportunities to increase the capacity of its rail network to support the growth in population and improve links with London's economic markets which will support economic growth, and employment and tourism opportunities inclusively, ensuring a strong and sustainable local economy. Therefore, minor negative effects have been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

Providing less reliable services, may not support a modal shift to more sustainable transport modes. This could increase the number of cars on the existing road network, increasing levels of noise and air quality as well as carbon emissions. This has resulted in minor negative effects on SA1 (air quality), SA3 (carbon emissions) and SA15 (noise).

Great Yarmouth Rail Station

Significant improvements are required at Great Yarmouth rail station to improve the arrival experience of visitors and commuters. Details have not been decided yet however, they are likely to involve the replacement of at least part of the existing station building.

Table B20 - Great Yarmouth Rail Station 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	+	+

Improvements to the Great Yarmouth rail station is likely to make the station and ultimately the local townscape more attractive to visitors. This may result in increased investment within Great Yarmouth, especially within the tourism sector. Therefore, positive effects have been identified for SA8 (access and economy), SA10 (investment and growth), and SA14 (landscape and townscape).

Making the station more attractive may encourage more people to use rail travel which will result in have beneficial effects on air quality due to a reduction in transport related carbon emissions, and noise pollution. Improvements to the station as well may help to make users feel safer and confident using the transport network, particularly at night. This has resulted in minor positive effects on SA6 (quality and safety).

Table B21 - Great Yarmouth Rail Station Alternative 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**	**0**	**0**	**-**	**0**

Not making improvements to Great Yarmouth Station may result in the town becoming less attractive to investors leading to missed opportunities for economic growth, as well as a chance to improve the local townscape. Therefore, minor negative effects have been identified for SA8 (access and economy) SA10 (investment and growth), and SA14 (landscape and townscape).

Ely Area Enhancements

A large number of rail services pass through Ely; King's Lynn to Cambridge; Norwich to Cambridge; Norwich to Peterborough; Ipswich to Peterborough; and freight services from Felixstowe. Major rail infrastructure improvements are required to accommodate all services committed within franchise agreements and for further frequency improvements in the future.

Table B22 - Ely Area Enhancements 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 Ely Area is a busy junction where railway lines converge and is currently operating at full capacity. Proposals to upgrade the railway to allow more trains to run through Ely will result in better connectivity and reliability of services as well as, supporting population growth by increasing capacity of the rail network. This will result in significant positive effects on SA8 (access and economy) and SA10 (investment and growth) as improved connectivity will provide new opportunities for economic markets and a chance for businesses to grow nationally, most notably in Cambridge and London. These opportunities could attract more businesses into the region, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy.

As part of these improvements, freight services are expected to be increased to meet the demand for more rail freight between the Port of Felixstowe the West Midlands and the north. This will mean freight is taken off the roads leading to a reduction in carbon emissions and improvements to air quality. Safety of the road network will also increase as this will ultimately reduce the number of HGVs on the road. Therefore, significant effects have been identified for SA6 (quality of life and safety) and SA12 (accidents).

Improving connectivity and reliability of rail services will also encourage a modal shift to sustainable transport, whilst improving access to key services, jobs and recreation, which will lead to further improvements to air quality and noise pollution. However, an increased frequency of rail services may lead to increased levels of noise and has the potential to increase delay at level crossings which are key sources of air pollution and carbon emissions. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions and SA15 (noise).

As details of these improvements have not be finalised, uncertain effects have been identified for SA2 (biodiversity/ geodiversity), SA4 (Water, Soils and Minerals), SA9 (historic environment), and SA14 (landscape and townscape).

Table B23 - Ely Area Enhancements Alternative 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**	**+/-**

Not taking forward Ely Area Enhancements may result in missed opportunities for better connectivity and reliability of services as well as, supporting population growth by increasing capacity of the rail network, and improving links with London and Cambridge economic markets which will support economic growth, and employment and tourism opportunities inclusively, ensuring a strong and sustainable local economy. Therefore, minor negative effects have been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

There is also potential for demand in rail freight is not met if this scheme is not taken forward, which means more freight vehicles will be on the road network, leading to reductions in air quality and safety.

Not taking forward Ely Area Enhancements will mean that improvements to support a shift in sustainable transport modes are not made which may lead to increased use of private transport, reducing air quality and increasing noise pollution. However,

not taking forward this scheme may lead to less congestion at level crossings which can negatively affect air quality and noise. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions and SA15 (noise).

East West Rail (Cambridge to Oxford)

The complete East West Rail scheme comprises a strategic rail route that will link Ipswich and Norwich to Cambridge, Bedford, Milton Keynes, Bicester, and Oxford. The route will potentially allow freight trains to connect the ports of Felixstowe and Harwich with the Great Eastern, East Coast, Midland, West Coast and Great Western main lines without the need to travel on congested tracks around North London.

East West Rail is supported by NCC and is focussed on making sure that the benefits of this substantial investment come to Norfolk by ensuring that services extend at least as far as Norwich (on existing lines). A Preliminary Strategic Outline Business Case is in the process of being finalised, which shows a good case for this.

Table B24 - East West Rail (Cambridge to Oxford) 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)
+/-	?	+/-	?	?	+	++	++	?	++	++	+	+	?	+/-

Proposals to upgrade the railway to allow services to extend to Norwich will result in better connectivity and reliability of services as well as, supporting population growth by increasing capacity of the rail network. This will result in significant positive effects on SA8 (access and economy) and SA10 (investment and growth) as improved connectivity will provide new opportunities for economic markets and a chance for businesses to grow nationally, most notably in Cambridge and Oxford.

These opportunities could attract more businesses into the region, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy.

As part of these improvements, freight services are expected to be increased to meet the demand for more rail freight between the ports of Felixstowe and Harwich, the Midlands and the north without the need to travel on congested tracks around North London. This will mean freight is taken off the roads leading to a reduction in carbon emissions and improvements to air quality. Safety of the road network will also increase as this will ultimately reduce the number of HGVs on the road. Therefore, significant effects have been identified for SA6 (quality of life and safety) and SA12 (accidents).

Improving connectivity and reliability of rail services will also encourage a modal shift to sustainable transport, whilst improving access to key services, jobs and recreation, which will lead to further improvements to air quality and noise pollution. However, an increased frequency of rail services may lead to increased levels of noise and has the potential to increase delay at level crossings which are key sources of air pollution and carbon emissions. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions and SA15 (noise).

As scheme level designs of these improvements have not been finalised, uncertain effects have been identified for SA2 (biodiversity/ geodiversity), SA4 (Water, Soils and Minerals), SA9 (historic environment), and SA14 (landscape and townscape).

Table B25 - East West Rail (Cambridge to Oxford) Alternative 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**	**+/-**

Not taking forward East West Rail may result in missed opportunities for better connectivity and reliability of services as well as, supporting population growth by increasing capacity of the rail network, and improving links with Cambridge and Oxford economic markets which will support economic growth, and employment and tourism opportunities inclusively, ensuring a strong and sustainable local economy. Therefore, minor negative effects have been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

There is also potential that the demand for rail freight is not met if this scheme is not taken forward, which means more freight vehicles will be on the road network, leading to reductions in air quality and safety.

Not taking forward East West Rail could mean that improvements to support a shift in sustainable transport modes are not made which may lead to increased use of private transport, reducing air quality and increasing noise pollution. However, not taking forward this scheme may lead to less congestion at level crossings which can negatively affect air quality and noise. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions and SA15 (noise).

Schemes within Local Authority Control

Broadland Growth Triangle Link Road

The Broadland Growth Triangle Link Road will provide a key link road to the strategic employment areas of Broadland Business Park and Norwich Airport through the development sites within the northern suburbs of Norwich. It will significantly increase the accessibility of employment sites in the Broadland Growth Triangle area and support the development of approximately 55 hectares of employment land in this vicinity

Table B26 - Broadland Growth Triangle Link Road

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 proposed Broadland Growth Triangle Link Road will connect the strategic employment areas of Broadland Business Park to Norwich Airport through the Broadland Growth Triangle area within north Norfolk. This improved connectivity will provide new opportunities for economic markets and enable businesses to grow nationally and internationally. The link road will help to improve the capacity of the road network which will help to support the future population growth, and rising housing and employment demands within the Broadland Growth Triangle area. These opportunities could attract more businesses into the county, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy. Therefore, significant positive effects have been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

The development of the link road will reduce congestion along commuter routes (particularly the A1270 and A1042) and will help to reduce levels of driver stress (SA13 -health and wellbeing) and traffic related accidents (SA12 -accidents). The

reduction in congestion will help to reduce transport related carbon emissions, improving the local air quality. Reductions in air pollution, noise pollution and carbon emissions could be reduced further by the incorporation of active transport infrastructure as part of the scheme. However, the development of the link road could encourage more people to use private transport, leading to an increase in transport related carbon emissions, noise pollution, and air pollution. Carbon emissions may also increase due to the embodied carbon associated with the construction and maintenance of the link road. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions), and SA15 (noise).

Land take is likely to be required to deliver this scheme which may result in the loss of habitat and protected species. The introduction of a link road could disturb habitats and the setting of heritage assets through an increase in air and noise pollution to levels that have not been experienced before. This scheme is also likely to require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, that can have a major visual impact if designed inappropriately. Due to the urban nature of the landscape, it is likely that significant negative effects will be minimal. Uncertain effects have however been identified for SA2 (biodiversity/ geodiversity), SA9 (historic environment), and SA14 (landscape/ townscape) as effects will be determined by scheme level design, as opportunities may arise to mitigate against negative effects.

This scheme will require new transport infrastructure which will require the use of finite resources and raw materials, however opportunities may exist, where practicable, for works to reuse existing materials and therefore, promote waste minimisation as well as proving opportunities to mitigate against future challenges of climate change. Therefore, uncertain effects have been identified for SA4 (water, soils and minerals) and SA5 (climate change) as effects will depend on scheme level design.

Table B27 - Broadland Growth Triangle Link Road Alternatives

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

If the Broadland Growth Triangle Link Road was not taken forward, issues relating to congestion along commuter routes of the A1270 and A1042 will continue and potentially get worse with the increased development of the strategic employment areas of Broadland Business Park, therefore, it is likely that the risk of transport related accidents are likely to increase and the feeling of safety using these roads will decrease.

Without this link road journey times are likely to increase, which could lead to increased driver stress, reduced accessibility to employment and services and reduce productivity. This has therefore resulted in minor negative effects on SA8 (access and economy), SA10 (investment and growth) and SA11 (access and jobs).

Air quality issues will also likely continue or worsen without these improvements due to congestion and traffic idling increasing, which in turn could increase transport related carbon emissions. This has resulted in minor negative effects on SA1 (air quality) and SA3 (carbon emissions).

Attleborough Link Road

The Attleborough Link Road is a key transport priority for Attleborough, required to support the planned strategic growth (4,000 dwellings) on the Attleborough Sustainable Urban Extension (SUE). This road will provide a link between the B1077 near Bunns Bank to London Road to the south of the town. The link road will distribute new and existing traffic away from the town centre and enable traffic management measures to be implemented within the town centre such as HGV restrictions. Delivery of the link road is a planning requirement of the scheme and will be phased so that up to 1,200 homes can be built before the link road is required to be opened in full.

Table B28 - Attleborough Link Road

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 Attleborough Link Road will help to alleviate traffic from the Attleborough town centre whilst increasing the capacity of the road network to enable the planned growth within the Attleborough SUE, which will provide an economic boost to the town centre and increase local spending. These opportunities could attract more businesses into the town, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy. Therefore, significant positive effects have been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

Reducing traffic in the town centre and the implementation of traffic management measures such as HGV restrictions, will improve safety for all users of the road network and for pedestrians using the town centre. Therefore, significant positive effects have been identified for SA6 (quality of life and safety), SA7 (inclusion and equality), and SA12 (accidents).

The reduction of the traffic in the town centre will also help to improve local air quality through a reduction in carbon emissions, as well as reducing noise pollution, which will result in benefits to human health and wellbeing (SA13) and improve tranquillity and sense of place (SA14 – landscape and townscape). Further benefits will arise from restricting HGVs which are generally louder and more polluting. However, by diverting the traffic is likely to shift this issue elsewhere, increasing noise and air pollution in areas where these levels have not been experienced before. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions), and SA15 (noise).

Land take is likely to be required to deliver this scheme which may result in the loss of habitat and protected species. The introduction of a link road could disturb habitats and the setting of heritage assets through an increase in air and noise pollution to levels that have not been experienced before. This scheme is also likely to require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, that can have a major visual impact if designed inappropriately. Due to the urban nature of the landscape, it is likely that negative effects will be minimal. Uncertain effects have however been identified for SA2 (biodiversity/ geodiversity), SA9 (historic environment), and SA14 (landscape/ townscape) as effects will be determined by scheme level design, as opportunities may arise to mitigate against these effects.

This scheme will require new transport infrastructure which will require the use of finite resources and raw materials, however, opportunities may exist, where practicable, for works to reuse existing materials and therefore, promote waste minimisation as well as proving opportunities to mitigate against future challenges of climate change. Therefore, uncertain effects have been identified for SA4 (water, soils and minerals) and SA5 (climate change) as effects will depend on scheme level design.

Table B29 - Attleborough Link Road Alternatives

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

If the Attleborough Link Road was not taken forward, existing issues relating to congestion within Attleborough town centre will continue and potentially get worse with the increased population growth in Attleborough. It is, therefore, likely that the risk of transport related accidents are likely to increase and the feeling of safety using these roads will decrease.

Without this link road journey times are likely to increase, which could lead to increased driver stress, reduced accessibility to employment and services and reduce productivity. This has therefore resulted in minor negative effects on SA8 (access and economy), SA10 (investment and growth) and SA11 (access and jobs).

Air quality issues will also likely continue or worsen without these improvements due to congestion and traffic idling increasing, which in turn could increase transport related carbon emissions. This has resulted in minor negative effects on SA1 (air quality) and SA3 (carbon emissions).

A148 Fakenham Roundabout Enhancement

A planning application has been received for 950 residential dwellings adjacent to and south of the A148 between Water Moor Lane and the Morrisons roundabout to the east. Access to the new residential development is proposed via a new roundabout on the A148 (at the Water Moor Lane junction) with a link road through to the existing roundabout serving Morrisons. The Highway Authority NCC indicated that a roundabout would be required to be built at the current A148/B1105 junction as a condition of the planning permission if residential development to the west of Water Moor Lane is progressed.

Table B30 - A148 Fakenham Roundabout Enhancement 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	?

The development of the new roundabout on the A148 Water Lane junction will help to support the delivery of 950 new homes adjacent to and south of the A148 as well as further expansion of Fakenham, by providing safer access from the new development and greater capacity of the road network. This will help to improve connectivity between housing markets and employment centres and may provide opportunities to attract more businesses into the county, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy. Therefore, significant positive effects have been identified for SA8 (access and economy) and SA10 (investment and growth).

Uncertain effects have been identified for SA1 (air quality), SA3 (carbon emissions), and SA15 (noise) as this may encourage private car use which will have a negative effect on air quality and noise. However, public and active transport provisions use may be included as part of the wider development.

The work to the deliver the new roundabout is likely to be in the existing footprint of the A148 so effects to landscape, agricultural land, biodiversity, and historic assets will be minimal.

Table B31 - A148 Fakenham Roundabout Enhancement Alternative 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

If the A148 Fakenham Roundabout was not taken forward, the expansion of the town will likely be halted or delayed as the delivery of the 950 new homes is dependent upon the scheme. The possibility of losing these new homes and new residents limits the opportunities for further economic growth and new employment opportunities.

Without this roundabout, journey times are likely to increase, which could lead to increased driver stress, reduced accessibility to employment and services and reduce productivity. This has therefore resulted in minor negative effects on SA8 (access and economy), SA10 (investment and growth) and SA11 (access and jobs).

Existing air quality issues will also likely continue or worsen without these improvements, due to congestion and traffic idling increasing, which in turn could increase transport related carbon emissions. This has resulted in minor negative effects on SA1 (air quality) and SA3 (carbon emissions).

Broadland Business Park Rail Station

Currently services operate every hour between Norwich and Sheringham. New rolling stock has recently been delivered across the whole of the franchise. However, further capacity improvements are required to accommodate passenger demand and local partners have been pressing for services every half hour (rather than hourly). Broadland Business Park is a strategic employment site located adjacent to the rail line just east of Norwich.

Table B32 - Broadland Business Park Rail Station 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**	**+**	**++**	**++**	**++**	**+/-**	**++**	**++**	**++**	**+**	**+/-**	**+/-**

To meet increased passenger demand, this scheme will increase services from every hour to every half hour, between Norwich and Sheringham. This will help to significantly increase the capacity of the rail network to support population growth and improve access to strategic employment sites such as the Broadland Business Park. This improved connectivity may also attract more businesses into the region, supporting further economic growth and employment. Tourism opportunities are also likely to be sought due to improving connectivity to the seaside town of Sheringham. Therefore, significant positive effects have been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

Improvements to rail travel is likely to encourage more people to use public transport and improve access key services, jobs and recreation inclusively. This will lead a reduction in the number of vehicles on the road network, reducing the number of transport related accidents. Further benefits to safety will arise from the delivery of new rolling stock, as these are likely to be mor efficient. Therefore, significant positive effects have been identified for SA6 (quality of life and safety) and SA12 (accidents).

Encouraging the use of rail travel will also result in significant positive effects on air quality (SA1) due to the reduction in transport related carbon emissions (SA3), which will provide further indirect benefits to the natural and historic environment through a reduction in noise disturbance and air pollution caused by road traffic as well as, improve levels of tranquillity of the landscape. Further benefits to air and noise pollution can be sought from the delivery of new rolling stock as older trains tend to be louder and emit greater concentrations of emissions. However, an increased frequency of rail services may lead to increased levels of noise and has the potential to increase delay at level crossings which are key sources of air pollution and carbon emissions. Therefore, both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions and SA15 (noise), as well as SA2 (biodiversity/ geodiversity), SA9 (historic environment), and SA14 (landscape and townscape).

Table B33 - Broadland Business Park Rail Station Alternative 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	0

Not increasing services between Norwich and Sheringham may mean that Norfolk misses out on opportunities to increase the capacity of its rail network to support future population growth and improve links with new economic markets, which in turn will support economic growth, and employment and tourism opportunities , ensuring a strong and sustainable local economy. Therefore, minor negative effects have been identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

Providing less reliable services, may not support a modal shift to more sustainable transport modes. This could increase the number of cars on the existing road network, increasing levels of noise and air quality as well as carbon emissions. This has resulted in minor negative effects on SA1 (air quality), SA3 (carbon emissions) and SA15 (noise).

If this project does not go ahead, the majority of the SA objectives will be negatively affected. Without the railway station the area will see an increase in vehicular traffic which will result in deteriorating air quality (SA1), a decrease in quality of life (SA6) and health and wellbeing (SA13). The reduced access to the business park will also prevent certain community groups from accessing the business parks and the employment opportunities there which will see a negative effect on access and the economy (SA8).

Weavers Way

This project will create new walking and cycling infrastructure in rural Norfolk. Weaver's Way begins in Cromer, following a public rights of way network to the market town of Aylsham. This project will focus principally on revitalising the disused railway line between Aylsham and Stalham. Route improvements will include new surfacing to ensure year-round accessibility for walkers (including access impaired users) and cyclists, increased safety, and accessibility at road crossings through installation of new gates and improved signage and connectivity to amenities and other routes throughout.

Table B34 – Weavers Way

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	++	++	+	+

The development of the Weavers Way cycle network is likely to result in significant positive effects upon SA6 (quality of life and safety), SA7 (inclusion and equality), SA12 (accidents) and SA13 (health and wellbeing) as this project will upgrade and revitalise existing routes, including the Public Rights of Way (PRoWs) and disused railway line. These upgrades will improve safety of the routes, as well as reducing accidents, through making the route safer for walkers, and improving lighting and crossings. The development of this route is also likely to improve health as a result of encouraging active travel and improving access to the rural countryside of Norfolk, improving health and fitness. Additionally, this route may encourage the utilisation of

this network rather than private car use to areas such as Great Yarmouth, improving health through reduced emissions from the road network .

There are similar positive effects as a result of the development upon SA1 (air quality), SA3 (carbon emissions), SA5 (climate change), SA8 (access and economy), SA14 (landscape and townscape) and SA15 (noise). These positive effects are also attributed to the development of the scheme encouraging a modal shift to active travel modes, reducing transport emissions (including carbon) and noise in the area. It is also assumed that the development will be built to withstand both chronic and acute effects of climate change and therefore provide positive effects in the resilience of the network. This development will provide improved connectivity within rural Norfolk, linking coastal urban areas like Great Yarmouth and Cromer with Stalham. Developing the disused rail line and upgrading the PRoW will positively contribute to the landscape and townscape of the area, improving the setting of the disused line. However, the introduction of lighting and signage is likely to alter the landscape appearance, although the scale of this effect is yet to be determined, overall it is likely to contribute to positive placemaking.

There are uncertainties in relation to the scheme and SA2 (biodiversity/geodiversity), SA4 (water, soils and minerals) and SA9 (historic environment). The scheme is located within areas of high agricultural land value (grade 1-3a) and therefore any damage to this land will likely result in negative effects. A small scale of land take is anticipated for the development of this scheme, however, the exact scale of this is currently uncertain and therefore effects upon biodiversity and soils are undetermined. Similarly, any interventions that are located close to heritage assets are unlikely to negatively affect them during operation, however there is potential for disturbance during construction. The scheme may provide opportunities to enhance both the natural and built environment through the incorporation of green infrastructure, however, these design detail are not yet known.

Table B35 – Weavers Way Alternative 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	-

If the Weavers Way active travel route was not to come forward then there would be anticipated negative effects upon SA1 (air quality), SA3 (carbon emissions) SA5 (climate change), SA6 (quality of life and safety), SA7 (inclusion and equality), SA8 (access and economy), SA12 (accidents) and SA13 (health and wellbeing). The absence of this scheme will leave only road travel as the main transport option within this rural area of Norfolk, with public rights of way only providing short routes for travel in the area and unsafe crossings, this will negatively effect on air quality, carbon emissions and climate change due to increased private car use. There will also be reduced access to both rural and coastal urban areas, therefore reducing opportunities for active travel, as well as unsafe crossings and unlit routes reducing safety and increasing accidents. The absence of a developed active travel route will also contribute negatively to health and wellbeing.

The Green Loop

A 46-mile circular route for walking / cycling and disabled use. Encompassing the Marriott's Way, Bure Valley Path and Broadland Way. Broadland Way is partially built through the Broadland Northway and connects with the Broadland Growth Triangle. Marriott's Way and Bure Valley Path exist and are used currently for walking and cycling but require upgrading in some areas to make them more accessible for disabled users, both routes are biodiversity corridors. Broadland Way has been part built by the Broadland Northway and will link to the east end of the Green Pedal way. The Green Loop will also connect to the Three Rivers Way Cycle route and to Weaver's Way. DfT, Norfolk County Council and Broad's Authority funded Three Rivers Way Cycle route and to Weaver's Way.

Table B36 – The Green Loop

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 Green Loop development is likely to result in significant positive effects upon SA1 (air quality), SA3 (carbon emissions), and SA13 (health and wellbeing) and minor positive SA15 (noise), as a result of the promotion and development of the active travel network surrounding Norwich encouraging a modal shift away from private car use and towards active travel modes such as walking and cycling. Reductions in private car use will contribute to improved air quality, improved noise pollution and reductions in carbon emissions within the area, with a development on this scale improving connectivity within the area and therefore, improving the likelihood of active travel uptake. As a result of both improved air quality and improved physical activity rates, significant positive effects are also felt for health. It is assumed that the development of these networks will be built to standards that will withstand chronic and acute effects of climate change, for example flooding. Additionally, a reduction in emissions will contribute to improvements to climate change, although on a small scale.

Improvements to the active travel network through the Green Loop will also have likely positive effects on SA6 (quality of life and safety), SA7 (inclusion and equality), SA8 (access and economy), SA11 (access to jobs) and SA12 (accidents). The development of this route will improve the accessibility of residents to green spaces surrounding Norwich, improving quality of life as well as wellbeing. Additionally, this will improve access to Norwich itself, positively effecting SA8, and SA11 through improved connectivity within the area. It is assumed that the development to these routes will be built to high standards, therefore improving safety and reducing accidents on these routes, especially improving safety for disabled users. Active travel, by nature, is accessible to more social groups, with those on low incomes able to utilise this network and allowing access to all social groups inclusively.

There are uncertain effects identified for SA2 (biodiversity/geodiversity, SA4 (water, soils and minerals) and SA9 (historic environment) as a result of The Green Loop. There are uncertainties surrounding the exact scheme routes that require development, and whether there may be small scale land take required. If routes are developed in the south east around Norwich then there are areas of higher agricultural land value (grade 2-3a) that may be disturbed and lost. However, the scale of this is likely to be small as a result of the nature of active travel routes. Similarly, uncertainty in exact routes leaves to uncertain effects on biodiversity, with construction work risking damage and disturbance, particularly given the routes are biodiversity corridors. However, canopy connectivity is able to be maintained in many active travel developments, aiding in mitigating biodiversity damage. It is unlikely that the route will damage heritage assets in the area, particularly due to the nature of the route, however the development may impact upon the setting of any heritage asset located in close proximity.

Uncertain effects are also identified for SA10 (investment and growth) and SA14 (landscape and townscape) as it is currently unclear whether the development of this network will encourage investment in Norwich, and the surrounding area through improved connectivity. Similarly, the development may negatively effect landscape and townscape during its construction, however, the development may positively contribute to placemaking, improving the current cycle networks and improving local settings.

Table B37 – The Green Loop Alternative 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	-

If the Green Loop active travel network is not developed, then there are likely negative effects anticipated for SA1 (air quality) SA3 (carbon emissions), SA5 (climate change) and SA15 (noise) as a result of the inadequacies of the current network maintaining private car usage around Norwich. Similarly, the inadequacies of the current network, especially for disabled users, results in negative effects upon SA6 (quality of life and safety), SA7 (inclusion and equality) and SA8 (access and economy).

Active travel also present opportunities for healthy lifestyles – people are much more likely to use active travel if they are safe routes on which to travel on. Not bringing forward the Green Loop may result in missed opportunities to grow the county's active travel network and support healthy lifestyles. This has therefore resulted in minor negative effects on SA13 (health and wellbeing). The absence of a developed active travel route may also result in increased accidents both on the current routes (that require upgrading) and on roads as a result of increased traffic, which has resulted in minor negative effects on SA12 (accidents).

Up-and-coming projects in local authority control

North Walsham Link Road

The new North Norfolk Local Plan is proposing a large mixed-use development to the west of North Walsham. The proposed development will deliver 1800 new homes, including affordable housing and elderly care. In order to support development, the North Walsham West Link Road is proposed, which will link Norwich Road across to Cromer Road and into the industrial estate via Bradfield Road.

This new road will be a single carriageway and will be the main street through the development suitable for all modes of transport including safe walking and cycling, buses and Heavy Goods Vehicles. It will be subject to a detailed design approach which ensures it is an attractive street which is part of the new community rather than a trunk or through route to elsewhere. Traffic speeds will be managed and regular safe crossing points provided. This new link will enable the reduction of HGV traffic from adjacent residential areas.

Table B38 – North Walsham Link Road

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 North Walsham Link Road (NWLR) is crucial in supporting the new development west of North Walsham. The road will provide segregated walking and cycle paths that will link to the off road cycling and walking routes throughout the new development. This is likely to help support the new community access employment, recreation, services and facilities, in North Walsham and beyond. This has therefore resulted in significant positive effects on SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

It is expected that the new development will be served off the Western Link Road, which will help to reduce levels of through traffic away from existing residential streets such as Millfield Road, Station Road and Aylsham Road. This has the potential to help to reduce levels of congestion and potentially reduce carbon emissions, improve air quality and noise pollution within these areas, however, these may increase along the new link road. The integration of infrastructure to support active travel may, however, help to reduce the reliance upon private vehicles. Both positive and negative effects have therefore been identified for SA1 (air quality) and SA15 (noise). Uncertain effects have been identified for carbon emissions, as development is likely to have embodied carbon, however, this may be dependent upon the design and the resources and materials used.

The provision of segregated active travel routes to the town centre and other key services such as the rail station, Millfield School and Victory Centre are likely to help support healthier lifestyles. This may help to improve safety and reduce the number of accidents. Segregated paths will also help to improve safety and reduce fear and intimidation from motorised vehicles. This has therefore resulted in significant positive effects on SA6 (quality and safety), SA12 (accidents) and SA13 (health and wellbeing).

The NWLR will provide safe crossing points and provide a solution for crossing the Weavers Way long distance path. Bring development closer to this path may help encourage residents to use the Weavers Way and get out and explore more of the County's countryside and increase levels of appreciation for Norfolk's unique landscape. However, development could detract from this route and reduce levels of tranquillity. There are no listed heritage assets, however, there may be undesignated assets and unknown archaeological remains that may be negatively affected by the proposed scheme. The development of NWLR will most likely require components such as street fixtures, lighting, furniture, signage, and maintenance equipment, that can also have a major visual impact, detracting from townscape, heritage assets and their unique setting, if designed inappropriately. Uncertain effects have however been identified for these objectives, as effects will be determined by scheme level design.

The proposed NWLR is located approximately 1km east of Bryant's Heath, Felmingham SSSI, which is in an unfavourable and declining condition. Northern parts of the proposed scheme are also located adjacent to areas of Deciduous Woodland priority habitat. Both of these habitats could be negatively affected by the NWLR during both construction and operation, due to increased levels of noise and disturbance. Due to the lack of detailed scheme level design, uncertain effects have been identified as design may take these habitats into consideration and could work towards biodiversity net gain.

The NWLR is also proposed in areas of grade 2 agricultural land which is classed as 'very good' and represents some of the best and most versatile agricultural land nationally. This has therefore resulted in significant negative effects on SA4 (water, soils and minerals) as it is likely that this land will be lost permanently to development.

Table B39 - North Walsham Link Road Alternative 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	?

The NWLR is essential to the west of North Walsham development. Without the provision of this road, there is potential for this development to be reduced in size or more significantly scrapped altogether. This development presents an opportunity for significant investment in the area as well as the provision of housing, employment opportunities, social care and educational services. This has therefore resulted in significant negative effects on SA10 (investment and growth). Minor negative effects have also been identified for SA7 (inclusion and equality), SA8 (access and economy), SA11 (access to jobs) and SA13 (health and wellbeing). Although, not building NWLR won't reduce the number of facilities currently supporting the community, there may not be the capacity for North Walsham to support future population growth and their demands.

Not building NWLR could help to preserve the existing land and ensure the preservation of the some of the county's best and most versatile agricultural land. However, it is not clear whether the west of North Walsham development will still come forward in the area without the NWLR. This housing and employment development is likely t also result in significant land take and potential loss of agricultural land. Uncertain effects have therefore been identified in relation to on SA4 (water, soils and minerals).

It was expected that the new west of North Walsham development would be served off the NWLR; helping to reduce levels of through traffic away from existing residential streets such as Millfield Road, Station Road and Aylsham Road. Without NWLR

there is potential for levels of traffic to continue to worsen in these areas, contributing further to poor noise and air pollution. Without new infrastructure to support active travel, the reliance upon private vehicles may also increase. As it is not clear whether any part of the development would still go ahead without the link road, uncertain effects have been identified. New development could still come forward west of North Walsham which without the appropriate transport infrastructure to support it, could place resident further away from facilities and increase further dependence upon private vehicles. Uncertain effects have therefore been identified in relation to SA1 (air quality), SA3 (carbon emissions) and SA15 (noise).

Longwater Additional Access

Table B40 – Longwater Additional Access

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	+/-

Providing additional access to Longwater Employment Areas is likely to help to reduce levels of current congestion and reduce journey times. This is likely to decrease levels of driver stress and help improve access to employment. This has resulted in minor positive effects on SA8 (access and economy) and SA11 (access to jobs).

Junction improvements may also help to improve safety and reduce the number of accidents at the junction; however, this will be dependent upon scheme level design. This has therefore resulted in uncertain effects on SA6 (quality and safety) and SA12 (accidents).

Reducing traffic demand at Longwater Interchange through creation of an alternative access to the Longwater Employment Area, will help to reduce levels of congestion and could help to reduce carbon emissions and improve levels of noise and air pollution. However, the scheme still supports the use of private vehicles which contribute to the decline in noise and air

pollution. Both positive and negative effects have therefore been identified for SA1 (air quality), SA3 (carbon emissions) and SA15 (noise). As noise and air pollution can have detrimental effects on human health, uncertain effects have also been identified in relation to SA13 (health and wellbeing).

Table B41 – Longwater Additional Access Alternative

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	-

Without improvements to Longwater Interchange, current levels of congestion are likely to continue and with population growth and a growing number of cars on the roads, this problem is likely to worsen over time. A no scheme alternative is likely to contribute to the decline in noise and air pollution at the interchange and the surrounding area, resulting in negative effects on for SA1 (air quality), SA3 (carbon emissions) and SA15 (noise).

Increased traffic demand could lead to increased journey times and levels of driver frustration, particularly those trying to access Longwater Employment Area. This has resulted in minor negative effects on SA8 (access and economy) and SA11 (access to jobs). Increased levels of congestion may also negatively affect those populations living close to the interchange particularly those living south of the junction. This includes increased levels of noise and air pollution which can have detrimental effects on human health and the quality of where they live. Minor negative effects have therefore been identified in relation to SA6 (quality and safety) and SA13 (health and wellbeing).

A149 King's Lynn Bypass

The New Norfolk Local Plan is proposing the dualling of the A149 King's Lynn Bypass between the A47 and A148 junctions, with a package of complementary measures within the King's Lynn itself, although these are currently unidentified. Dualling of the route will help to reduce congestion and delays that are currently experienced.

The proposed scheme will also include measures to facilitate and improve public transport and active travel modes of walking and cycling within the area. The development of public transport and active transport on the A149 King's Lynn Bypass will also provide an opportunity to bring forward a complementary package of public transport and active travel modes within the town of King's Lynn.

Table B42 – A149 King's Lynn Bypass

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)
+/-	- -	+/-	?	?	++	+	++	?	++	++	+	++	?	+/-

Dualling of the A149 King's Lynn Bypass between the A47 and A148 junctions will help to improve access and capacity, which will help the road network to cope with the current high traffic numbers, which cause extensive queues and delays. As this route includes access to the Queen Elizabeth Hospital King's Lynn, improved connectivity may also provide new opportunities for both employment and healthcare access. Improving access to King's Lynn may also attract more businesses into the region, supporting further economic growth, employment opportunities and ensure a strong and sustainable local economy, especially by improving access and journey times to and from the King's Lynn Port. Therefore, significant positive effects have been identified for SA8 (access and economy), SA10 (investment and growth), SA11 (access to jobs) and SA13 (health and wellbeing).

By improving the flow of traffic, and reducing the significant congestion in the area, people are likely to be less stressed while using the road network and the number of traffic related accidents are likely to decrease, especially involving vehicles overtaking. Therefore, significant positive effects have been identified for SA6 (quality of life and safety) and minor positive effects for SA12 (Accidents).

Reduction in congestion will also help to improve local air quality and carbon emissions. However, improving the road network may encourage the use of private transport therefore both positive and negative effects have been identified for SA1 (air quality), SA3 (carbon emissions) and SA15 (noise). Positive effects on these objectives will arise from the incorporation of sustainable transport modes as part of this scheme, although the incorporation of these provisions are currently unclear. However, construction works associated with dualling the A149 carries high levels of embodied carbon (carbon associated with construction and materials) that will negatively affect upon SA3 (carbon emissions) and SA5 (climate change).

Dualling of the A149 between the A47 and A148 will require the use of finite resources and will be developed in a predominantly urban and brownfield landscape, however, the development of dualling may alter the current townscape, although this is likely to be minimal. Land take will also be required; however, the land identified for development is urban and predominantly grade 4 so any damage is unlikely to have a significant negative effect on agricultural land. However, opportunities may arise, where practical, for works to reuse existing materials, infrastructure that is ready for future challenges of climate change and mitigation against visual impacts. Therefore, uncertain effects have been identified for SA4 (soils and minerals), SA5 (climate change) and SA14 (landscape and townscape).

Uncertain effects have also been identified for SA2 (biodiversity), SA9 (historic environment), and SA15 (noise). Habitats and species (such as ancient woodland), as well as historic assets (such as scheduled monuments), may be disturbed during the construction and operation of this scheme, especially as there are areas of ancient woodland, and a scheduled monument located close to the A149. Due to the requirement of land take, the dualling of the A149 between the A47 and A148 may lead to direct habitat loss and fragmentation, which has resulted in significant negative effects on SA2 (biodiversity) However, opportunities may arise for biodiversity net gain and methods for any loss to be mitigated against.

Table B43 - A149 King's Lynn Bypass Alternative 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	?

The A149 King's Lynn Bypass between the A47 and A148 supports future population, and housing growth in the South East King's Lynn Growth Area (SEKLGA) by improving the capacity and connectivity of the road network. Therefore, not taking forward the dualling of the A149 between the A47 and A148 may lead to Norfolk missing out on opportunities for new economic markets and a chance for businesses to grow, especially as this is one of the key economic hubs within the region, supporting economic growth and a strong sustainable local economy. The town may also become less attractive to investors if developments do not have the appropriate infrastructure to support them. Not building this schemes, and associated policy within the town would also result in missed opportunities for substantial employment during construction and operation. This has therefore resulted in negative effects on SA8 (access and economy) and SA10 (investment and growth).

Not taking forward the A149 King's Lynn Bypass between the A47 and A148 could exacerbate existing issues of congestion and traffic along this route, with approximately 38,000 vehicles a day utilising this road network. Therefore, making it harder for residents to travel to work, services (particularly the Queen Elizabeth Hospital King's Lynn) and facilities and increasing stress levels. Therefore, minor negative effects have also been identified for SA7 (inclusion and equality), SA11 (access to jobs), and SA13 (health and wellbeing). It is also anticipated that traffic and congestion will negatively effect upon SA6 (quality of life and safety). Similarly, as a result of high levels of congestion and traffic, negative effects have been identified for SA1 (air quality), and SA5 (climate change)

Uncertain effects have been identified for SA15 (noise) and SA3 (carbon emissions) as the A149 King's Lynn Bypass between the A47 and A148 not being taking forward may lead to higher levels of traffic noise in the area, however, as the existing noise

level is high as a result of congestion, the increase in noise level is unknown. Similarly, as carbon emissions for the area are already high as a result of the traffic and congestion, it is unclear as to whether levels will rise if the A149 King's Lynn Bypass is not dualled, or if levels will remain consistent with current levels.

Up-and-coming projects not in local authority control

Trowse Rail Bridge

The Trowse Rail Bridge project put forward within the new Local Transport Plan for Norfolk proposes double-tracking of the current line across the River Yare. The double-tracking at this site is currently undetermined, however it is likely to be achieved by construction of a new bridge alongside the existing swing bridge at the site (with each of the two bridges carrying a single line), or by construction of a new bridge with two lines. If the former option were to be chosen, it would likely mean that the bridge would no longer open to allow larger vessels to pass underneath.

Table B44 – Trowse Rail Bridge

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	++	++	+	+	+/-	?

Double-tracking of Trowse Rail Bridge is likely to have both positive and negative effects upon SA1 (air quality), SA3 (carbon emissions) and SA5 (climate change). There are likely to be positive effects on these objective as double-tracking this rail line will improve the capacity, efficiency and speed of the rail network coming in and out of Norwich. Improvements to speed and efficiency of the rail network will encourage a modal shift away from private car use and towards public transport, therefore reducing road related carbon emissions and contributing to improved air quality. However, the construction associated with this scheme carries high amounts of embodied carbon, which may negatively contribute (particularly during the construction phase) to air quality, carbon emissions and climate change.

Similarly, there are also mixed effects upon SA14 (landscape and townscape) as a result of Trowse Rail Bridge. There are likely positive effects as a result of this scheme as the improvement of the current rail bridge is likely to minimise the current

congestion on the line, and contribute to positive placemaking, removing nuisances. However, the development of either a single or double track new bridge will alter the townscape of Norwich, with construction carrying potential temporary negative effects.

Improvements to the efficiency and capacity of the Trowse Rail Bridge will encourage further investment into Norwich, particularly into the city centre. This bridge provides links from the south of the county into Norwich, improvements will therefore, improve access to jobs, through increased journey reliability and improved access into Norwich through public transport. Construction of this scheme will also provide significant opportunity for jobs both during the construction and design phases of the project. Significant positive effects are therefore identified for SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs).

The Trowse Rail Bridge scheme is likely to result in minor positive effects upon SA6 (quality of life and safety), SA7 (inclusion and equality), SA12 (accidents) and SA13 (health and wellbeing). Positive effects upon these SA objectives are attributed to the development of the line, and improvements in rail speeds reducing journey stress as a result of rail delays. Similarly, these improvements will therefore improve health, through increased opportunities, access and improvements in air quality. The improvement to the rail network in this area is also assumed to be constructed in line with safety requirements, improving safety and reducing the likelihood of accidents. Encouraging a modal shift away from private car use will also aid in reducing road traffic accidents due to reduced traffic numbers.

Due to the uncertainties in relation to the nature of the scheme, whether it is one single lane bridge or a double lane bridge, uncertain effects have been identified for SA2 (biodiversity/geodiversity), SA4 (water, soils and minerals), and SA15 (noise). Any construction is likely to disturb biodiversity in the area, particularly marine biodiversity, however there are no identified statutory sites within close proximity of the site. Construction is likely to negatively effect upon water and soils through increasing pollution pathways, however the scale of this is undetermined as the site is located upon urban land. Noise effects are likely to be negative during construction, and it is unclear as to how improvements to capacity may improve current rail noise in the area.

Table B45 – Trowse Rail Bridge Alternative 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	-

The double-tracking of Trowse Rail Bridge supports developments to rail infrastructure in the region, improving the efficiency and capacity of the network. Therefore, not taking forward this option is likely to result in negative effects upon SA8 (access and economy), SA10 (investment and growth) and SA11 (access to jobs) due to the current restrictions on the line's capacity and speed.

Not taking forward the double-tracking of Trowse Rail Bridge has resulted in minor negative effects upon SA1 (air quality) and SA3 (carbon emissions)as not upgrading the existing rail bridge is likely to maintain high levels of private car use, as public transport into Norwich is a slower transport mode. Existing air quality issues at this pinch pin are also likely to continue. Current restrictions to the network also result in negative effects upon SA15 (noise) as a high number of trains utilise the existing bridge.

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