Norfolk County Council

NORWICH WESTERN LINK

Outline Business Case

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70041922-WSP-OBC
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PUBLIC

Norfolk County Council

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CONTENTS

TABLES

FIGURES

APPENDICES

Appendix 1A – Sustainable Transport Strategy
Appendix 2A – Letters of Support
Appendix 2B – OAR Addendum
Appendix 3A – DfT Cost Proforma
Appendix 3B – PA Table
Appendix 3C – Economic Narrative
Appendix 3D – AST
Appendix 6A – Detailed Programme
Appendix 6B – Action Plan Review

GLOSSARY

Acronym	Meaning
AADT	Annual Average Daily Traffic
AMCB	Analysis of Monetised Costs and Benefits
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
ARN	Affected Road Network
ATC	Automatic Traffic Count
BCR	Benefit to Cost Ratio
CEMP	Construction Environmental Management Plan
CIRIA	Construction Industry Research and Information Association
CDM	Construction Design and Management
CO_2	Carbon Dioxide
CPO	Compulsory Purchase Order
CWS	County Wildlife Site
DBA	Desk Based Assessment
DfT	Department for Transport
DIADEM	Dynamic Integrated Assignment and Demand Model
DMRB	Design Manual for Roads and Bridges
EAST	Early Assessment and Sifting Tool
EA	Environment Agency
ECC	Engineering Construction Contract
ECI	Early Contractor Involvement
EHV	Extra High Voltage
EIA	Environmental Impact Assessment
ES	Environmental Statement
FBC	Full Business Case

Acronym	Meaning
FEZ	Food Enterprise Zone
GDP	Gross Domestic Product
GEH	Geoffrey E. Havers
GNDP	Greater Norwich Development Partnership
GVA	Gross Value Added
HER	Heritage Environment Record
HGV	Heavy Goods Vehicle
HRA	Habitats Regulations Assessment
HSE	Health and Safety Executive
ICT	Information and Communications Technology
IMD	Indices of Multiple Deprivation
ITS	Integrated Transport Strategy
JCS	Joint Core Strategy
JTV	Journey Time Variability
KSI	Killed or Seriously Injured
LDO	Local Development Order
LEP	Local Enterprise Partnership
LEZ	Low Emission Zone
LGV	Light Goods Vehicle
LIDAR	Light Detection and Ranging
LLG	Local Liaison Group
LLM	Large Local Majors
LMVR	Local Model Validation Report
LNR	Local Nature Reserve
LPA	Local Planning Authority
LSOA	Lower Super Output Area
LTB	Local Transport Board

Acronym	Meaning
LTP	Local Transport Plan
MCC	Manual Classified Count
MRN	Major Road Network
MWG	Member Working Group
NATS	Norwich Area Transport Strategy
NCA	National Character Area
NCC	Norfolk County Council
NCN1	National Cycle Network Route 1
NDR	Northern Distributor Road *(now named A1270 Broadland Northway)*
NIA	Noise Important Area
NIS	National Institute of Statistics
NMU	Non-Motorised User
NNUH	Norfolk and Norwich University Hospital
NO_2	Nitrogen Dioxide
NPPF	National Planning Policy Framework
NPV	Net Present Value
NRP	Norwich Research Park
NRTF	National Road Traffic Forecasts
NSES	Norfolk and Suffolk Economic Strategy
NSIP	Nationally Significant Infrastructure Project
NTEM	National Trip End Model
NVQ	National Vocational Qualification
NWL	Norwich Western Link
NWQ	Norwich Western Quadrant
OAN	Objectively Assessed Need
OAR	Option Assessment Report
OBC	Outline Business Case

Acronym	Meaning
OGV	Ordinary Goods Vehicle
OJEU	Office Journal of the European Union
ONS	Office for National Statistics
PCU	Passenger Car Unit
PIA	Personal Injury Accident
PICS	Personal Injury Collisions
PRA	Preferred Route Announcement
PRoW	Public Rights of Way
PVB	Present Value of Benefit
PVC	Present Value of Costs
QRA	Quantified Risk Assessment
RIS	Road Investment Strategy
RNR	Roadside Nature Reserve
SAC	Special Area of Conservation
SATURN	Simulation and Assignment of Traffic to Urban Road Networks
SERTM	South East Regional Transport Model
SHMA	Strategic Housing Market Assessment
SOBC	Strategic Outline Business Case
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
STS	Sustainable Transport Strategy
SuDS	Sustainable Drainage System
TBM	Tunnel Boring Machine
TCF	Transforming Cities Fund
TCPA	Town and Country Planning Act
TEE	Transport Economic Efficiency
TEMPro	Trip End Model Presentation Program

Acronym	Meaning
TEN-T	Trans-European Transport Network
TfN	Transport for Norwich
TIS	Transport Investment Strategy
TUBA	Transport User Benefit Appraisal
TTV	Travel Time Variability
UEA	University of East Anglia
VfM	Value for Money
VOC	Vehicle Operating Costs
VoT	Values of Time
WebTAG	Transport Analysis Guidance
WebTRIS	Highways England Traffic Information System
WFD	Water Framework Directive

EXECUTIVE SUMMARY

This Outline Business Case has been prepared on behalf of Norfolk County Council (NCC), for consideration by the Department for Transport (DfT).

BACKGROUND

Despite improvements being made to Norfolk's road network in recent years, plans to link the A1270 from its junction with the A1067 to the A47 near Honingham have not yet been progressed. This has resulted in a lack of strategic north-south and orbital connectivity, with only the A140 (outer ring road) and relatively few low-standard rural local access roads linking the two. The physical and environmental challenges that the area presents have left this area without a primary A-Road standard route to cater for demand of over 45,000 journeys per day.

Communities including Weston Longville, Hockering, Ringland, Costessey, and Taverham experience rat-running and inappropriate traffic, resulting in severance in these areas, directly impacting the quality of life of local residents from an environmental and safety perspective.

Strategic employment sites to the north and west of Norwich have inadequate connectivity, increasing congestion, journey times, reducing productivity for businesses, and limiting their potential for targeted growth in future years.

This need for improved connectivity around the western side of Norwich has been identified by a range of local partners including New Anglia LEP, Norwich City Council, Broadland, South Norfolk, Breckland and North Norfolk district councils, the Norfolk and Norwich University Hospital, the Norwich Research Park and Norwich International Airport. This is underscored by continued local interest. Public consultations in 2018 and 2019 attracted over 4,000 responses, with 77% of respondents expressing a preference for the development of a new road between the A1270 and the A47.

Norfolk's recovery and growth ambitions, which support the Government's wider support for levelling up economic centres outside of London, require a transport network that is future-proofed. The NWL will increase capacity around Tier One Employment Sites identified as part of Norfolk's Strategic Planning Framework, which lists the scheme as a priority project. In addition, communities' sense of place will be enhanced by the NWL, with rat-running, inappropriate traffic, and the resulting severance being alleviated.

The case for the NWL is not only about relieving congestion in a small area. Unlocking orbital connectivity to the west of Norwich will strengthen the resilience of the network, improve the quality of life for locals and visitors, and prepare Norfolk for years of future growth.

THE NORWICH WESTERN LINK

From July 2018 to November 2018 an optioneering and appraisal process was carried out to identify and assess options. A long list of 82 options was identified across a range of modes and assessed using the DfT's Early Assessment Sifting Tool. A shortlist of four highway and 10 non-highway options, including sustainable transport interventions, were taken forward for further consideration. A preferred route was announced in July 2019.

The Norwich Western Link will comprise a new dual carriageway all-purpose road to the west of Norwich, from the A47 to the A1067/A1270, including a new viaduct bridge over the River Wensum and its floodplain. The scheme will provide a direct connection between the Strategic Road Network and the A1270 through the west of Norwich. This will complete an orbital route around Norwich, which forms part of the Major Road Network.

The scheme is comprised of:

- A dual carriageway road, including a viaduct over the River Wensum and associated floodplain
- A connection to a new "grade separated" junction with the A47
- An "at grade" junction with the A1067
- Dualling of a section of the existing A1067 between the proposed NWL roundabout and existing A1270 roundabout
- A bridge carrying the NWL over Ringland Lane
- New pedestrian crossing points, green bridges and bat underpasses where deemed to be required
- A wider network of walking and cycling-friendly route options, as per the Sustainable Transport Strategy
- Diversion and extension of existing Public Rights of Way and field paths to create a coherent joined up network
- Surface water drainage – principally infiltration basins, sediment forebays and associated carrier drains/ channels.

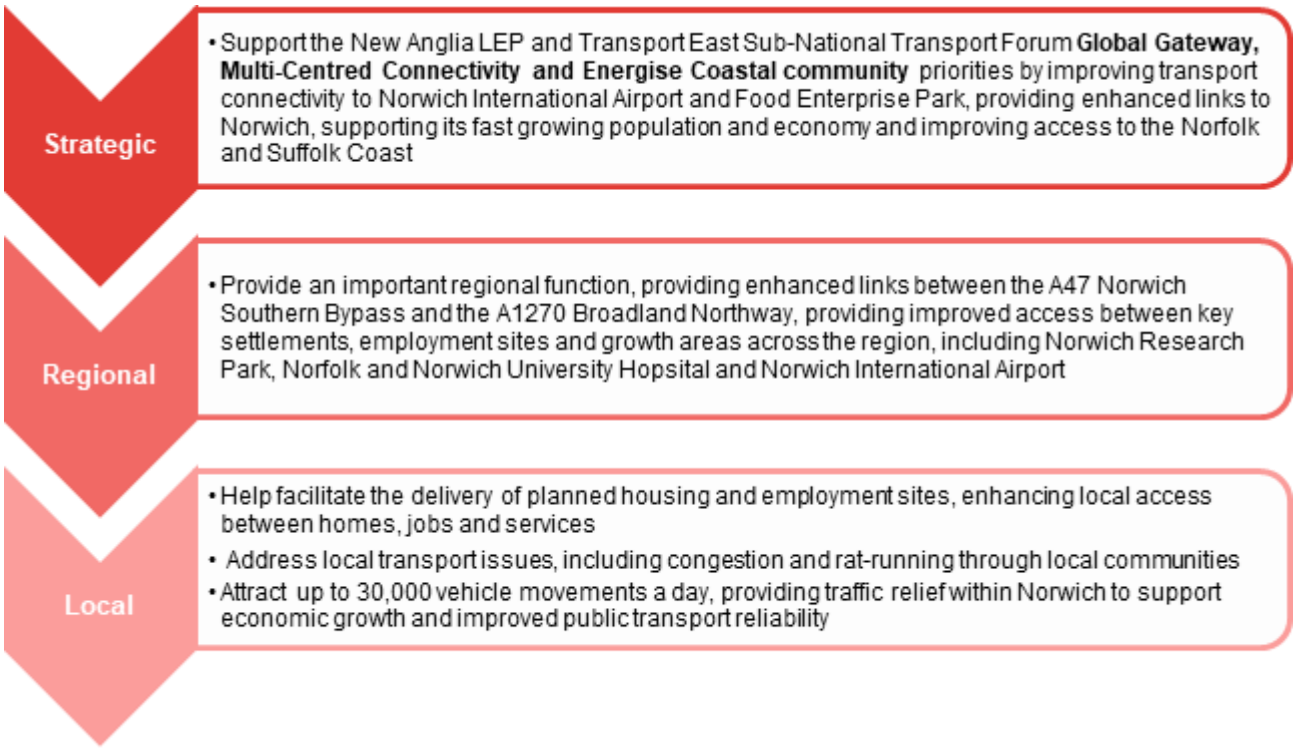
The scheme also includes landscaping, planting, ancillary works, and significant environmental mitigation work. Environmental net gain and biodiversity net gain measures are also considered as part of the NWL design philosophy.

Closely aligned with national, regional and local policies and plans, the NWL contributes to the Government's goal of levelling up communities, both on a national scale, and within Norfolk. It is designed to close the gap in the orbital network, strengthen the surrounding routes, and safeguard the network from increased congestion future growth will bring.

The cost of the scheme preparation and construction, excluding inflation, client costs and non-recoverable VAT is £140.77m. The scheme outturn cost will be £198.39m, including risk and inflation. It will be funded through a combination of government funding (85%) and a local contribution of (15%).

The scheme offers High value for money, with the initial monetised benefits of the scheme (£310.79m) being greater than the monetised costs of the scheme (£127.13m). The resulting initial benefit-cost ratio is 2.4. The adjusted monetised benefits of the scheme total £434.55m. The adjusted benefit-cost ratio is therefore 3.4, which remains within the High category.

Norfolk will benefit from improved access to Norwich, the primary economic centre for the wider sub-region, and to the wider western area. This will facilitate the delivery of new and expanded business sites. Quicker more reliable journeys will reduce business costs, increase labour market catchments, improve access to key strategic growth sites and support the visitor economy. This will also help support the delivery of new and existing housing sites.



The NWL scheme is commercially viable and is employing a robust contracting and procurement strategy. This has already included the use of the OJEU 'competitive dialogue procedure' procurement route, a two-stage design and build contract, with early contractor involvement, and the use of NEC4 Engineering and Construction contracts, with different options utilised, as appropriate for the different stages of work.

A robust set of processes either are in place or are being put in place to ensure that the project is effectively delivered, and properly evaluated. Subject to funding approval, the NWL is planned to be open to traffic in 2025.

In summary, the scheme is financially affordable, commercially viable, and offers high Value for Money and benefits to people, place and businesses at a local, regional, and strategic level.

1

INTRODUCTION

1 INTRODUCTION

1.1 OVERVIEW

1.1.1. This Outline Business Case (OBC) for the Norwich Western Link scheme (NWL; the scheme) has been prepared on behalf of Norfolk County Council (NCC) for consideration by the Department for Transport (DfT).

1.1.2. The content and preparation of the business case adheres to published DfT guidance, including the most up to date transport appraisal guidance (TAG) and Value for Money framework.

1.1.3. It updates and builds on the Strategic Outline Business Case submission, which was approved in May 2020. The business case demonstrates that the proposed scheme is based on analysis of the current situation, a clear vision of how things should be in the future, a careful consideration of options, a robust appraisal of costs and benefits, and a clear plan for delivering the scheme.

1.2 LOCATION OF THE SCHEME

1.2.1. The NWL scheme is located north-west of Norwich, in the Norwich Western Quadrant (NWQ) illustrated in **Figure 1-1**. The broad study area includes the key routes of the proposed dual carriageway section of the A47, the A1074 (Dereham Road), the A1270 (Broadland Northway), the A140, and the A1067 (Fakenham Road / Drayton Road).

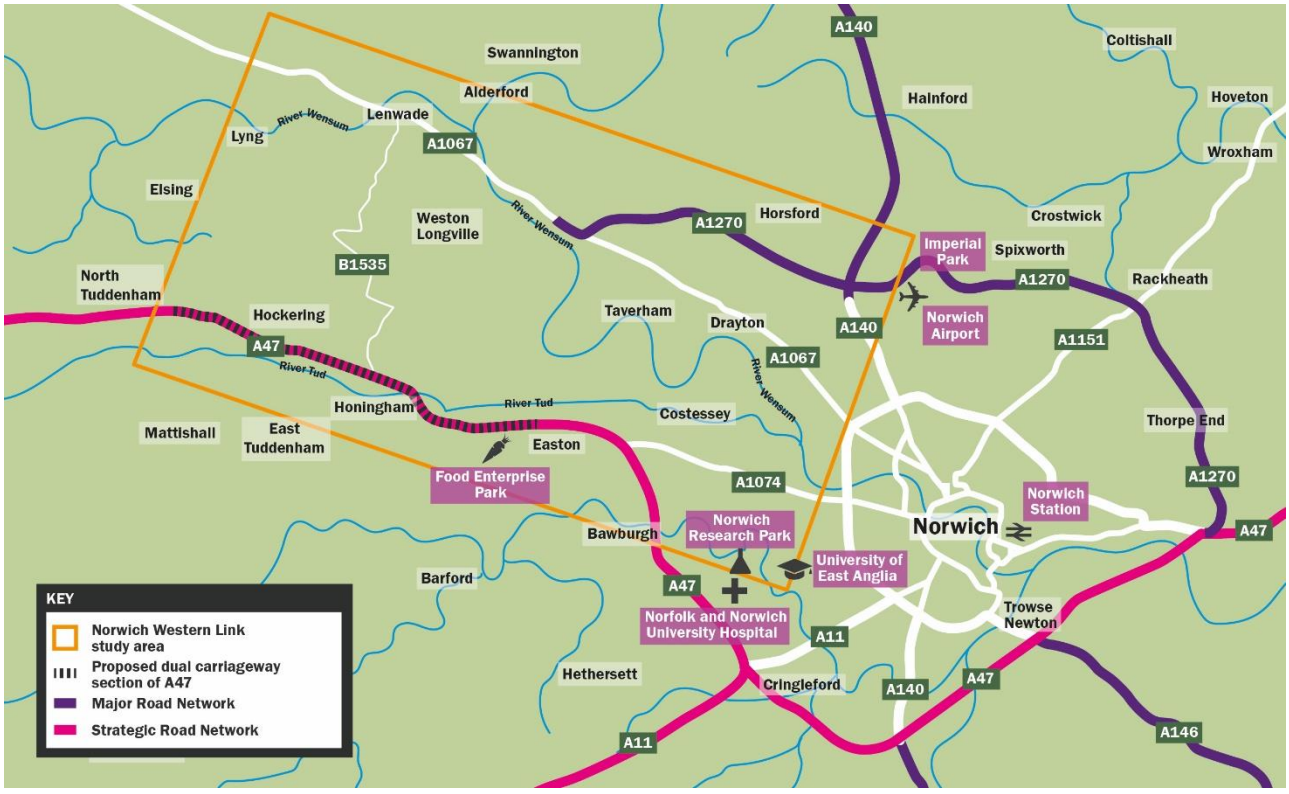


Figure 1-1 - NWL Study Area

1.2.2. The study area is bounded to the south by the A47, part of the Strategic Road Network (SRN). It provides a link from Lowestoft and Great Yarmouth in the east, via Norwich towards King's Lynn,

Peterborough and the A1. The A47 is to be dualled by Highways England between North Tuddenham and Easton; this will provide a continuous dual carriageway from Dereham to Acle.

1.2.3. Just outside of the study area to the south-east, the A47 connects with the A11, a continuous dual carriageway from Norwich to Cambridge and provides connections to London via the M11.

1.2.4. The A1270 (Broadland Northway) is located to the north. This is part of the Major Road Network (MRN), which forms a middle tier of the country's busiest and most economically important local authority 'A' roads, sitting between the national SRN and the rest of the local road network.

1.3 THE NEED FOR THE NWL

1.3.1. Despite improvements being made to Norfolk's road network in recent years, plans to link the A1270 from its junction with the A1067 to the A47 near Honingham have not yet been progressed. This has resulted in a lack of strategic north-south and orbital connectivity, with only the A140 (outer ring road) and a relatively few low-standard rural local access roads linking the two.

1.3.2. Strategic employment sites to the north and west of Norwich, including Norwich Airport, have inadequate connectivity, increasing congestion, journey times, reducing productivity for businesses, and limiting their potential for targeted growth in future years.

1.3.3. Communities including Weston Longville, Hockering, Ringland, Costessey, and Taverham experience rat-running and inappropriate traffic, resulting in severance in these areas, directly impacting the quality of life of local residents from an environmental and safety perspective.

1.3.4. Norfolk was hit hard by the Covid-19 pandemic. Oxford Economics and the Institute of Chartered Accountants in England and Wales (ICAEW)[1] have worked together to assess the impact of Coronavirus on growth forecasts in different regions. Between December 2019 and May 2020 forecasts, 2025 GVA forecasts for the East of England dropped by 2%, with the region's reliance on manufacturing, public sector and tourism jobs underscoring the challenges brought on by the pandemic.

1.3.5. This makes Norfolk's plans for both post-pandemic recovery and economic development ambitious, but all the more badly needed. Over the next decade, it aims to have 57,000 new jobs, many of which are expected to be located in its Tier One Employment Sites (see **Figure 1-2**). Tourism remains a core component of regeneration, with the promotion of the visitor economy part of the medium-term recovery efforts in Broadland and South Norfolk. Levelling up takes on an increased importance within those regions hit hardest by the pandemic, both in terms of driving economic growth, and the wider benefits it will bring to deprived communities.

1.3.6. The NWL will also support existing businesses and unlock opportunities for economic growth in Norwich by reducing traffic movements in and around the city. The NWL is expected to reduce through movements from the outer ring road, freeing up capacity to better accommodate planned housing and employment growth, improve public transport journey times and reliability and the

[1] www.icaew.com Coronavirus economic outlook: differences between regions

conditions for active travel. The sustainable travel proposals fit with the aspirations of Transport for Norwich (TfN), which seeks a mode shift away from private cars and improvement in air quality, including the geographical linkage where the NWL and TfN interface at the western fringe of Norwich. This offers an integrated approach which offers good synergy with wider sustainable transport proposals across Norwich.

1.3.7. Strategic road connectivity around northwest Norfolk is vital in achieving that growth and recovery. The Norwich Western Link is designed to close the gap in the orbital network, strengthen the resilience of the surrounding routes, and provide better quality routes to the employment opportunities presented by more diverse development.

1.4 BACKGROUND

1.4.1. Ambitious transport plans for Norwich are being developed and delivered as part of Transport for Norwich (TfN, see **sections 2.2.120 to 2.2.124** for detail). Planned interventions aim to manage traffic levels, increase the capacity of the road network, and encourage sustainable modes of transport.

1.4.2. The NWL is designed to connect the A1270 (referred to during its development as the Northern Distributor Road) from the A1067 to the A47 west of Norwich and improve journeys between these two major A-roads, in the surrounding area, and for onward travel.

1.4.3. In 2003, public consultation on the revised Norwich Area Transportation Strategy (NATS) showed strong support for transport improvements to the north and west area of Norwich.

1.4.4. The revised NATS was agreed in 2004, which included a provision for a Northern Distributor Road (NDR), with the aim of reducing the impact of high traffic volumes and congestion in Norwich. Further consultation was undertaken on a variety of NDR route options throughout 2004 and 2005, before the adoption of a preferred route in September 2005. The NDR (now the A1270) opened in 2018.

1.4.5. Early plans to link the A47 (west) to the A47 (east) via the proposed NDR, which included a link between the A1067 and A47 (west), were not progressed. This was, in part, due to the added complexity related to the environmental challenge of crossing the River Wensum with its status as a Special Area of Conservation (SAC). Since 2017, further discussions have since been held with Natural England and the Environment Agency regarding the type and positioning of the proposed viaduct for crossing the River Wensum. Such a viaduct with sufficient clearance over the River Wensum and its flood plain is anticipated not to affect the integrity of the SAC and is a feature of the current NWL proposals.

1.4.6. In 2005, the Council's Cabinet agreed that the objectives of the wider Norwich Area Transport Strategy (NATS) – now known as the Transport for Norwich delivery plan – could still be delivered without the link to the A47 (west). It was also acknowledged during the delivery of the A1270 that traffic and transport issues in the west of Norwich would need to be kept under review.

1.4.7. The emergence of the government's national Roads Investment Strategy (RIS1) in 2014 included in its first funding period (2015 to 2020) improvements to the A47 around Norwich. One of those projects was the dualling of the section from Easton to North Tuddenham. This occurred as the A1270 was moving to its construction phase, and further highlighted the notable gap in dual carriageway infrastructure around Norwich.

1.4.8. The A47 Alliance, a collective of businesses, local authorities, MPs and others from across the region, have also set out their ambition to see the entire A47 completed to dual carriageway standard from Lowestoft to the A1 at Peterborough, which will remove existing constraints on traffic movements to and from Norwich from the west. The funded improvements in RIS1, carried forward into RIS2, to the A47 have been planned since 2015 and, when delivered, would further exacerbate the traffic problems and issues already experienced in communities to the west of Norwich, unless adequate mitigatory measures are introduced. The County Council has therefore been working closely with Highways England to ensure that the A47 improvements are integrated with the measures that are part of the NWL proposals (see **section 2.10.6** for detail).

1.4.9. The traffic issues highlighted by communities have become more pronounced with the passage of time. The physical and environmental challenges that the area presents have left this area without a primary A-Road standard route to cater for demand of over 45,000 journeys per day. The emergence of the Food Enterprise Zone is also expected to drive future traffic growth. This area benefits from a Local Development Order, which will allow greater flexibility for new, business-related development within the site.

1.4.10. There is continued local interest in the provision of an NWL to ease traffic problems in the local area and enhance strategic connectivity. Over 4,000 comments were submitted as part of two public consultations in 2018 and 2019 to understand people's experience of living in, and travelling through, the area to the west of Norwich. Respondents perceived the roads in the area to be unsuitable for the current levels and type of traffic (1,395). Rat-running (1,103) and slow journey times (1,001) were frequently mentioned concerns. Key stakeholders have also been engaged with the scheme since 2017, with a Local Liaison Group and Member Working Group meeting bi-monthly.

1.4.11. These concerns are explored in **section 2.3**, which demonstrates how the small, often single-track rural roads are being congested with traffic. The type of traffic involved is also a concern: on the north-south routes that pass close to residential areas such as Taverham, Costessey, Lyng and Weston Longville, over 1,000 HGVs were observed in a 24-hour period.

1.4.12. A pre-feasibility study[2] was completed in June 2016, which reviewed previous work, including a scoping study[3] from 2014 that investigated potential NWL options, including both road and public transport options. A resulting series of actions to support the next stage of development were presented to NCC's Environment, Development and Transport Committee in July 2016.

1.4.13. The 2016 study concluded that further work was needed to develop a business case and set out a compelling case for the scheme. This included demonstrating that:

- There was a real problem to be solved

[2] Norwich Western Link Project Technical Report (Mouchel, June 2016)

[3] A47-A1067 Western Link Road Scoping Study (WSP, September 2014)

- There was a strategic alignment to policy
- The scheme formed part of a coherent wider strategy
- A full range of options had been considered, with the best scheme selected
- The scheme represented a high or very high value for money
- That the scheme was feasible and affordable

1.4.14. A further study[4], undertaken in October 2017, looked at mitigating the environmental impacts of crossing the River Wensum. Bridge (dual / single carriageway) and tunnel (dual / single carriageway) options were considered, with a viaduct option being taken forward for any new link road schemes that cross the River Wensum.

1.4.15. In 2018, NCC undertook a non-statutory public consultation to understand people's experience of living in and travelling through the area to the west of Norwich. A total of 4,426 website visitors were recorded, with 2,327 comments submitted.

1.4.16. A majority of respondents (64%) expressed a preference for the development of a new road between the A1270 and A47 in order to tackle the transport issues highlighted in the area (1,492 respondents). This option was selected by three times as many respondents as the next most popular option of improving the existing roads (473 respondents, 20%).77% of respondents either agreed or mostly agreed when asked to what extent they agreed there was a need for a Norwich Western Link.

1.4.17. From July 2018 to November 2018 an optioneering and appraisal process was carried out to identify and assess options. A long list of 82 options was identified across a range of modes and assessed using the DfT's Early Assessment Sifting Tool (EAST). The assessment areas are listed in **section 2.12.4**, and the process and outcomes detailed in the Option Assessment Report (OAR).

1.4.18. Four highway options and 10 non-highway options were shortlisted. The non-highway options, including sustainable transport interventions, were taken forward to be considered as part of a wider intervention package of measures in a Sustainable Transport Strategy (STS). The four highway options that scored highest against the appraisal criteria consisted of three new highway options and an existing highway upgrade option.

1.4.19. A second round of public consultation commenced on 26 November 2018, with a series of public events held in late 2018 and January 2019. This maximised the opportunity for local residents and affected stakeholders to participate, whilst avoiding conflict with the seasonal holidays.

1.4.20. In 2019, an Option Selection Report (OSR) was produced drawing together information relating to the shortlisted highway link options. It considered a wide range of engineering and environmental criteria, as well as feedback from the public consultation, and subsequently recommended a preferred option be taken forward.

1.4.21. Concurrently, a Strategic Outline Business Case (SOBC) was developed and submitted to Transport East as part of the Regional Evidence Base to inform the Transport East Transport Strategy.

[4] NWL Technical Report (WSP, October 2017)

Transport East assessed the NWL against other schemes in the area as part of a prioritisation process, and the SOBC was subsequently submitted to the DfT. Transport East continue to support the scheme as one of their prioritised large local major projects.

1.4.22. The SOBC was approved in May 2020, and the NWL was accepted for inclusion in the Major Road Network (MRN).

1.4.23. Further work has since been undertaken to determine what sustainable transport options would be delivered alongside the highway works. This includes improvements to the existing walking and cycling networks as well as the existing public transport provision. To aid this, an STS has been developed; proposed improvements were put forward at a Local Access public consultation, which ran from July to September 2020.

1.4.24. This included a Non-Motorised User Strategy for diversions and extensions of Public Rights of Way, side road closures to limit traffic within the immediate area around the NWL, wider sustainable transport interventions (cycle friendly route options and pedestrian/cycle crossing improvements) and options for a potential new bus service.

1.5 LOCAL CONTEXT

1.5.1. Norwich is the county city of Norfolk and a key regional centre in the East of England. It is approximately 185km north-east of London and occupies a strategically significant position within East Anglia. Norwich is one of the fastest growing cities in the UK. The work-day population of Norwich was estimated at just over 280,000 people in the 2011 census. The Office of National Statistics (ONS) estimates that this figure now likely exceeds 300,000. The percentage of residents aged between 16 and 64 is higher than both the East and Great Britain average.[5]. The Greater Norwich area (comprising the Norwich City Council, South Norfolk District Council and Broadland District Council areas) has a combined population of 408,600 (based on 2018 ONS data).

ECONOMIC CONTEXT

1.5.2. As of 2015, Norfolk's economy was valued at £18.6bn. It has grown faster than the non-London UK average since the recession, and, as of 2020, had an employment rate of 78.2% - almost 2% higher than England's average[6]. Norfolk aims to continue that growth, with 73,000 new homes, 57,000 jobs and 5,300 new businesses planned by 2026.

1.5.3. Tourism also remains a pivotal sector for spearheading future growth, supporting 65,398 jobs (18.4% of all employment) and contributing £3.2 billion to the local economy.[7]

1.5.4. In 2017, Norfolk's planning authorities collaborated to create the Norfolk Strategic Planning Framework (NSPF) – a set of shared spatial objectives for growing the county. This was updated in

[5] https://www.nomisweb.co.uk/reports/lmp/la/1946157237/printable.aspx

[6] ONS, Annual Population Survey, June 2020

[7] https://www.visitnorfolk.co.uk/Tourism-info-and-stats.aspx

December 2020 and is expected to be adopted shortly. The report[8] stresses that despite Norfolk's economic strengths, its dependence on lower wage, lower-skill sectors (e.g. food production, agriculture and tourism), and high concentrations of deprivation and hidden rural poverty, will pose serious challenges in the future.

1.5.5. To maintain a positive trajectory, the NSPF identifies a number of strategic employment sites that offer opportunities for inward investment and strategic growth. These are shown in **Figure 1-2**.

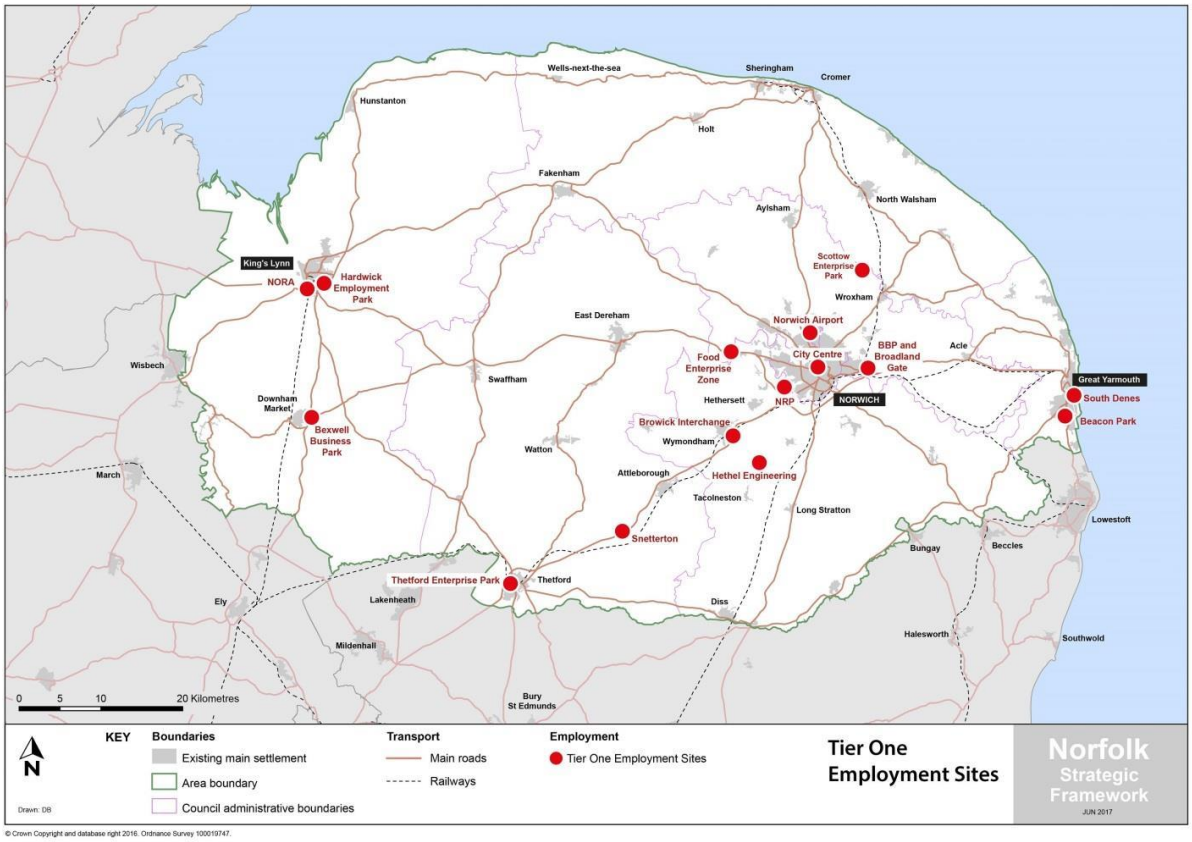


Figure 1-2 – Strategic (Tier One) Employment Sites, Norfolk

1.5.6. The Norwich Research Park (NRP), is accessed from the B1108 south of the A47/A1074 Longwater interchange. It currently employs 12,000 people in over 150 businesses and has an annual research budget of £130 million. It is home to a number of internationally renowned research facilities leading the world in plant and microbial sciences, environmental science, food, diet and health.

1.5.7. The Food Enterprise Park, situated within the Greater Norwich Food Enterprise Zone, is located to the west of Easton and includes 100 acres of potential development. 46 acres of the site benefit

[8] Norfolk Strategic Planning Framework, updated December 2020

from a Local Development Order to encourage and support food production, processing and agriculture through the co-location of commercial enterprises.

1.5.8. Norwich Airport is located approximately three miles north of Norwich city centre and less than five miles from the NWQ. Total passenger numbers for 2018 were recorded as 536,578 and the Airport is worth some £70 million to the local economy. It is also the centre for aviation operations for the southern sector of the North Sea Oil, Gas and Renewables sector.

1.5.9. The airport is growing and has published a masterplan setting out a vision for the airport's continued growth over the next 30 years. By 2045, passenger numbers are targeted to rise to 1.4 million, with a projected worth of £170 million to the local economy. Planning consent has been secured to deliver Imperial Park – a 115-acre business park directly to the north of the Airport. It is estimated that Norwich Airport would support up to 3,350 direct, indirect and induced jobs. Of these, around 3,250 jobs would contribute to the local economy. Norwich Airport has stated that these growth ambitions remain in place post-pandemic.

1.5.10. Movements from the south/south west of Norwich to the airport are currently constrained. The airport is sign-posted via the A1074 and Longwater interchange with the A47, which already suffers from delays and unreliability due to peak period congestion.

1.5.11. The NWL is expected to provide a more reliable primary route to strategic employment sites, supporting future employment growth at the airport, the Food Enterprise Zone and the Norwich Research Park. Without the scheme, the targeted employment growth is likely to increase congestion on existing routes, and limit expansion.

1.5.12. In line with the Government's Levelling Up strategy, these improved linkages to employment sites will help to address economic inequalities within Norfolk. Additional detail on areas of deprivation in the study area are shown in **sections 1.5.17** and **1.5.18**.

DEMOGRAPHIC PROFILE

Resident population

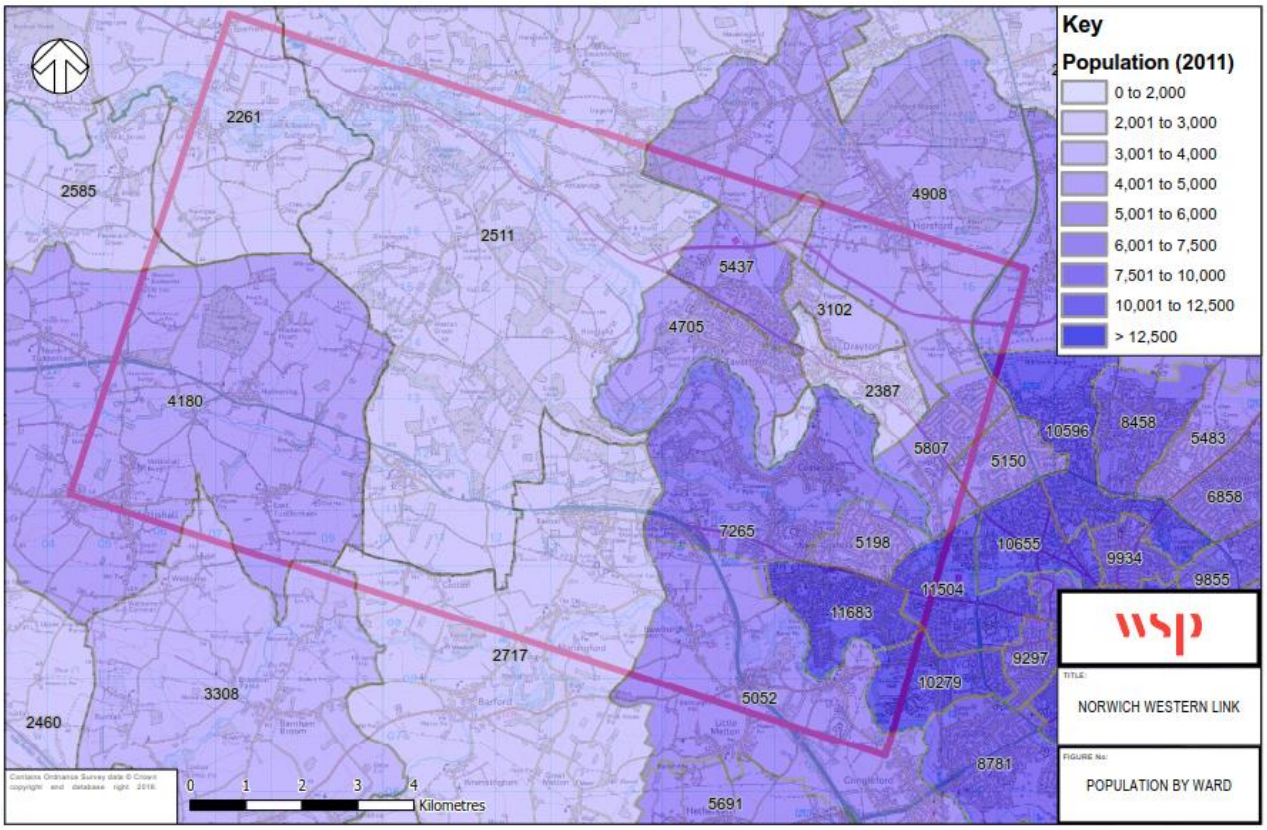
1.5.13. With an estimated work-day population of over 280,000 people, Norwich is one of the largest urban areas in the East of England. The NWQ has an estimated population of 77,600[9], excluding the population of Morton on the Hill and Alderford. **Figure 1-3** indicates the total population by ward, whilst **Table 1-1** identifies the top five populated areas within the study area, by age.

Table 1-1 – Top five most populated areas within study area (Census 2011)

Location	Total	Age 0-14 (%)	Age 15-64 (%)	Age 65+ (%)
Parish – Costessey	12,463	2,059 (17%)	8,000 (64%)	2,404 (19%)
Residential area – Bowthorpe	11,683	2,377 (20%)	7,978 (68%)	1,328 (11%)

[9] Census, 2011

Residential area – North Earlham	11,504	2,299 (20%)	7,902 (69%)	1,303 (11%)
Parish – Hellesdon	10,957	1,336 (12%)	6,548 (60%)	3,073 (28%)
Parish – Taverham	10,142	1,780 (18%)	6,549 (65%)	1,813 (18%)
NWQ study area	77,600	13,246 (17%)	50,183 (65%)	14,171 (18%)



Source: 2011 Census

Figure 1-3 – Population by ward

1.5.14. **Table 1-2** provides the trend in total population between 2012 and 2019 (based on available mid-year estimates to 2019), as well as a projected estimate for 2041. The population of South Norfolk and Beckland increased by 11.82% and 6.15% respectively between 2012 and 2019, with the populations of Norwich and Broadland increased more slowly when compared to regional and country rates.

Table 1-2 – Population increase between 2012 and 2019 and predicted increase to 2041

Year	Norwich	Breckland	Broadland	South Norfolk	Norfolk	East of England	England
2012	133,867	131,857	125,173	125,987	864,847	5,905,914	53,493,729

Year	Norwich	Breckland	Broadland	South Norfolk	Norfolk	East of England	England
2013	135,118	132,995	125,499	127,682	870,296	5,951,934	53,865,817
2014	136,587	134,287	125,956	129,345	877,388	6,017,250	54,316,618
2015	138,097	135,698	126,626	131,199	884,748	6,075,970	54,786,327
2016	139,865	137,123	127,402	132,965	891,731	6,129,005	55,268,067
2017	140,353	138,602	128,535	135,471	898,390	6,168,432	55,619,430
2018	141,137	139,329	129,464	138,017	903,680	6,201,214	55,977,178
2019	140,573	139,968	130,783	140,880	907,760	6,236,072	56,286,961
2020	142,790	142,019	131,671	142,705	917,736	6,277,257	56,678,470
2021	143,134	143,322	132,781	145,008	924,146	6,312,979	56,989,570
% Increase	5.01%	6.15%	4.48%	11.82%	4.96%	5.59%	5.22%
2041	151,733	162,835	149,437	174,933	1,021,749	6,794,441	61,353,965
% Increase	8.87%	19.50%	17.60%	33.31%	15.03%	11.27%	11.38%

Source: Population Projections (Office for National Statistics)

1.5.15. Norfolk has an ageing population, with 24.5% of its population over 65 years of age.[10] This is almost 5% higher than the wider East of England population estimate.

1.5.16. Projections suggest that this trend will only increase. The population in the Norfolk area (including Norwich, Breckland, Broadland and South Norfolk) is expected to increase by approximately 15.03% over the 25-year period from 2016 to 2041. Of this increase, the working group population (15-64 years of age) will increase by approximately 2%, equating to 55% of the total population. The retired population (65+ years of age) will grow by approximately 44%, accounting for 31% of the total population.

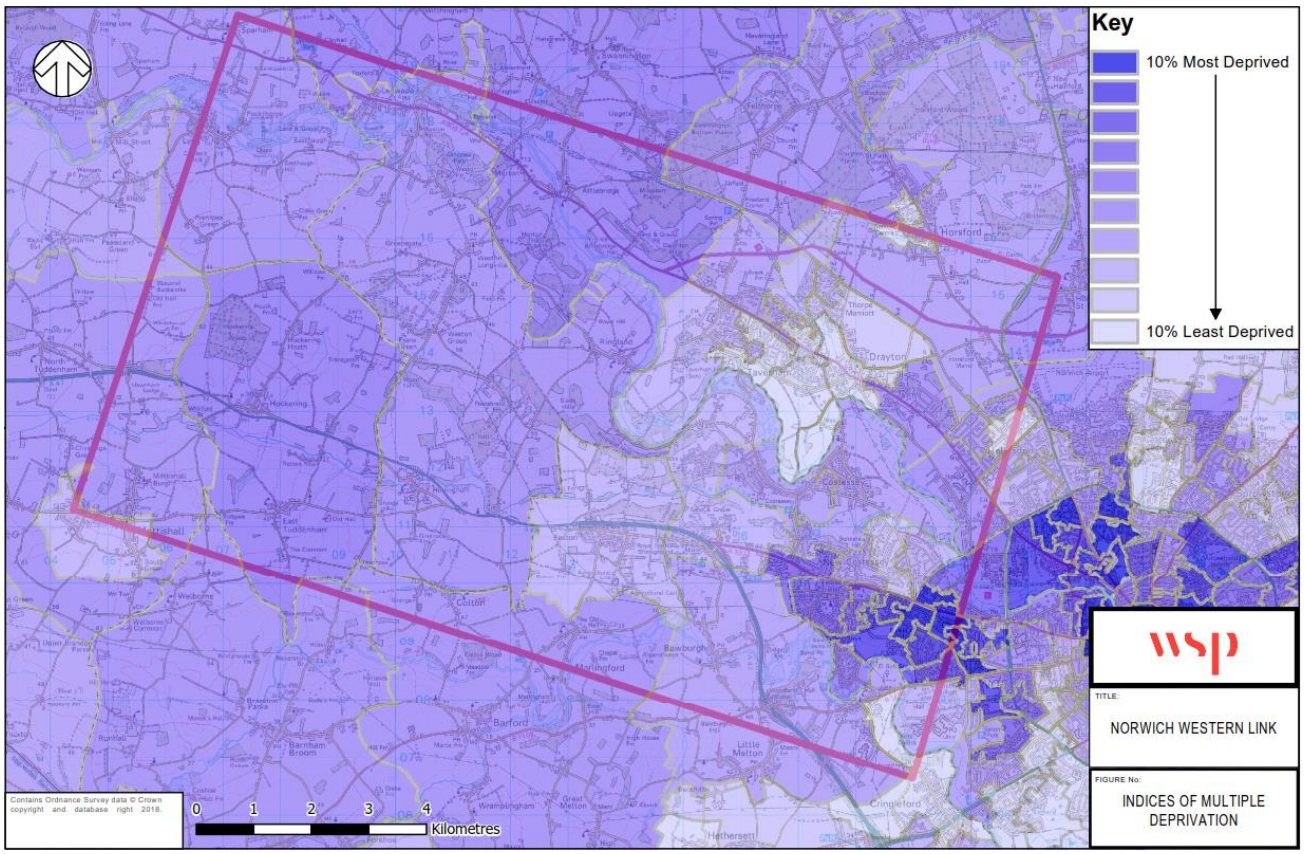
Deprivation

1.5.17. The NWQ has two of its Lower Layer Super Output Areas (LSOAs[11]) in the 10% most deprived areas of the country, measured against the Indices of Multiple Deprivation (IMD). The IMD includes

10 ONS, 2019

11 Geographical areas of a consistent size with similar social characteristics, created to allow for the comparison of data sets, including Indices of Deprivation. Lower Layer Super Output Areas (LSOAs) contain a population of between 1,000 and 3,000, or between 400 and 1,200 households. (ONS)

various factors influencing the level of affluence in an area including income, employment, education, health, crime, barriers to housing services and the living environment. The areas experiencing the highest levels of multiple deprivation are located west of Norwich and include parts of the Bowthorpe and North Earlham residential areas, as shown in **Figure 1-4**.



Source: Indices of Multiple Deprivation (Ministry of Housing, Communities and Local Government)

Figure 1-4 – Levels of multiple deprivation

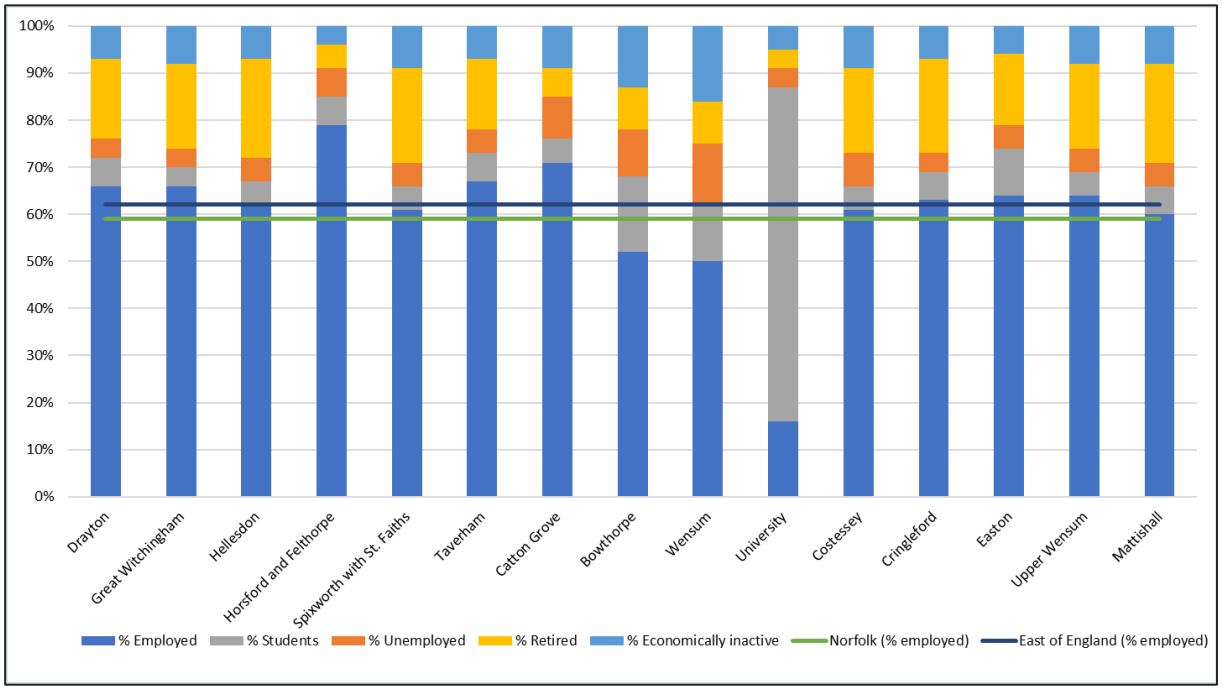
1.5.18. Higher deprivation exists across the NWQ when education and training indices are considered. The most deprived LSOAs are located south-east in Bowthorpe and North Earlham. The total estimated population in the most deprived wards is approximately 15,800, which accounts for 20% of the NWQ population.

Employment

1.5.19. Norwich is the largest labour market in the region, accounting for approximately 60% of all jobs in Norfolk, and as such, creates large volumes of movements of goods and people. Transport efficiency is a critical component of economic growth nationally and locally. **Figure 1-5** shows the economic activity of the population aged 16 to 74 within the NWQ, derived from Norfolk Insight

Statistics[12]. The graph includes the percentage of population in employment (including those in full or part-time employment and self-employed), unemployed, in full time education, retired, and economically inactive (including those looking after family or suffering from long-term sickness or disabilities).

1.5.20. Across the NWQ, the employment rate ranges from 16% around University and 50% in Wensum (located to the south-east and including North Earlham) to 79% in Horsford and Felthorpe located to the north-east. Unemployment rates range from 4% in Cringleford, University, Drayton and Great Witchingham to 13% in Wensum.



Source: Norfolk Insight Statistics

Figure 1-5 – Economic activity across the study area

TRANSPORT CONTEXT

Highway network

1.5.21. The NWQ is bounded to the south by the A47, part of the SRN. To the south-east, the A47 connects with the A11, which provides connections from Norwich to Cambridge (via the A14) and London (via the M11). To the north of the study area is the A1067, which provides a key radial route from Norwich to surrounding residential communities and out to the market town of Fakenham.

12 https://www.norfolkinsight.org.uk/

1.5.22. Within the NWQ, there is a 'gap' between the A47 (west) and A1067, with no existing A roads between the two. The existing links are of a lower standard, rural single carriageway roads and pass through residential areas including Costessey, Taverham, Ringland and Weston Longville.

1.5.23. Improvements have been delivered along Sandy Lane, Walnut Tree Lane, Wood Lane, Stone Road and Lyng Road to provide an enhanced link between the A47 and north Norwich for Heavy Goods Vehicle (HGV) movements, primarily to reduce long-standing HGV traffic problems in Hockering. This route has been designated as a B-Road (B1535). The alignment of the B1535, however, remains constrained by existing property boundaries and consequently includes a number of tight bends. It does not provide a direct link between the A47 and A1270, doing little to alleviate HGV traffic in rural communities.

1.5.24. **Figure 1-6** shows the NCC Trunk Road and resilience network, indicating the gap between the A47 and A1067.

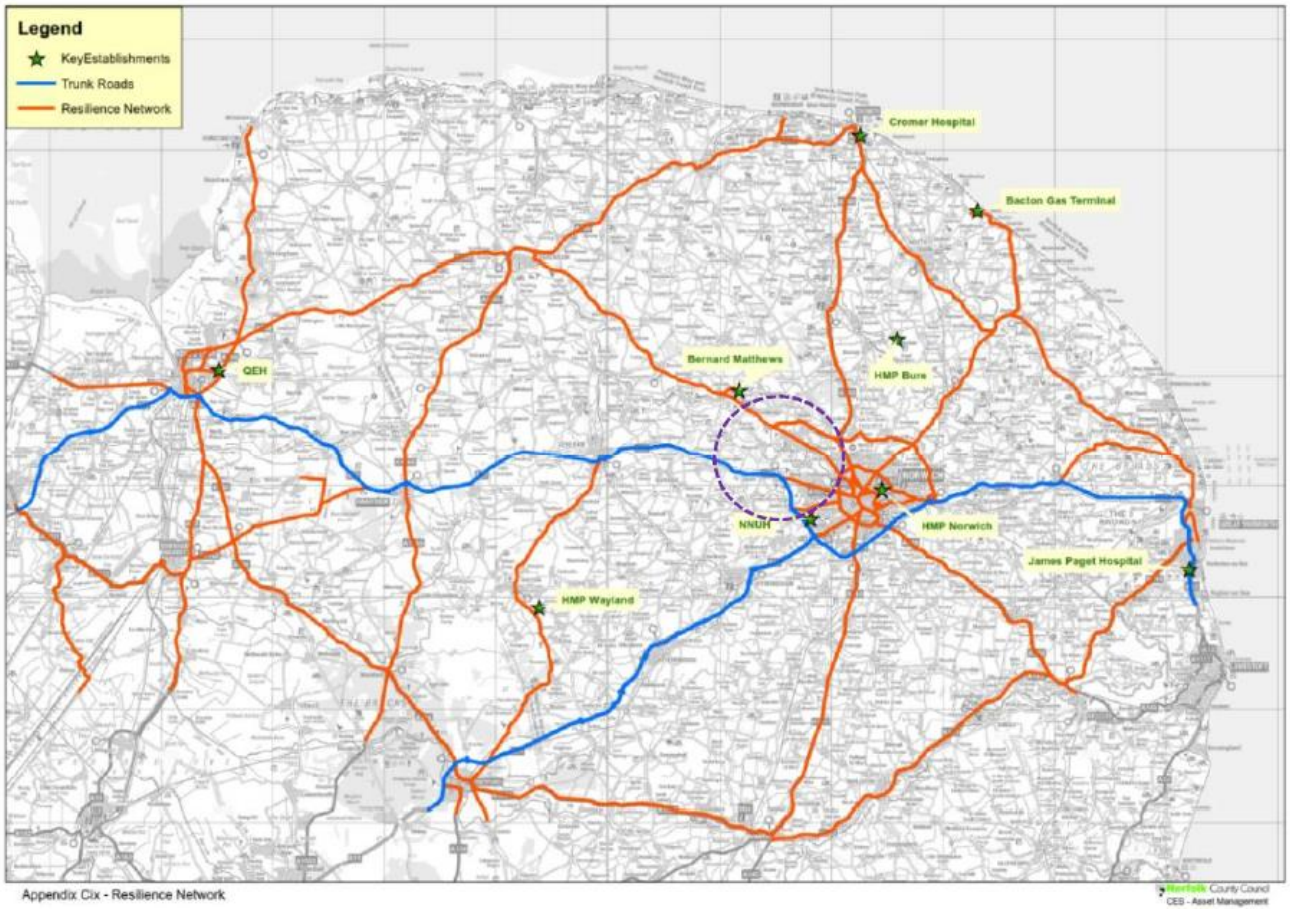
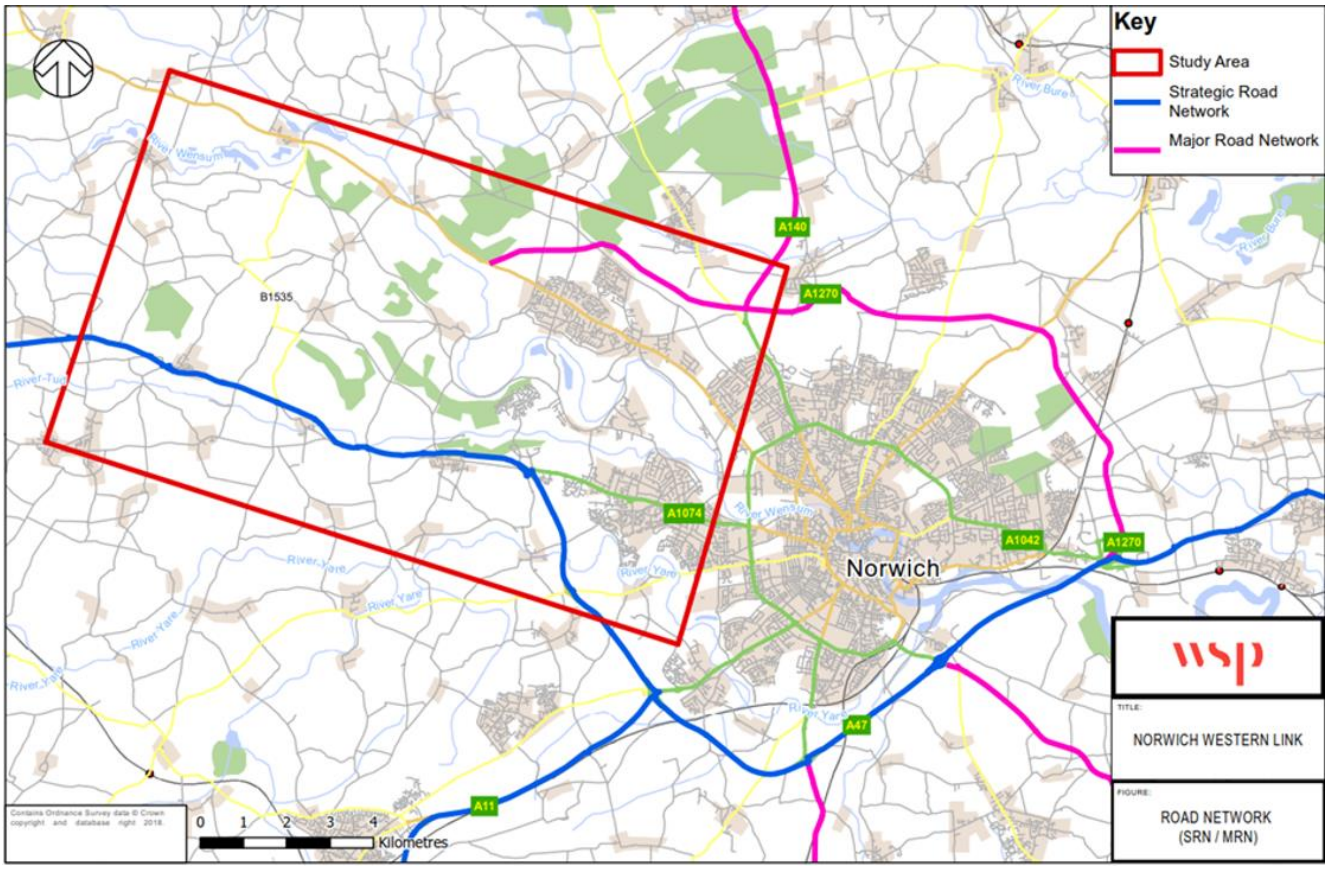


Figure 1-6 – NCC Trunk Road and Resilience Network

1.5.25. The final section of the A1270, from the A1151 Wroxham Road to the A47 at Postwick, opened on Tuesday 17 April 2018. The A1270 significantly increases network capacity, providing an improved route for trips whilst relieving traffic pressures and congestion on existing routes. However, the lack of a western link reduces the orbital connectivity, and existing traffic issues within the NWQ remain.

1.5.26. The A140 and A1270 are MRN routes, connecting to the A47 at the Postwick Hub, as shown in **Figure 1-7**. The NWL would fill in the missing MRN link between the A47 and A1067 in the west,

extending the A1270 to meet the A47 on the west of Norwich. This route would increase orbital connectivity and provide a suitable north-south alternative for vehicles to circumnavigate Norwich to the west.



Source: Proposals for the creation of a Major Road Network, Map (Department for Transport)

Figure 1-7 – SRN and MRN routes

COVID-19

1.5.27. As mentioned in section 1.3, the impacts of Covid-19 are still being explored. While current traffic monitoring is indicating that traffic levels are already recovering to near pre-pandemic levels, the change in travel demand, need for employment-related journeys and associated growth assumptions will become clear as recovery progresses.

1.5.28. Revised economic and population projections were issued by the Office for Budget Responsibility (OBR) in March 2020, along with updated medium-term economic projections published in July 2020. These reflect the OBR assessment of the impact of COVID-19 on economic growth. In line with DfT guidance, sensitivity testing was undertaken as part of the appraisal efforts for this OBC to account for the impact of these revisions as well as for updated fleet assumptions.

1.5.29. The New Anglia LEP has published a Covid-19 Economic Recovery Restart Plan, which identifies investment in infrastructure as one of the measures identified for economic recovery. The plan states that “we will support the construction sector through continued investment in key infrastructure and make a compelling case to Government to fund priority infrastructure schemes.”

STRUCTURES

1.5.30. **Figure 1-8** indicates the locations of structures within the NWQ and classifies them into dual carriageway, single carriageway, single lane carriageway, footway / cycleway structures and existing track bridges.

1.5.31. Limited infrastructure is in place to enable the crossing of the River Wensum. Between Hockering, Longwater interchange, Taverham and Attlebridge there are two single carriageway structures at Queen's Hills and Taverham. The only dual carriageway structure is currently in New Costessey serving the A1074.

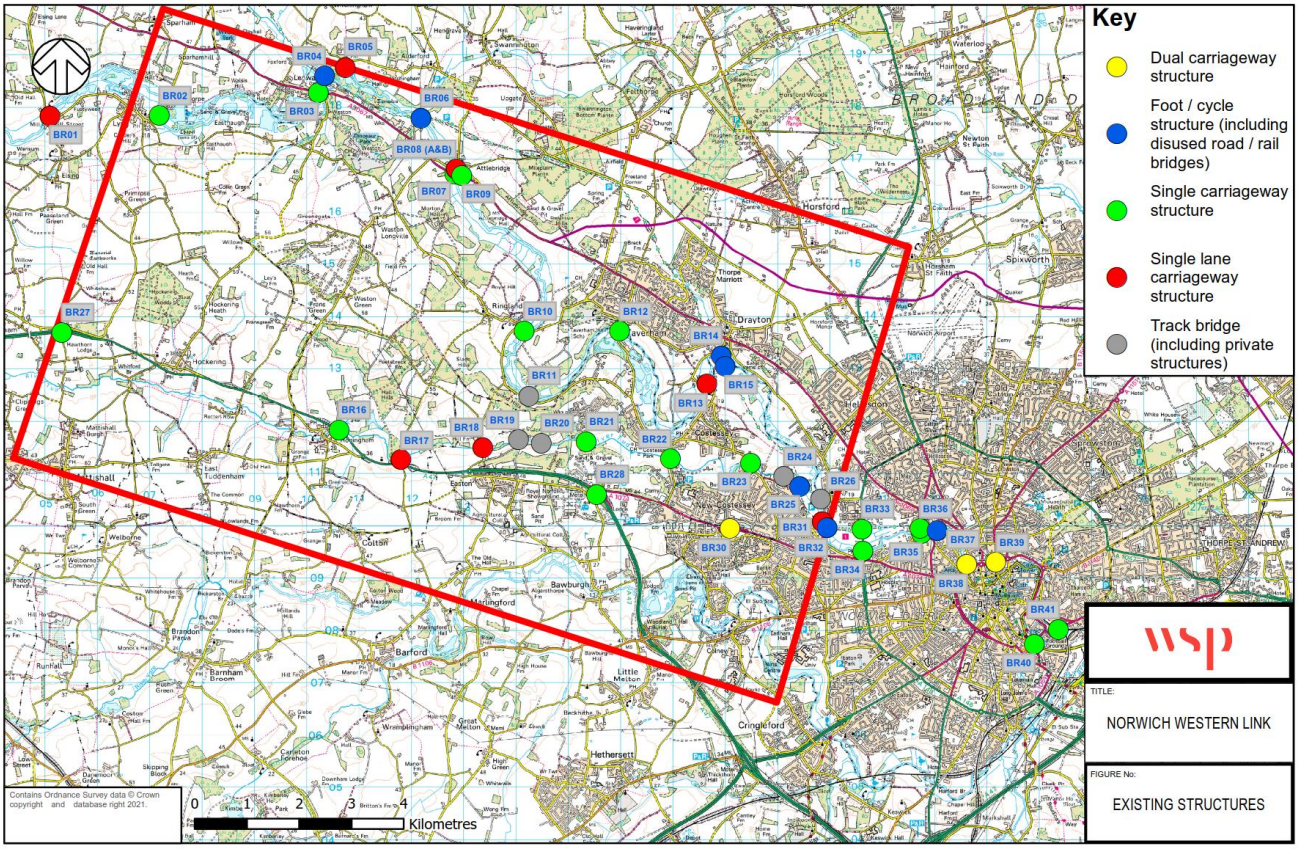


Figure 1-8 - **Existing structure locations**

WIDER TRANSPORT CONTEXT

Rail

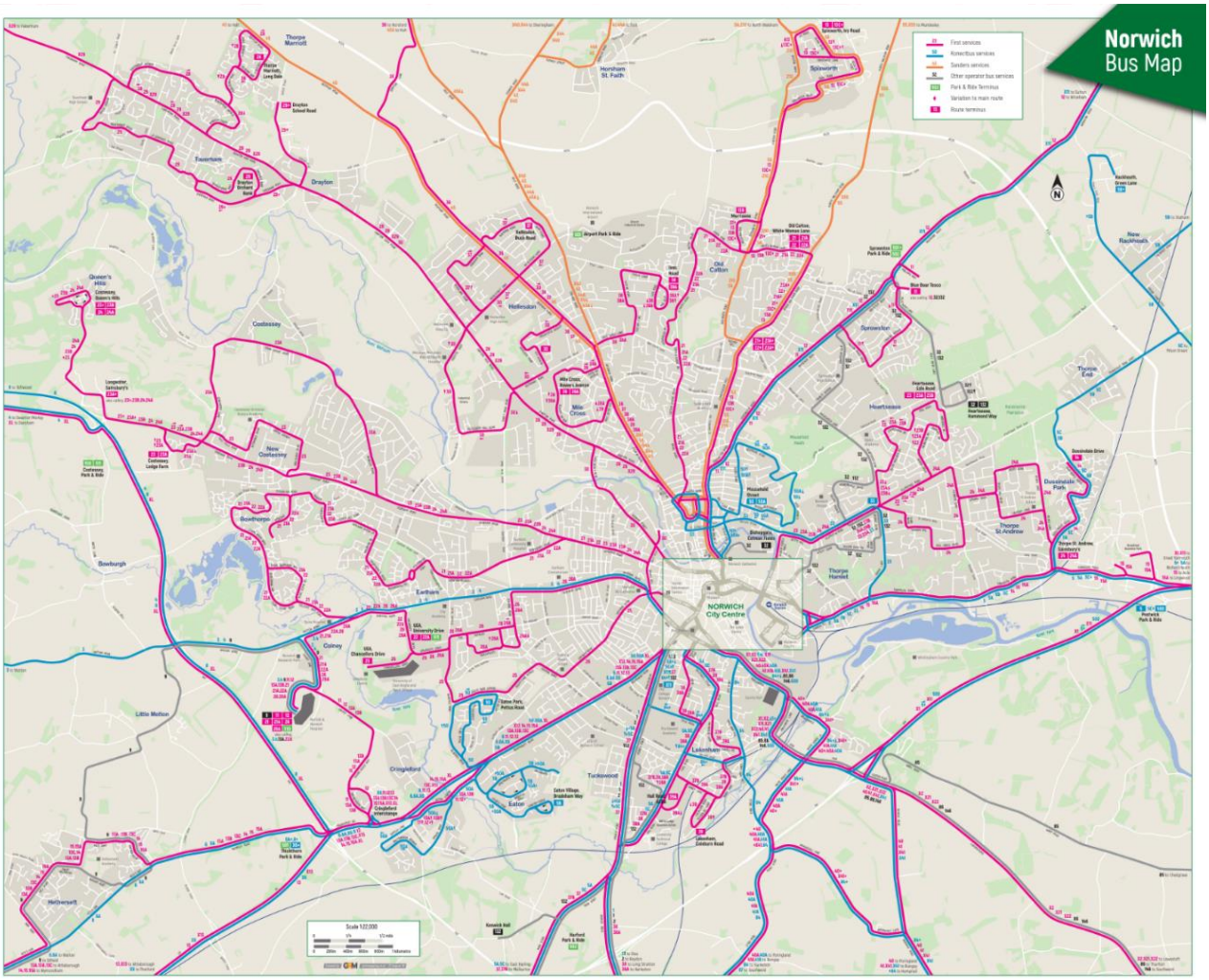
1.5.32. Norwich Railway Station is located approximately 8km south-east of the NWQ study area, and to the south-east of the city centre. Norwich is generally well placed on the rail network, with Norwich Railway Station located on the Great Eastern Mainline and served by several secondary railway lines such as the Breckland Line, Bittern Line and Wherry Line. The station is served by two rail operators (Abellio Greater Anglia and East Midlands Railway) providing access to destinations within the Norfolk area as well as further afield.

1.5.33. There are no connecting stations within the NWQ, or to key employment locations on the west side of Norwich. While Norwich Railway Station can be accessed by bus services from Costessey

(including Queen's Hills) and Taverham, access to the station from more rural locations within the NWQ is challenging.

Bus and coach links

1.5.34. The bus network in the study area is largely radial, providing routes to and from Norwich city centre along key corridors. The eastern part of the study area is well connected with Norwich city centre, particularly during the day. First Bus provides several services connecting Queen's Hills, Costessey, Easton, Hellesdon and Taverham with destinations within and around Norwich city centre as shown in **Figure 1-9**. Bus services also operate within the study area, connecting residential areas to major employment sites. There is, however, a lack of traditional bus services within the identified gap to the west of Norwich, including Weston Longville, Weston Green and Ringland.



Source: Norwich City-Wide Network Map (First Bus)

Figure 1-9 - Bus service routes

1.5.35. There are bus stops in the NWQ located within walking distance from residential areas, however due to inadequate or limited pedestrian facilities (more detail provided in **section 1.5.43**) between villages and bus services, access by foot from many residential areas is less viable.

1.5.36. **Table 1-3** shows the bus services connecting the NWQ to the north and east of Norfolk, Norwich city centre and locations to the north and east of Norwich. While First Bus offers regular services connecting settlements within the study area with King's Lynn and Swaffham via Easton, Hockering, and Dereham, connecting services to Holt and Cromer are more limited, with Holt being connected via a single school bus – open to the public – and operated by Sanders Coaches Monday to Friday.

Table 1-3 - Typical weekday bus timetable for NWQ

Service	Route	Operator	Frequency
4, 4A	Norwich to Swanton Morley	KonectBus	1 per hour
8 Fast	Norwich to Toftwood	KonectBus	2 per hour
Yellow (28 & 29)	Norwich to Thorpe Marriott	First Bus	1-4 per hour
Purple (36, 37, 38 & 39)	Long Stratton to Horsford (via Norwich City Centre)	First Bus	Up to 4 per hour
Red (23 & 24)	Queen's Hills / Costessey to Heartsease / Thorpe St Andrew (via Norwich City Centre & Rail Station)	First Bus	Up to 4 per hour
510	Costessey Park & Ride to Norfolk and Norwich University Hospital	KonectBus	Up to 2 per hour
Excel (A, B & C)	Norwich to King's Lynn	First Bus	2 per hour
X29	Norwich to Fakenham	First Bus	1 per hour
56	Sheringham – Easton College (via Holt)	Sanders Coaches	1 per day, Monday - Friday

Park & Ride

1.5.37. Currently, there are six Park & Ride sites located around Norwich, providing a total of almost 5,000 parking spaces on the urban fringe and enabling mode shift to non-car modes to be achieved. Of the six sites, five serve the city centre, as shown in **Figure 1-10**.

1.5.38. The Costessey Park & Ride is located within the NWQ study area (south-eastern section), next to the Royal Norfolk Showground. This only serves Norfolk and Norwich University Hospital (NNUH) and the University of East Anglia (UEA). Residents of western Norwich or users arriving from the west would need to use the Thickthorn Park & Ride or Airport Park & Ride sites to access the city centre. The latter results in journeys across the study area.

1.5.39. While there are no plans for additional Park & Ride sites, expansions to the Thickthorn Park & Ride were proposed as part of the Transforming Cities programme (TCF). NCC was successful in these applications and received funding towards schemes that will promote intra-city connectivity and significantly improve public and sustainable transport in Greater Norwich. In total the TCF is providing over £40m of investment.

1.5.40. First Eastern Counties, who provide around 80% of the bus services in Greater Norwich, are committing an additional £18m of investment in new buses, refurbished buses and increased service

frequencies as part of the TCF. Recent investment by First saw the introduction of new, high specification buses on the Excel service operating from west Norfolk into Norwich, with fast, limited stop services and up to three buses per hour from Dereham.

1.5.41. Discussions are also in progress with Norwich Research Park to provide a new bus service from Thickthorn P&R site to the NRP, which would be in addition to the existing service to the city centre.

Source: Network Map (Park & Ride Norwich)

Figure 1-10 - Park & Ride routes and locations

1.5.42. Further transport intervention in the NWQ would improve strategic connectivity to the existing Park & Ride sites, catering for desire lines through the study area and making sustainable travel to central Norwich more convenient and efficient.

Walking infrastructure

1.5.43. Walking infrastructure in the study area is variable. Within more built-up areas, the provision is generally adequate, with footways in place adjacent to the roads. There is limited provision between villages, where connectivity is hindered either by roads or a lack of safe pedestrian infrastructure.

1.5.44. There are numerous Public Rights of Way (PRoW, **Figure 1-11**) within the study area, including footpaths and bridleways in Bowthorpe, Costessey, Drayton and Ringland. Pedestrian crossing points are generally on main roads and at key locations and junctions. The figure also highlights existing public highway and unsurfaced highway maintained by NCC, in the immediate vicinity of the NWL study area.

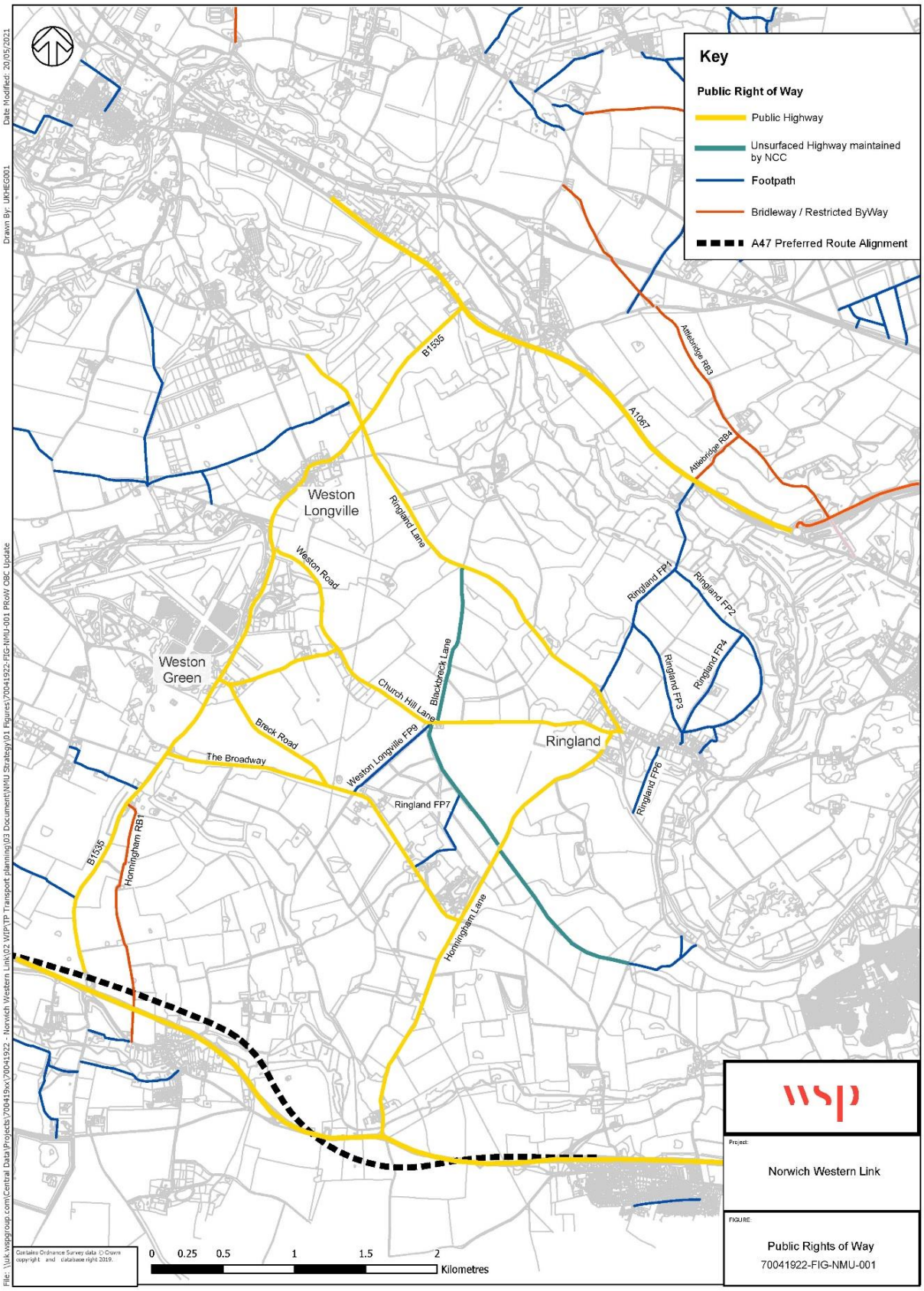


Figure 1-11 – Public Rights of Way

Cycling infrastructure

1.5.45. While cycling could provide a sustainable alternative means for short to medium length journeys, the infrastructure available to do so in the NWQ is extremely limited. Local (on-road) routes run to the south-east and the National Cycle Network Route 1 (NCR1) cross through the northern extents. This section of the NCR1, also known as Marriott's Way, is a 42km footpath, bridleway and cycle route, following the alignment of two disused railway lines. The route passes through Norwich city centre, Costessey, through Drayton crossing the A1067 and the A1270, and goes westward towards Lenwade. From there the route goes north towards Reepham and beyond.

1.5.46. **Figure 1-12** shows the NCR1 and other local cycle routes present within the study area.

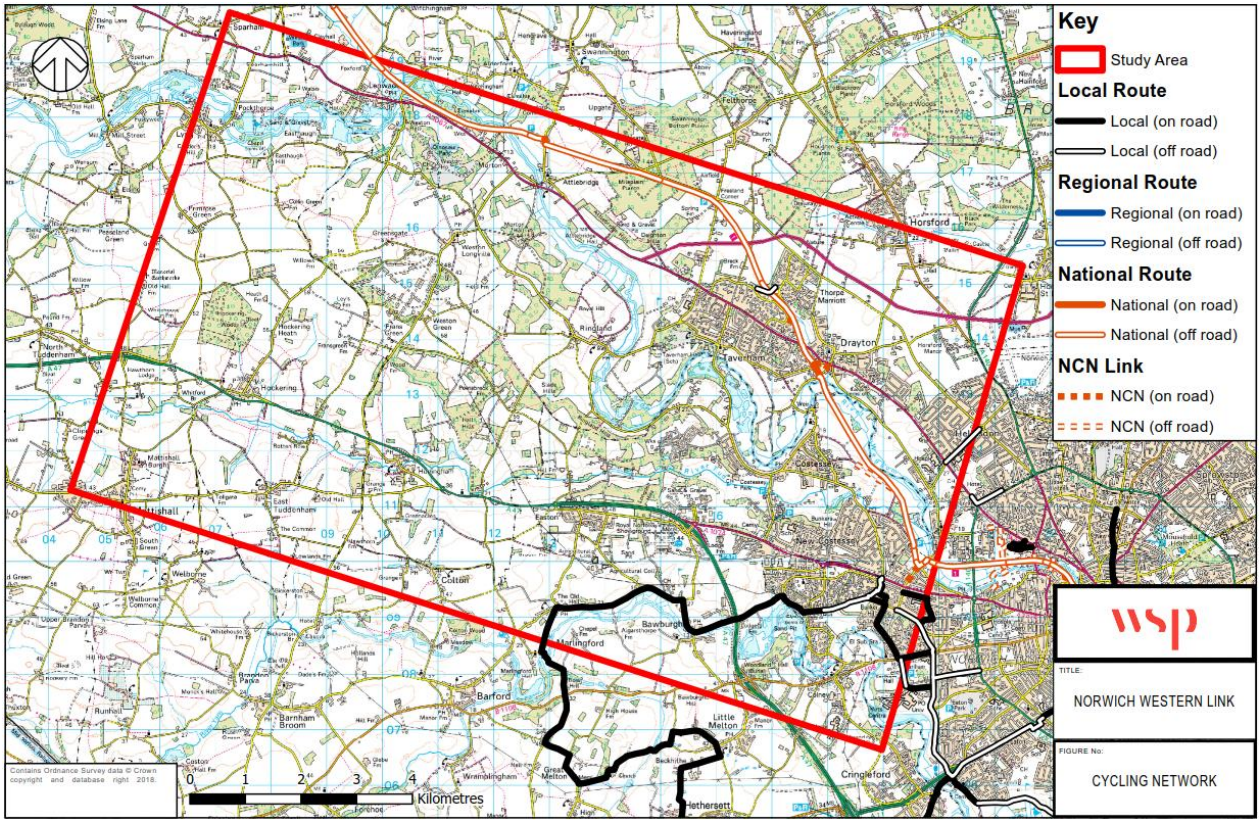


Figure 1-12 - **Cycle network**

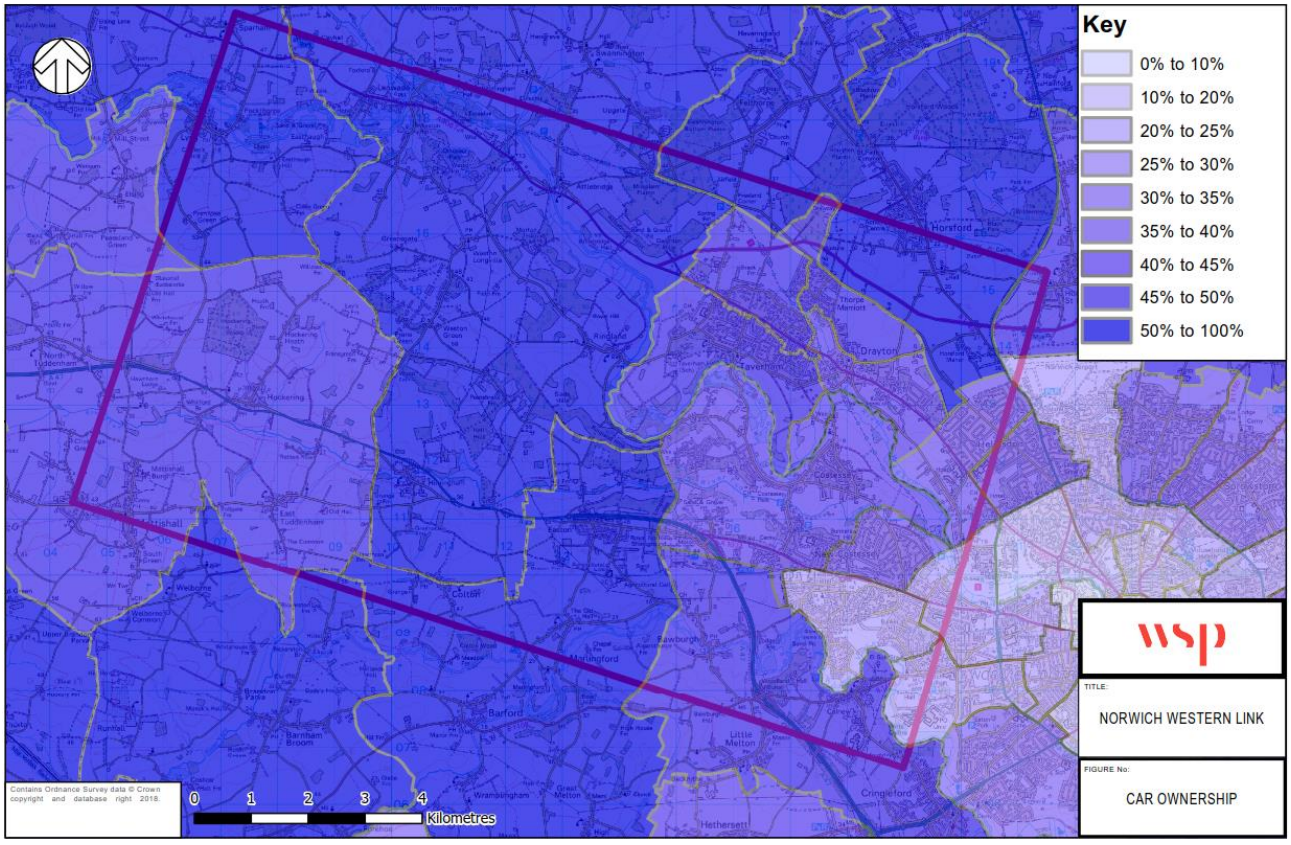
1.5.47. More widely, the Norwich cycle network is made up of seven colour-coded routes, known as 'Pedalways', which cross the city in all directions, and converge at St Andrews Plain in the city centre. The Pedalways in Norwich are as follows:

Green	between Bowthorpe and Broadland Business Park
Red	between Drayton and Whitlingham (NCN1)
Yellow	between Lakenham and Aviation Academy
Pink	between NNUH and Heartsease
Blue	between Wymondham and Sprowston
Orange	Inner circuit
Purple	Outer circuit

1.5.48. Norwich was awarded two significant Cycle City Ambition grants from the DfT. The first wave of funding saw improvements to the 13km Pink Pedalway and the connections leading to it, creating a higher quality cycle link from the NNUH and UEA, through Norwich city centre, to Heartsease and Broadland.

TRAVEL PATTERNS

1.5.49. Approximately three-quarters (75.1%) of residents within the NWQ travel to work by car, either as a driver (69.3%) or passenger (5.8%). As shown in **Figure 1-13**, the majority of residents within the study area has access to two or more cars.



Source: 2011 Census

Figure 1-13 - **Households with two or more vehicles**

1.5.50. Smaller proportions use public transport modes such as bus (7.8%) and train (0.6%) to travel to work. This could be attributed to areas within the NWQ having poor public transport connections to the city centre and / or the distance being too great to use active modes of transport such as cycling and walking. This suggests both the need for improved public transport connections between the western areas of the study area and Norwich city centre, and the need for improved transport links, to cope with the volume of journeys undertaken by road and the high percentage of car ownership within the study area.

1.5.51. According to the 2011 Census data for Breckland, Broadland, Norwich and South Norfolk, 49% of journeys to work are under 10km **(Figure 1-14**), indicating opportunities for encouraging modal shift away from private car usage to other, more sustainable modes of transport.

Figure 1-14 - Average distance travelled to work - 2011 Census

ORIGINS AND DESTINATIONS: 2015 TRAFFIC MODEL

1.5.52. As part of the evidence pack for the Options Assessment Report, analysis was performed on the traffic model to understand the origins and destinations of vehicles within the study area, and determine whether an NWL could impact upon the routes currently used. Analysis was undertaken on four routes in both directions, during the morning peak.

Outer A1067

1.5.53. In the eastbound direction, many trips utilised the B1535 to transfer from the A47 to the A1067 and continue to destinations to the north of Norwich. Some trips diverted through the study area via Taverham and Costessey to reach destinations to the south of Norwich. In the westbound direction, those same trips could utilise an NWL.

A1067

1.5.54. On the A1067 near Hellesdon, a large number of eastbound trips had a destination to the south of Norwich and were using the A140 to make the journey. An NWL could potentially attract trips off the A1067 and route them south before reaching the city, thus relieving pressure on the outer ring road.

1.5.55. Westbound, those trips utilising the A1067 originated in the south and south-west. They used the outer ring road to access destinations to the north and north-west. An NWL would allow them to take a more direct route and avoid the outer ring road.

A1074

1.5.56. Eastbound trips that originated from the A47 had a destination to the north of Norwich. Vehicles used the outer ring road to complete this journey. The introduction of an NWL could therefore attract trips from the A1074, helping to reduce current congestion.

1.5.57. In the westbound direction, the trips originating from the north-east of Norwich, which utilised the outer ring road and the A1074 to get to destinations along the A47, could utilise the A1270 and NWL to avoid Norwich city centre.

A47

1.5.58. Eastbound trips had origins from the A47 as well as the A1067 to the north-west via the B1535. Destinations tended to be to the south of Norwich, though some travelled north via routes through Costessey and Taverham.

1.5.59. Those trips that used the B1535 to access the south of Norwich would benefit from the NWL, as would those using routes through the surrounding villages and the inner ring road to reach destinations in the north and centre of Norwich. This would relieve the local road network and potentially part of the inner ring road traffic.

1.5.60. In the westbound direction the reverse is evident, and as such, trips would benefit in both directions from an NWL.

ORIGINS AND DESTINATIONS: 2019 TRAFFIC MODEL

1.5.61. The 2019 base year transport model was used to assess the origin and destination of trips on the north – south routes between the A47 and the A1067. This included:

- B1535 Sandy Lane
- Paddy's Lane

1.5.62. **Figure 1-15** to **Figure 1-18** show the scale of trips using north-south routes that would benefit from the introduction of an NWL.

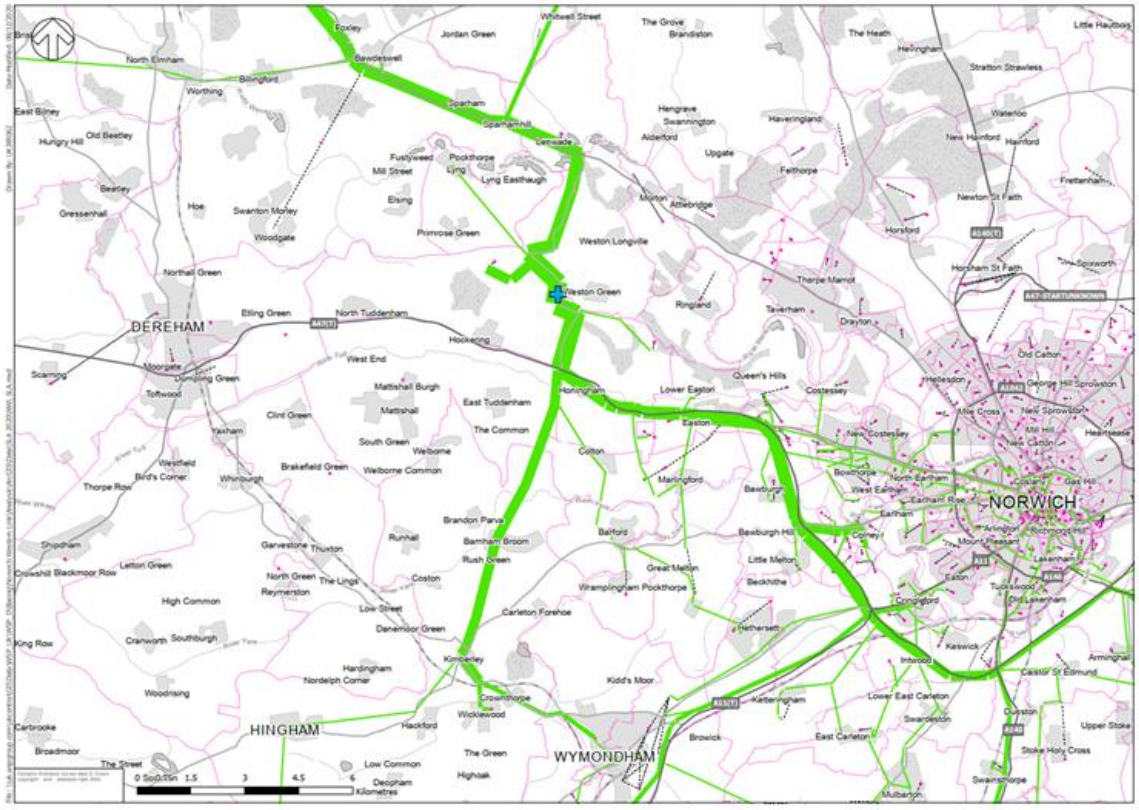


Figure 1-15 - Select Link Analysis - B1535 Sandy Lane (northbound)

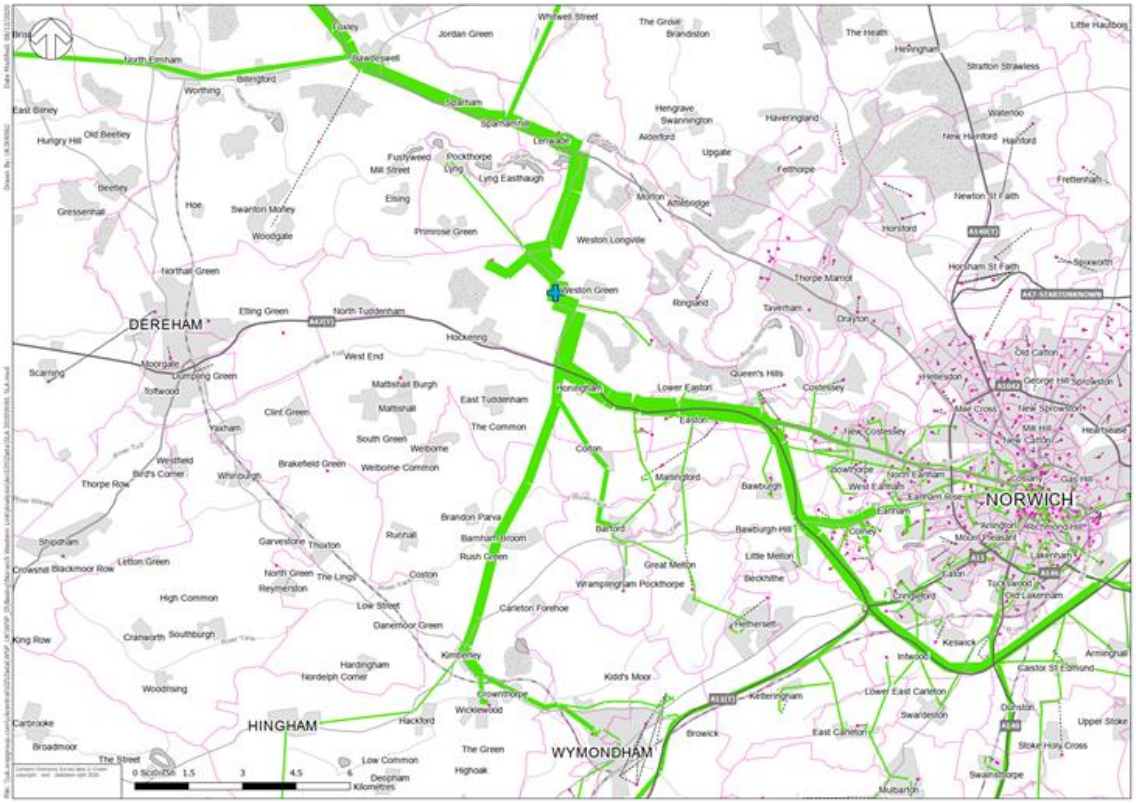


Figure 1-16 - Select Link Analysis - B1535 Sandy Lane (southbound)

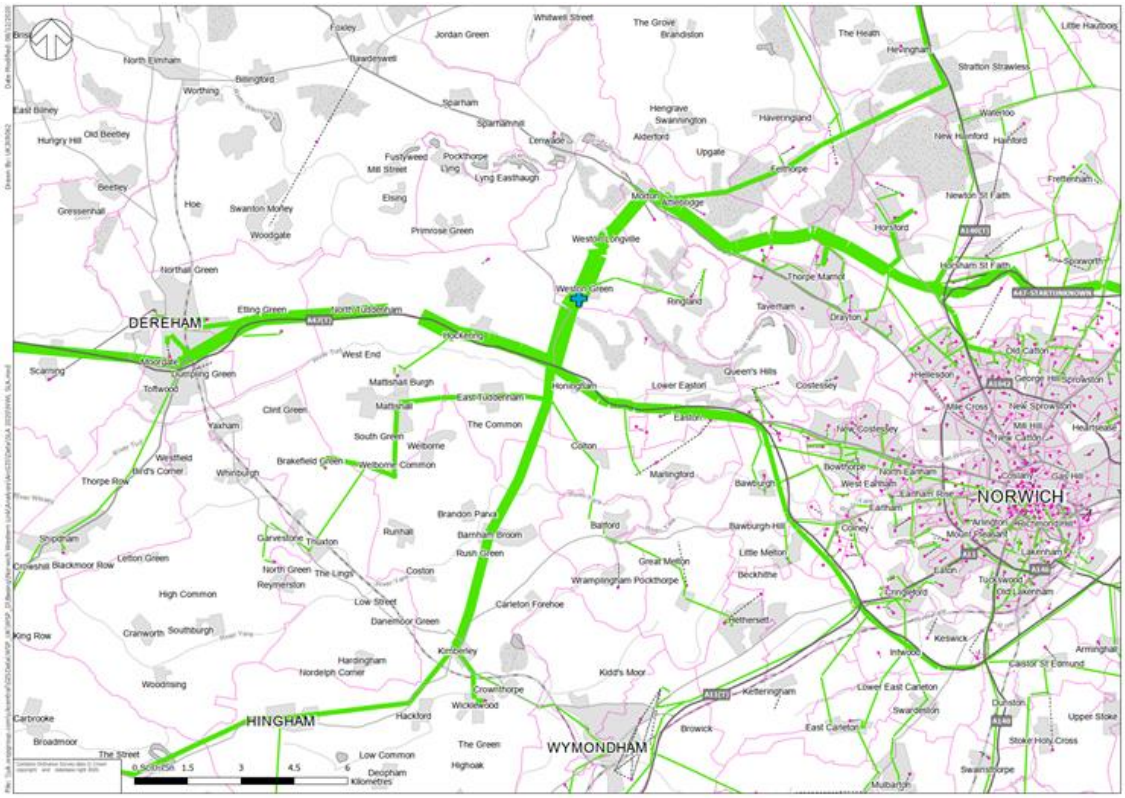
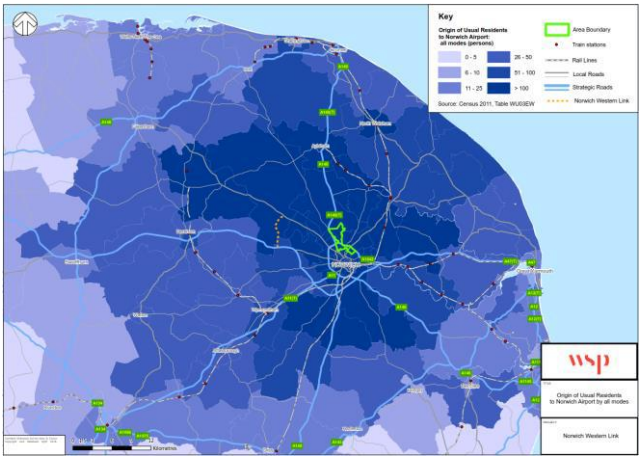


Figure 1-17 - Select Link Analysis - Paddy's Lane (northbound)

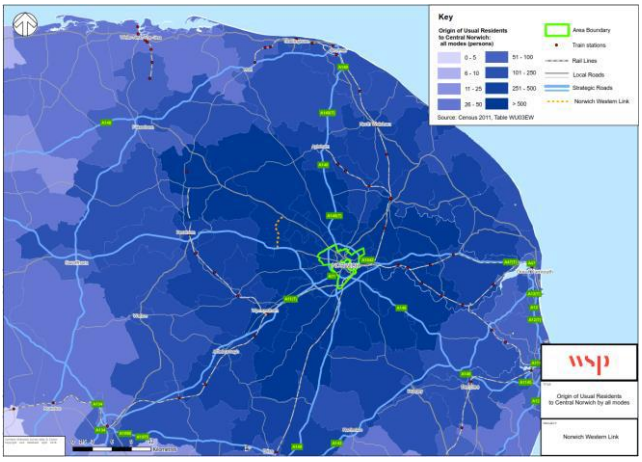
Figure 1-18 - Select Link Analysis - Paddy's Lane (southbound)

EMPLOYMENT SITES

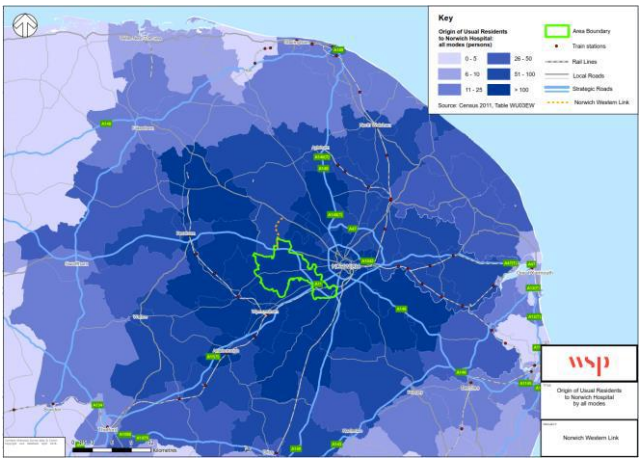
1.5.63. Using Census journey to work data, the origins of residents to various employment centres was analysed. This is shown in **Figure 1-19**. The Census data indicates that many commuter journeys have potential desire lines through the NWQ, which, dependent on whether their location of work is to the north or south of the city, could benefit from an NWL. Key workplaces such as NNUH, UEA, Norwich Research Park, and Norwich Airport attract a large proportion of journeys to work from the NWQ, and could benefit from an NWL, avoiding the need to use the local road network, or the outer ring road of Norwich to access the A11 heading south-west out of the city.



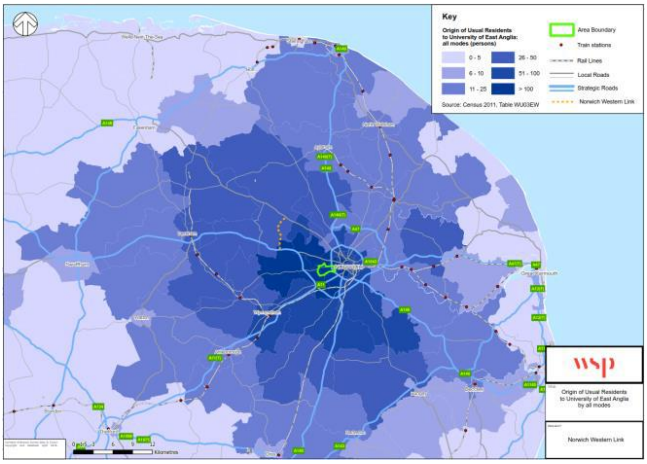
Norwich International Airport



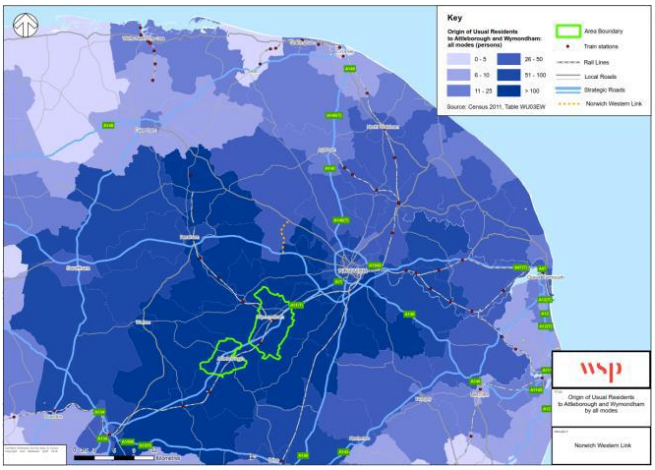
Norwich city centre



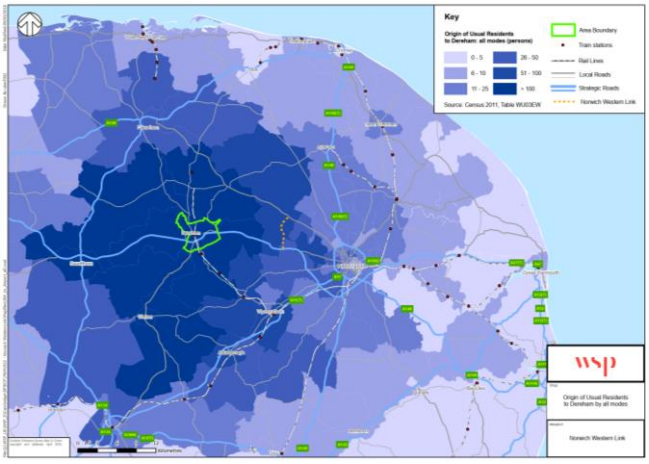
NNUH / Norwich Research Park



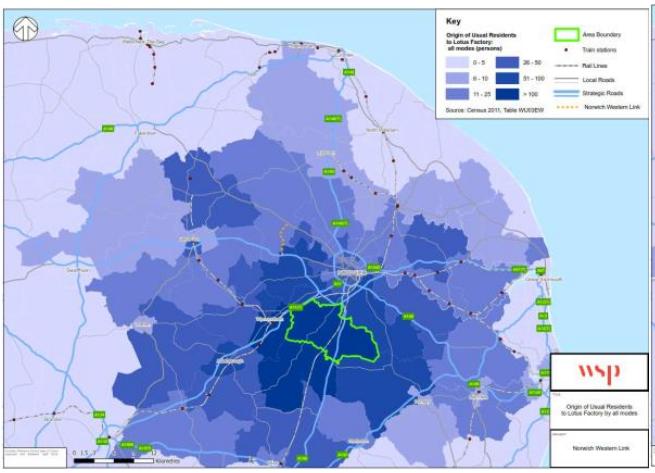
University of East Anglia



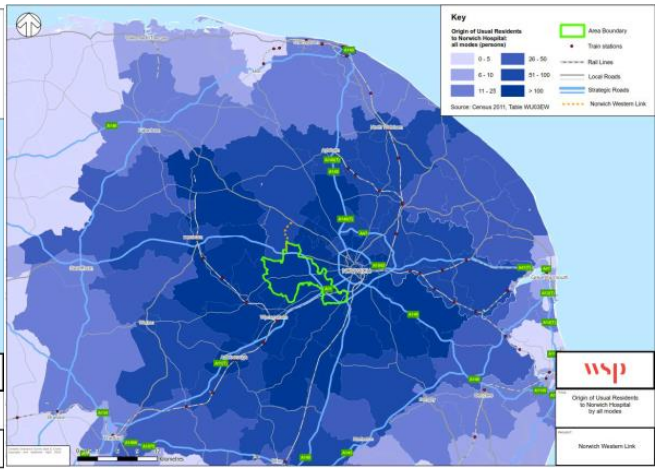
Attleborough / Wymondham



Dereham



Lotus Factory



Norfolk & Norwich University Hospital

Figure 1-19 - Origins of residents to various employment sites

CARBON AND AIR QUALITY

1.5.64. Norwich and North Norfolk have both declared climate emergencies and are preparing an Environmental Sustainability & Climate Change Strategy, as well as an action plan and route map for a sustainable, low carbon future. This includes reducing carbon dioxide emissions in Norwich and North Norfolk.

1.5.65. The closest Air Quality Management Area (AQMA) to the study area is the Central Norwich AQMA. This, as well as the air quality study area analysed as part of the OBC is shown in **Figure 1-20**.

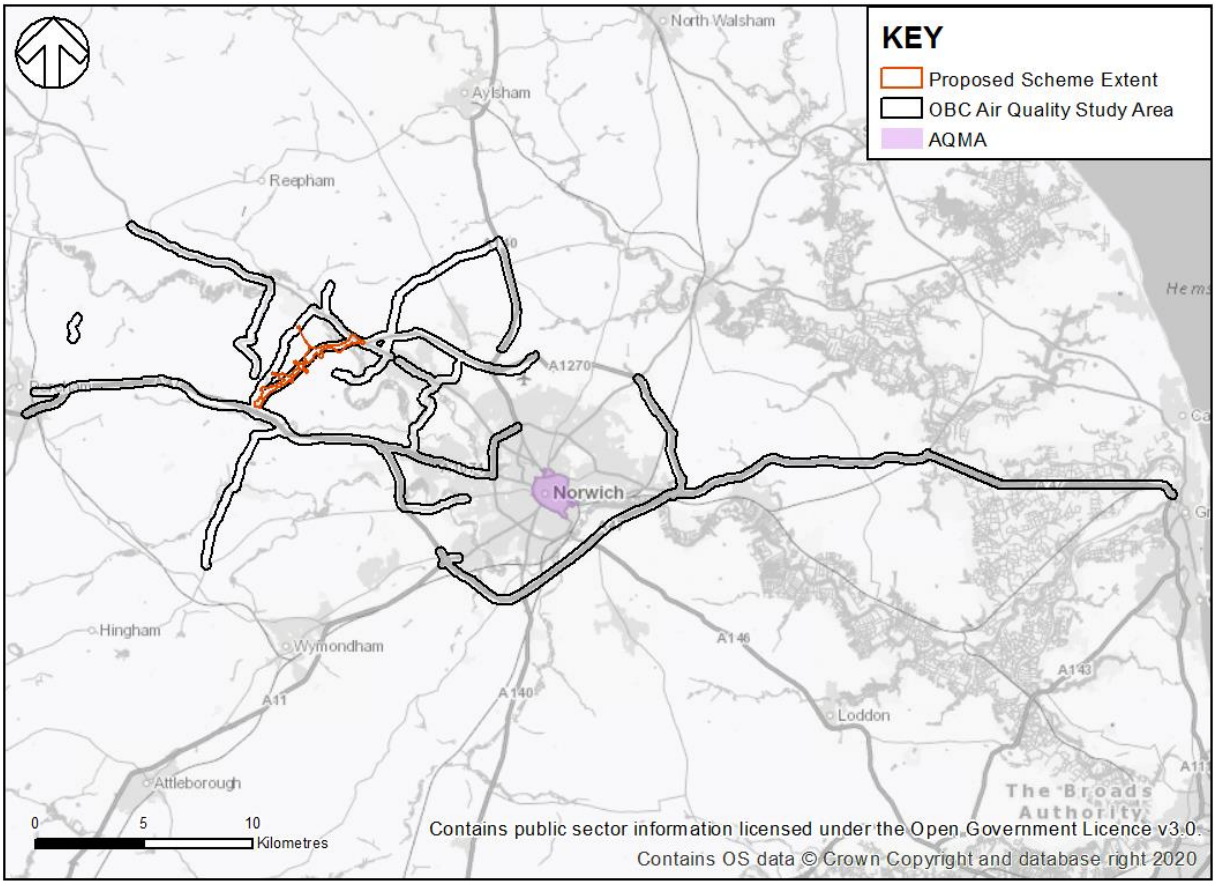


Figure 1-20 – Norwich city centre AQMA

1.6 DESCRIPTION OF THE SCHEME

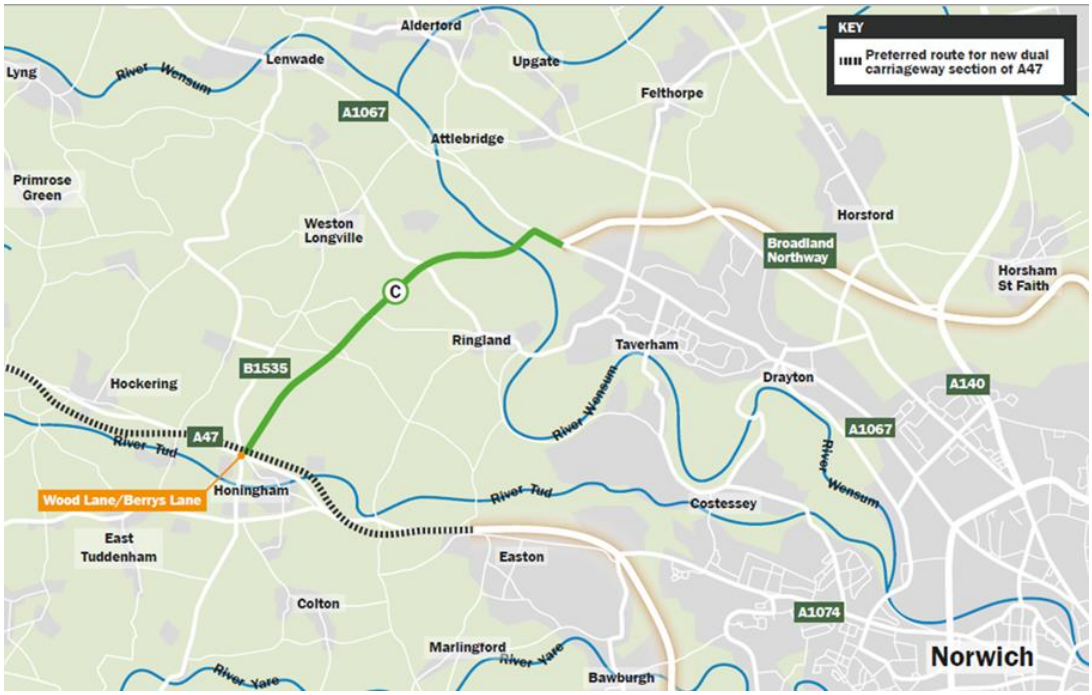


Figure 1-21 - Norwich Western Link Route

1.6.1. The Norwich Western Link will comprise a new dual carriageway all-purpose road to the west of Norwich, from the A47 to the A1067/A1270, including a new viaduct bridge over the River Wensum and its floodplain. The scheme will provide a direct connection between the Strategic Road Network and the A1270 through the west of Norwich. This will complete an orbital route around Norwich, which forms part of the Major Road Network.

1.6.2. The scheme is comprised of:

- A dual carriageway road, including a viaduct over the River Wensum and associated floodplain
- Connection to a new “grade separated” junction with the A47
- An “at grade” junction with the A1067
- Dualling of a section of the existing A1067 between the proposed NWL roundabout and existing A1270 roundabout
- A bridge carrying the NWL over Ringland Lane
- New pedestrian crossing points, green bridges and bat underpasses where deemed to be required
- A wider network of walking and cycling-friendly route options, as per the Sustainable Transport Strategy
- Diversion and extension of existing Public Rights of Way and field paths to create a coherent joined up network
- Surface water drainage – principally infiltration basins, sediment forebays and associated carrier drains/ channels.

1.6.3. The scheme also includes landscaping, planting, ancillary works, and significant environmental mitigation work. Environmental net gain and biodiversity net gain measures are also considered as part of the NWL design philosophy.

1.6.4. The Sustainable Transport Strategy **Appendix 1A** provides a framework for a wider package of measures that support the sustainable travel objectives of the NWL. The package of measures would encourage mode shift away from private car use by providing the means to travel sustainably by cycle, on foot or by bus, as well as linking up the existing network of Public Rights of Way to maximise local connectivity for pedestrians, cyclists and equestrians. Detail on the shortlisted options can be found in **section 2.12**.

1.6.5. A Bus Strategy has also been produced as part of the STS to connect key residential and employment areas to the west of Norwich with those in the city centre. The Bus Strategy will complement other aspects of the STS and make use of routes that will experience lower traffic levels following construction of the NWL, making bus travel more attractive for use and improving journey time reliability.

1.7 DESIGN PHILOSOPHY

1.7.1. As part of the development of the Norwich Western Link, NCC engaged with Local Planning Authorities (LPA) through a Design Workshop with appropriate officers, to establish a Design and Landscape Strategy (DALS) that sets out NCC’s commitment to delivering good design for the scheme. It presents guidance to enable the design to be developed in such a way that it responds to the sensitive landscape within which the scheme will be situated, and maximises the benefits of the scheme through good design.

1.7.2. The DALS is set out around a core design philosophy:

- Norwich Western Link is a scheme committed to conserving and enhancing natural assets and providing community benefits in its delivery of a new link road for Norwich.

1.7.3. This is supported by six design principles:

- Respond to the character and landscape in which the scheme is situated, with engineered forms integrated with the landscape to minimise their physical and visual impact and provide wider benefits or features
- Make a positive contribution to the landscape through conserving and enhancing the natural environment and biodiversity net gain
- Strive to minimise adverse impacts on the landscape and seek sustainability in its use of materials, construction techniques, and maximising multi-functional features wherever possible
- Maintain and enhance the local Rights of Way where possible, for community accessibility, amenity, and to encourage sustainable modes of travel – with consideration of this beyond the scheme extent
- Adhere to a design narrative which provides a commonality and theme to unify all components of the scheme
- Respond to the constraints imposed by statutory bodies and internal constraints on the lifespan of the scheme including capital and maintenance costs.

1.7.4. The DALS applies these principles to each component of the scheme to consider how the design should be refined. This guidance is particularly important for the River Wensum Viaduct design, to ensure a solution that responds to the environmental constraints of the site - for example, to minimise the number of piers in the floodplain that affect aquatic ecology, geomorphology, water/flooding, the use of the land by the landowner, as well as visual impact and aesthetics. The DALS also sets out the process by which the design will be developed, ensuring continuity in the design philosophy, and continuation of the Design Workshops with the LPA group.

1.7.5. A design-led approach allows for creative problem solving within a multi-disciplinary team – allowing the best solution to be brought forward, and all potential benefits of the scheme to be realised.

1.7.6. The scheme has been developed so it can be delivered in an environmentally responsible way. Through understanding the local landscape and habitats and investment in appropriate measures, we can minimise and mitigate adverse effects the NWL may have on nature and wildlife. We are following Biodiversity Net Gain (BNG) and Environmental Net Gain (ENG) principles, which means we will aim to leave all applicable habitats for wildlife in a measurably better state than before construction began.

1.8 THE FIVE CASES

1.8.1. The business case is made up of five separate cases. Together these show that:

- There is a robust case for change that is closely aligned to strategic, regional and local policy objectives – the Strategic Case
- The scheme provides high value for money – the Economic Case
- The scheme is affordable – the Financial Case
- The scheme is commercially viable – the Commercial Case
- The scheme is achievable in practical terms, and how it will be managed to ensure it achieves its objectives – the Management Case.

1.9 SUMMARY OF THE STRATEGIC CASE

STRATEGIC FIT

1.9.1. The proposed NWL scheme is closely aligned with national, regional and local policies and plans, and contributes to the Government's goal of levelling up communities, both on a national scale, and within Norfolk.

1.9.2. The scheme is designed to close the gap in the orbital network, strengthen the surrounding routes, and safeguard the network from increased congestion future growth will bring.

1.9.3. Investment in priority infrastructure schemes has been identified as a component of the long-term post-pandemic recovery plan, as published by the New Anglia LEP. Addressing existing congestion and connectivity challenges via the Norwich Western Link will create a more resilient network as these plans are realised, and linking housing and employment sites around Norwich together will provide a greater scale of opportunity for local communities.

PROBLEMS

1.9.4. The main problems that the proposed scheme aims to address are:

- **Connectivity** – closing the gap in orbital connectivity on the western side of Norwich, and addressing the missing MRN link between the A47 and the A1067
- **Congestion and delay** – addressing current and predicted congestion and delay on the radial routes and ring roads around Norwich, which results in reduced **journey time reliability** and associated environmental externalities
- **Productivity gap** –addressing the worsening gap in GVA between Norwich and the rest of the UK and enhancing recovery efforts
- **Impact of road use on rural communities** – removing unsuitable vehicles from rural roads, and reducing **speeding** on roads with lower speed limits
- **Severance** –providing an additional structure across the River Wensum suitable for heavy, two-way traffic, including freight
- **Barriers to walking and cycling** – enhancing options for pedestrians and cyclists
- **Personal injury collisions** – reducing accidents, particularly with regard to vulnerable users, where the percentage of incidents on rural north-south routes is higher than the area average.

1.9.5. If the scheme is not provided, these problems are expected to get worse. Growth in Norfolk will come at a price of increased congestion – particularly on rural roads – and a less resilient network overall.

1.9.6. The overall aim of the scheme is therefore to: support sustainable economic growth; improve the quality of life for local communities; promote an improved environment; and improve strategic connectivity with the national road network.

1.9.7. A comprehensive selection process was adopted to assess options for the scheme. This included assessing a range of new highway options, existing route upgrade options, public transport interventions as well as freight and demand management options.

1.9.8. A dual carriageway road, including a viaduct over the River Wensum and associated floodplain, was identified as the preferred option, with over 60% of consultation respondents considering this option to be an effective way of managing the identified problems. This option was selected by three times as many respondents as the next most popular option of improving the existing roads. It offers high

value for money, is publicly acceptable but less environmentally intrusive than other comparable options, and is most likely to deliver the objectives.

1.9.9. The scheme will also include a package of sustainable transport measures to complement the Norwich Western Link and encourage mode shift away from private car use for those travelling shorter distances within the study area.

1.10 SUMMARY OF THE ECONOMIC CASE

1.10.1. The cost benefit analysis for the scheme shows that the initial monetised benefits of the scheme (£310.79m), are greater than the monetised costs of the scheme (£127.13m). The resulting initial benefit-cost ratio is **2.4**, which demonstrates that the scheme offers **High** Value for Money.

1.10.2. The adjusted monetised benefits of the scheme total £434.55m. The adjusted benefit-cost ratio is therefore **3.4**, which remains within the **High** category.

1.10.3. Switching value analysis indicates that the scheme would need an increase in benefits of £74.0m to bring the scheme into the Very High category, or a decrease of £180.3m to drop it into the Medium Value for Money category. Costs would need to rise by £90.1m to bring the scheme into the Medium Value for Money category, or fall by £18.5m to bring it into the Very High value for money category.

1.10.4. When changes to the TAG Sensitivity Databook (V1.14) and optimism bias have been applied, the scheme delivers an adjusted BCR that still remains in the **High** Value for Money Category for all of the methodological approaches.

1.11 SUMMARY OF THE FINANCIAL CASE

1.11.1. The cost of the scheme preparation and construction, excluding inflation, client costs and non-recoverable VAT is £140.77m. The scheme outturn cost will be £198.39m, including risk and inflation.

1.11.2. Funding is sought via the Large Local Majors programme through the National Roads Fund. Central government/DfT funding of £168.63m (85%) is sought to deliver the scheme, with the majority of the funds being spent during the financial years 2023-2026. A local contribution of £29.76m (15%) of the scheme implementation costs is required.

1.11.3. NCC's Section 151 Officer has provided a Letter of Intent to confirm the Council's financial obligations towards the scheme.

1.12 SUMMARY OF THE COMMERCIAL CASE

1.12.1. The NWL scheme is commercially viable and is employing a robust contracting and procurement strategy. This includes the use of the OJEU 'competitive dialogue procedure' procurement route, a two-stage design and build contract, with early contractor involvement, and the use of NEC4 Engineering and Construction contracts, with different options utilised, as appropriate for the different stages of work.

1.12.2. The Contract for the NWL is split into three sections:

- Stage one: the development of the detailed design by the contractor, including support to NCC during the statutory consents process; completing such surveys and investigations as are required; and the setting of the total of the Prices for Stage Two Work
- Stage two: construction

- Stage three: landscape maintenance

1.13 SUMMARY OF THE MANAGEMENT CASE

1.13.1. The NWL scheme is capable of being delivered successfully and in line with recognised best practice. A robust set of processes either are in place or are being put in place to ensure that the project is effectively delivered, and properly evaluated.

1.13.2. The NWL is a stand-alone scheme in principle, which could be delivered independently of any other scheme or development. Similarly, no other future schemes or developments are dependent upon it. However, in its present form it has an interaction with the A47 North Tuddenham to East improvement scheme being delivered by Highways England.

1.13.3. The Management Case also describes the membership, responsibilities and accountability of various project bodies and groups, including the relationship between them. It details how stakeholders have been involved in the development of the scheme, and how they will continue to be involved as the scheme moves into the construction phase.

1.13.4. The NWL is programmed to open to traffic in 2025.

2 THE STRATEGIC CASE

2.1 INTRODUCTION

2.1.1. The Strategic Case demonstrates that the Norwich Western Link (the scheme, NWL) is needed for Norfolk. It shows how the scheme fits into a wider strategy for the city's development, and demonstrates that it aligns with national, regional and local strategic policy objectives.

2.1.2. Norfolk has tremendous growth ambitions over the next decade, aiming to attract inward investment and achieve strategic economic growth. The inadequacy of the road network to the West of Norwich for orbital and north-south movements is seen by local people and businesses as an obstacle to that growth. Communities within the NWQ are subject to speeding, rat-running, and inappropriate traffic, resulting in severance and safety concerns. For these reasons, a link between the A1270 (part of the Major Road Network) and the A47 Norwich Southern Bypass has been identified as one of the County Council's Top 3 infrastructure priorities, and is supported by the emerging Greater Norwich Local Plan.

2.1.3. The provision of the NWL will enable NCC to push forward with its plans for growth, secure in the knowledge that the road network will be able to accommodate future demand in a safe, reliable, and effective manner.

2.1.4. The Strategic Case is structured in line with Department for Transport guidance, describing:

- The policy and legislative context in which the scheme has been developed
- The existing problems which the scheme needs to address
- The effect on the study area if the scheme is not delivered – the impact of not changing
- What options were considered and the results of assessment
- The objectives of the scheme
- How success will be measured.

2.1.5. It also addresses the practical delivery of the scheme, outlining:

- What the scheme will, and will not include
- Any constraints (physical, financial, political, environmental. etc.) which could affect delivery of the scheme
- Interdependencies - other factors, schemes or projects that interact with the NWL
- The stakeholders – what they require from the scheme, how they have been involved so far, and how they can support the delivery of the scheme.

2.2 POLICY, LEGISLATION AND BUSINESS STRATEGY

2.2.1. This section describes NCC's strategic aims and responsibilities and sets out the policy context in which the scheme has been developed. It considers the relevant legislation, policy, plans and strategies at a national, regional and local level, to identify the key themes and priorities. The proposed NWL scheme is closely aligned with the following national, regional and local transport plans, policies and strategies:

National policies and plans

- Objectives for Major Road Network (MRN) schemes
- National Infrastructure Strategy (2020)

- Ten Point Plan for a Green Industrial Revolution (2020)
- Gear Change (2020)
- Cycling and Walking Investment Strategy / LTN 1/20 (2020)
- Roads Investment Strategy (RIS1 / RIS2) (2020)
- National Planning Policy Framework (2019)
- Industrial Strategy (2017)
- Transport Investment Strategy (2017)
- National Infrastructure Delivery Plan (2016)

Regional policies and plans

- Covid-19 Economic Recovery Restart Plan – New Anglia LEP (2020)
- Draft Norfolk and Suffolk Local Industrial Strategy (2019)
- Regional Evidence Base, Transport East (2019)
- Integrated Transport Strategy for Norfolk and Suffolk (2018)
- Norfolk and Suffolk Economic Strategy (2017)

Local policies and plans

- Broadland and South Norfolk Recovery Plan (2020)
- Norfolk Infrastructure Delivery Plan (2019)
- Norfolk Environmental Policy (2019)
- Together for Norfolk (2019)
- Norfolk Strategic Framework (2017)
- South Norfolk District Local Plan (2015)
- Joint Core Strategy for Broadland, Norwich and South Norfolk (2014)

Emerging Policy

- Local Transport Plan 4 Strategy, 2021 – 2036 (expected 2021)
- Transport East Transport Strategy
- Greater Norwich Local Plan (expected 2022)
- Transport for Norwich Strategy (expected 2021)

APPLICABLE LEGISLATION

Town & Country Planning Act 1990

2.2.2. The Town and Country Planning Act 1990 regulates the development of land in England and Wales. The development of the NWL is a scheme that will come under the remit of this Act, as any new highway would constitute 'development' (as defined in the Act) and would therefore require planning permission from the relevant authority prior to construction commencing.

Town & Country Planning (Environmental Impact Assessment) Regulations 2017 (England)

2.2.3. The NWL scheme will come under the remit of these regulations due to the scale of the proposals. The Environmental Impact Assessment (EIA) regulations require any substantial application for planning permission to be accompanied by an Environmental Statement (ES), which assesses the impacts of the project upon the environment. The preparation of the ES and its consideration by the planning authority is a process known as the EIA.

2.2.4. These regulations identify, in Schedule I and Schedule II, a variety of projects and developments that require planning permission. Schedule I developments, including new power stations, oil

refineries and motorways are projects for which EIA is compulsory, and Schedule II developments are projects for which EIA is not necessarily required, but should be undertaken should the project exceed certain thresholds and have the potential for significant effects upon the environment. As the scheme will occupy a footprint of over 1ha, the NWL will be a Schedule II development. A Scoping Opinion was submitted in October 2020 to define the scope of assessment.

The Conservation of Habitats and Species Regulations 2017

2.2.5. The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations) transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) into UK law. The Habitats Regulations provide for the designation and protection of 'European sites' and the adaptation of planning and other controls for the protection of European sites. Under the Habitats Regulations, competent authorities are required to consider plans or projects and restrict or revoke planning permission where the integrity of a European site would be adversely affected. The River Wensum is a Special Area of Conservation, and as such strictly protected under the Habitats Regulations.

NATIONAL POLICY

Objectives for Major Road Network schemes

2.2.6. The NWL was accepted for inclusion in the Major Road Network (MRN) in May 2020. The government's objectives for the MRN are set out as follows, together with the government's reasons for each objective:

- Reducing congestion – alleviating local and regional congestion, reducing traffic jams and bottlenecks.
    - Congestion creates delays and bottlenecks on heavily-used routes and has an economic impact. Investments will upgrade and enhance roads on the MRN, making it better able to cope with demand by adding capacity to reduce congestion and crowding. This will make journeys more comfortable and reliable for users and make possible new trips that were previously impractical due to frequent or unpredictable delays.
- Support economic growth and rebalancing – supporting the delivery of the Industrial Strategy, contributing to a positive economic impact that is felt across the regions.
    - Investments on the MRN can better connect people and businesses to markets and international gateways, boosting economic productivity. This makes places more attractive to businesses and people, encouraging further investment.
    - By improving the capacity, reliability, safety and connectivity of the network, road investment facilitates journeys for people and businesses and improves economic performance.
- Support housing delivery - unlocking land for new housing developments.
    - We face an immense challenge to provide the houses that will support communities to grow sustainably. Transport infrastructure is key to unlocking development and delivering places people want to live.
    - Road schemes can create new links between communities and workplaces to deepen local labour markets, connect housing developments to the network, provide new routes on city and commuter networks or contribute to creating places that promote wellbeing through the management of congestion or provision for public transport.

- Support all road users – recognising the needs of all users, including cyclists, pedestrians and disabled people.
    - MRN investments need to consider the needs of all road users. Proposals to improve the MRN should consider the needs of both motorised and non-motorised users. In bringing forward proposals for improvements to the MRN, the Government expects the needs of all users, including cyclists, pedestrians and disabled people and public transport users, to be considered and benefits for them delivered as part of the solutions proposed.
- Support the Strategic Road Network – complementing and supporting the existing SRN by creating a more resilient road network in England.
    - Users need to pass seamlessly between the MRN and the SRN. To support users' journeys and ensure a seamless transition between the two networks, MRN investments will also seek to improve flows between the SRN and the MRN.

2.2.7. A lack of an appropriate link restricts access to business both locally and regionally. The NWL will close a 'missing link' on the MRN, providing better connectivity, and the associated improvements in network resilience and safety.

2.2.8. Both housing and employment growth in Norfolk will come at the price of increased congestion, particularly on rural roads. The implementation of the NWL will allow traffic to switch from local roads to the MRN network, decreasing links with delays in the surrounding areas.

2.2.9. Non-motorised users have also been considered as part of the NWL, with their needs being reviewed and addressed as part of a Non-Motorised User strategy and a Sustainable Transport Strategy to consider wider sustainable transport interventions (cycle friendly route options and pedestrian/cycle crossing improvements) and options for a potential new bus service.

National Infrastructure Strategy (2020)

2.2.10. The National Infrastructure Strategy, published in November 2020, sets out the Government's plans to transform infrastructure across the UK by 2050 by focusing on four overarching subject matters:

- Levelling up – boosting growth and productivity by investing in rural areas, towns and cities
- Zero emissions by 2050 – transforming infrastructure to decarbonise the UK's power, heat and transport networks, and adapting to the risks posed by climate change
- Supporting private investment – providing clarity on government plans to ensure confidence
- Accelerate and improve delivery – reforming the planning system, and improving the way projects are chosen, procured and delivered

2.2.11. The National Infrastructure Strategy shares the National Infrastructure Commission's ambitions for levelling up cities outside of London. Improved transport links will allow cities to 'act as an anchor' for growth across a region, enabling the rebalancing of the economy through infrastructure.

2.2.12. The Strategy underscores the Government's commitment to creating rural communities with strong transport networks, thereby unlocking opportunity and supporting local economies. Active and sustainable travel remains a priority, with future funding having been committed for cycling (through active travel funds referenced in Gear Change [**see 2.2.18**]) and bus improvements.

2.2.13. A number of infrastructure investment measures are listed in the National Infrastructure Strategy. £39m has been allocated to Norwich for key transport improvements, including a mobility hub at Norwich Station.

2.2.14. Connectivity is central to the NWL scheme. Linking the A47 to the A1067/A1270 will provide a purpose-built alternative to rural roads and close the gap in orbital connectivity to the west of Norwich. Feedback from stakeholders during consultation exercises noted that not only would residents benefit from improved links to centres of excellence, but haulage firms would benefit from the reduced journey times, further driving economic growth.

Ten Point Plan for a Green Industrial Revolution (2020)

2.2.15. The '*Ten Point Plan'* commits to mobilising £12 billion of government investment as part of what has been termed Green Industrial Revolution. The ten points cover ways to decarbonise the UK across the sectors of across energy, buildings, transport, innovation and the natural environment, while also striving to transform the economy, creating new (green) jobs and delivering growth. Points 4 and 5 of the plan relate to transport infrastructure (accelerating the shift to zero emissions vehicles and green public transport, cycling and walking), but the underlying objective is to reduce carbon from our transport networks. This is supported by the 'National Infrastructure Strategy', which states infrastructure investment is fundamental to delivering the Carbon Net Zero targets.

2.2.16. The NWL aims to remove slow-moving traffic (known to increase vehicle emissions) from rural roads, and places them on an appropriately designed link road at a higher speed. With HGV traffic forecast to grow to over 10% of traffic flows between 2019 and 2050, the NWL will redirect a significant amount of traffic away from rural communities. Forecast traffic flows and speeds with the scheme in place result in carbon emissions dropping by a total of 456,434 tonnes of carbon over the 60-year appraisal period (the difference between the do minimum and do something scenarios). The operational phase of the scheme therefore shows a strong strategic fit to the government's Carbon Net Zero policy objective.

2.2.17. As part of the Environmental Statement, both the construction and operational phases will be quantified in line with current guidance, and set out in the context of the UK carbon budgets. This will include materials, the transport of materials to site, and the operation of plant and materials.

Gear Change: A bold vision for cycling and walking (2020)

2.2.18. This plan describes the vision to make England a great walking and cycling nation. It sets out the actions required at all levels of government to make this a reality, grouped under four themes:

- Better streets for cycling and people
- Cycling and walking at the heart of decision-making
- Empowering and encouraging local authorities
- Enabling people to cycle and protecting them when they do

2.2.19. While the NWL scheme is predominantly a highway scheme, it is supported by a Sustainable Transport Strategy that seeks to improve the existing walking and cycling facilities in the surrounding area. It seeks to divert the existing routes, where they are severed by the scheme, via new grade-separated crossings and improve the tie-in to existing routes both to the north and south of the scheme. The scheme includes new green bridges and new signalised crossings.

Cycling and Walking Investment Strategy / LTN 1/20

2.2.20. The statutory Cycling and Walking Investment Strategy (CWIS) sets a clear ambition to make cycling and walking the natural choices for short journeys or as part of a longer journey with supporting objectives to increase cycling and walking levels.

2.2.21. The Local Transport Note (LTN) provides guidance and good practice for the design of cycle infrastructure, in support of the CWIS. It supports the delivery of high-quality cycle infrastructure and reflects current good practice, standards and legal requirements. Inclusive cycling is the underlying theme so that people of all ages and abilities are considered.

2.2.22. The NWL scheme includes a Sustainable Transport Strategy, which seeks to improve the existing walking and cycling facilities in the surrounding area. The scheme includes green bridges, improved walking and cycling infrastructure and crossing facilities. It will also tie in to existing walking and cycling infrastructure to the north and the south of the scheme.

Roads Investment Strategy (RIS1 / RIS2), 2020-2025 (2020)

2.2.23. The first Roads Investment Strategy (RIS1) included improvements to the A47 around Norwich. One of these projects was the dualling of the single carriageway section from Easton to North Tuddenham. This was committed as part of the second Road Investment Strategy (RIS2), with funding made available during the second Road Period (RP2). Highways England submitted a Development Consent Order (DCO) Application to the Planning Inspectorate in March 2021 for this scheme. It was accepted in April 2021 and now progressing to examination in public.

2.2.24. RIS2 sets a long-term strategic vision for Highways England's road network. It specifies the performance standards Highways England must meet, lists planned enhancement schemes that are expected to be built, and states the funding that Highways England will make available during the second Road Period (RP2), covering the financial years 2020/21 to 2024/25.

2.2.25. The vision seeks a network that:

- Supports the economy
- Is greener
- Is safer and more reliable
- Is more integrated
- Is smarter.

2.2.26. The NWL will provide a direct connection between the Strategic Road Network and the A1270, which forms part of the Major Road Network. It would provide a shorter, more efficient route between the A47 west and north of Norwich than the currently provided route via the existing A47, which passes around Norwich to the east or via the outer ring road. This more efficient route would support the economy of Norwich and the wider Norfolk area. The addition, the NWL would strengthen the reliability of the existing road network by providing another route in times of accidents or maintenance on the existing A47.

National Planning Policy Framework (2019)

2.2.27. The National Planning Policy Framework (NPPF), published by the Ministry of Housing, Communities and Local Government in February 2019, contains the Government's planning policies for England and how these are expected to be applied.

2.2.28. The NPPF advises that planning policies and decisions should play an active role in guiding development towards sustainable solutions, and recognises three interlinked dimensions in achieving this: economic, social and environmental. The policies within the framework seek to improve health, social and cultural wellbeing for all, deliver adequate community and cultural facilities, provide services to meet the demand of local people, and create a good standard of amenity for all existing and future occupants of land and buildings. Development that takes place

under the framework is expected to contribute to the conservation and enhancement of the natural and historic environments as well as prevent development that leads to unacceptable levels of pollution.

2.2.29. The NPPF emphasises good design, which is a key aspect of sustainable development and should contribute positively to making places better for people and should avoid significant adverse impacts that can affect health and quality of life.

2.2.30. The NPPF sustainable development objectives are:

- **Economic** – To help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support existing, planned and potential growth, innovation and improved productivity, and by identifying and coordinating the provision of infrastructure.
- **Social** – To support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations, and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being.
- **Environmental** – To contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

2.2.31. Chapter 9 of the NPPF sets out policies to promote sustainable transport, including the expectation that the environmental impacts of traffic and transport infrastructure are identified, assessed, and taken into account, and that appropriate opportunities are taken for avoiding and mitigating adverse effects and achieving net environmental gains. The NWL has been formulated with these objectives in mind.

2.2.32. The NWL will increase accessibility to existing, planned, and emerging areas of growth. Improved transport links will improve access to existing and new homes/development in the NWQ.

2.2.33. Rerouting traffic away from villages and narrow lanes will help provide a safer environment for road users and pedestrians and encourage active travel modes. This would benefit the local natural and built environment in these locations, reducing emissions and noise and improving air quality.

Industrial Strategy (2017)

2.2.34. The Government published its Industrial Strategy in 2017, which aims to improve living standards and economic growth by driving productivity and growth across the whole country. It focuses on five foundations:

- Ideas: the world's most innovative economy
- People: good jobs and greater earning power for all
- Infrastructure: a major upgrade to the UK's infrastructure
- Business environment: the best to start and grow a business
- Places: prosperous communities across the UK.

2.2.35. The strategy identifies priority areas for infrastructure, stating that infrastructure choices provide the basics for the economy and actively support our long-term productivity. Efficient transport systems are identified as a priority area.

2.2.36. Norwich Research Park is a world-renowned centre of agri-tech research and innovation, with an annual research expenditure of over £230m. It is included in the Industrial Strategy as a case study for research laboratories and agri-tech innovation in Norwich and has been identified as a Tier One Employment Centre. The NWL will improve connections between Norwich Research Park and the area north of Norwich, including the airport and the A140 towards the coast.

Transport Investment Strategy (2017)

2.2.37. The Transport Investment Strategy (TIS) sets out how the Government plans to invest in transport infrastructure. The Strategy is seen as an enabler to help deliver the Industrial Strategy, which, by improving connections between communities and businesses, will help deliver planned growth across the country.

2.2.38. Investment decisions should focus on the main objectives set out in the TIS. The objectives and policy in the TIS are:

- Create a more reliable, less congested, and better-connected transport network that works for the users who rely on it
- Build a stronger, more balanced economy by enhancing productivity and responding to local growth priorities
- Enhance our global competitiveness by making Britain a more attractive place to trade and invest
- Support the creation of new housing

2.2.39. The proposed NWL would complete an orbital route around Norwich that forms part of the MRN. It will improve accessibility to business and employment, providing reduced journey times and transport costs, and encouraging investment.

National Infrastructure Delivery Plan (2016)

2.2.40. The National Infrastructure Delivery Plan 2016-2021 sets out the Government's plans for economic infrastructure over a five-year period, alongside plans to support delivery of housing and social infrastructure. It reflects the Government's commitment to invest over £100 billion by 2020-2021 to drive wider economic benefits, including:

- Supporting growth and creating jobs in the short term as projects are built – especially where public investment is used to attract private investment
- Raising the productive capacity of the economy in the long term as the benefits of new infrastructure are felt; reduced transaction costs; larger and more integrated labour and product markets; and better opportunities to collaborate and innovate
- Driving efficiency – enabling greater specialisation and economies of scale
- Boosting international competitiveness – attracting inward investment and enabling trade with foreign partners.

2.2.41. The NWL connects the A1067 and A1270 to the A47 west of Norwich, providing a high quality and more direct link between the west and north. This will improve productivity and efficiency for business through reduced journey costs. The NWL will improve the capacity and connectivity around Norwich providing improved resilience and supporting economic growth.

REGIONAL POLICY

Covid-19 Economic Recovery Restart Plan (2020)

2.2.42. This restart plan sets out the actions and interventions being taken by a wide range of partners, including New Anglia LEP, local authorities, business, industry councils and sector groups, voluntary, community and social enterprise (VCSE) organisations, colleges and universities. It demonstrates the strong local appetite and energy for getting the economy going again and helping those who have been hit hardest.

2.2.43. One of the identified measures for economic recovery is investing in infrastructure. The plan states that “we will support the construction sector through continued investment in key infrastructure and make a compelling case to Government to fund priority infrastructure schemes.”

2.2.44. The NWL has been identified as a key infrastructure scheme in the Norfolk and Suffolk region, as detailed in the Integrated Transport Strategy for Norfolk and Suffolk.

Draft Norfolk and Suffolk Local Industrial Strategy (2019)

2.2.45. The Norfolk and Suffolk Local Industrial Strategy sets out a series of coherent and specific actions that will drive productivity and growth across the economy as a whole. It reflects the opportunities and needs of Norfolk and Suffolk’s growing economy and how it will respond in a fast-changing world.

2.2.46. Clean growth sits at the heart of the Local Industrial Strategy. Norfolk and Suffolk are at the forefront of tackling the challenges and opportunities of climate change. The area's major strengths in energy generation and usage, and high-tech sustainable agri-food, present major opportunities. The strategy has three areas of focus:

- Clean Energy: Powering the world
- Agri-food: Feeding the world
- ICT and Digital Creative: Connecting the world.

2.2.47. Norfolk and Suffolk have the largest agri-food sector in the UK, and world-leading research into plant and soil technology and agricultural systems. The region has strong innovation assets, concentrated in a small number of firms, and world-class research assets, including Norwich Research Park.

2.2.48. The strategy sets out a range of actions that will be taken forward to maximise the clean agri-food opportunity, one of which is to ”Invest in a Food Innovation Hub based at the Honingham Food Enterprise Zone to deliver business growth through innovation, productivity, processing, exports and supporting new start-ups”.

2.2.49. The NWL will improve access to the Food Enterprise Zone and Norwich Research Park from the area north of Norwich.

Regional Evidence Base, Transport East (2019)

2.2.50. In 2019, Transport East produced a Regional Evidence Base to inform the development of its Transport Strategy (see **Transport East Transport Strategy**, section 2.2.106). This report draws on existing and future challenges and opportunities for strategic transport infrastructure investment across the Transport East region.

2.2.51. It sets out Transport East's vision to create "a thriving economy for the East, with fast, reliable and resilient transport infrastructure that drives forward a future of inclusive and sustainable growth for decades to come".

2.2.52. It lays out three key themes that are foundational for the Transport East Transport Strategy:

- Global gateways – better connected ports and airports to help UK businesses thrive
- Multi-centred connectivity – enhanced links between places and business clusters to improve productivity
- Energised coastal communities – delivering on the region's ambition to become the UK's foremost all-energy coast and a competitive visitor offer

2.2.53. The NWL scheme is identified as a part of that vision in the Regional Evidence Base. The increased connectivity between communities and employment sites, including Norwich Airport, that the NWL offers contributes to the first two of these themes. Enhanced links between the MRN and SRN also enables onward travel for coastal tourism, a significant contributor to the region's economy.

Integrated Transport Strategy (ITS) for Norfolk and Suffolk (2018)

2.2.54. The New Anglia Local Transport Board partners developed an ITS, which sets out the ambition to create an integrated, total transport solution that serves Norfolk and Suffolk's growing economy, their collective goals for delivery, and how they might be brought to fruition. It also provides a robust foundation for Transport East, the sub-national transport body. Most importantly, it sets out how the transport network can help to continue to make Norfolk and Suffolk a great place to trade, live, work, visit and learn.

2.2.55. It states that "for the East to continue to thrive, we must work together to develop a network that meets our aspirations both now and, in the decades, to come. If implemented successfully future businesses will benefit from better connected opportunities for growth, a wider pool of accessible skilled labour and the opportunity to engage in more markets than ever before."

2.2.56. The Strategy looks ahead to the 2040s but focuses on the actions that need to be taken over the next three to five years to help secure the foundations for long-term success.

2.2.57. The relevant transport strategy themes are:

Connecting the East, Accessing the World

2.2.58. International access is a key strength and opportunity for the East. Access to the Port of Felixstowe as the nation's largest container gateway and other ports including Great Yarmouth, which is expanding to meet the demand for off-shore wind, as well as airports at London Stansted and Norwich are clear priorities for the area. Connectivity between the East and the rest of the UK is essential to enabling businesses to have strong links to customers and supply chains.

2.2.59. The NWL will improve connectivity between the west/south of Norwich and the airport to the north. This will enable quicker, more reliable, and resilient strategic connections.

Regional Connectivity and our Priority Places

2.2.60. Improving accessibility between the East's economic centres is essential to the realisation of the future aspirations. It provides better access to jobs, education and healthcare, encourages the clustering benefits of development and services and attracts inward investment. A strong digital and

transport network across the East will link businesses and suppliers to markets and provide the backbone for the East to thrive.

2.2.61. As part of this, the ITS seeks to "deliver a reliable Major Road Network (MRN) with improved journey times between our Priority Places, through the creation of an integrated MRN Action Plan for delivery". This includes the NWL, connecting the new A1270 from the A1067 to the A47 west of Norwich, which will improve the flow of traffic around the growing local communities and ensure the network is kept in a good state of repair.

2.2.62. It also seeks to "facilitate better connectivity, which provides more reliable and resilient journey times within and between our Priority Places. This will be through making the strategic case for and the delivery of infrastructure investment. It will include new river crossings (in Great Yarmouth, Ipswich and Lowestoft), orbital links and relief roads (including the Ipswich Northern Route(s) and the NWL, connecting the new A1270 from the A1067 to the A47 west of Norwich), and junction improvements, prioritising infrastructure that will facilitate the delivery of significant housing and jobs growth."

Local and Coastal

2.2.63. The Norfolk and Suffolk Energy Coast is a significant contributor to the East's economy and serves Sizewell nuclear power station, Bacton Gas Terminal and the significant offshore energy sector as part of the wider East of England Energy Zone. It is a global centre of oil, gas, nuclear and renewable energy generation and infrastructure.

2.2.64. East Anglia attracts tourists every year, the latest information available (2013 ONS) shows that the East accounted for over £10.2 billion of Total Tourism Consumption with £5.2 billion of that associated with the East Anglia area.

2.2.65. The NWL will improve connectivity to the coast by completing orbital connectivity around Norwich, and providing a route option around the north of Norwich, rather than the current option to the south.

Making it happen

2.2.66. Local and collaborative delivery is important, having the potential to make a real difference and the skills, experience and resources from a number of new and existing partners are needed to help bring the stated ambitions to fruition.

2.2.67. The ITS states that the "transport network is recognised as a seamless enabler helping our business and communities thrive, helping to make the East one of the UK's most attractive places to do business, live, learn, work and visit."

Norfolk and Suffolk Economic Strategy (NSES) (2017)

2.2.68. The New Anglia Local Enterprise Partnership (LEP) covers Norfolk and Suffolk. It works with businesses, local authority partners and education institutions to drive growth and enterprise in Norfolk and Suffolk. The NSES builds on the 2014 Strategic Economic Plan. The NSES sets out the LEP's ambition to establish the New Anglia area as:

- The place where high growth businesses with aspirations choose to be
- An international facing economy with high value exports
- A high performing, productive economy
- A well-connected place
- An inclusive economy with a highly skilled workforce
- A centre for the UK's clean energy sector

- A place with a clear, ambitious offer to the world.

2.2.69. This will be achieved through actions and investment in priority places and themes. The priority places are the areas where the evidence shows there are significant opportunities and commitment for continued growth. Norwich and Greater Norwich are named as a priority place.

2.2.70. The NSES states that Norfolk and Suffolk should be "a well-connected place, locally, national and internationally. Investment in housing, roads, rail and broadband [should be] coordinated to build the communities and connections that people and businesses need. This will drive housing and GVA."

2.2.71. Creating new jobs and businesses requires focused investment by local partners and Government to improve the area's infrastructure and to ensure that business has a supply of skilled workers and the right support to grow. Some of the key sectors identified are agriculture, food and drink, visitor economy and financial services and insurance.

2.2.72. Norwich is home to a cluster of financial and insurance companies, life science, advanced food tech and biotech cluster and the Food Enterprise Zone, all of which are situated to the west of Norwich and will benefit from improved accessibility and travel efficiencies provided by the NWL. The improved accessibility will also benefit the visitor economy especially people travelling north of Norwich to the coast and the Norfolk Broads.

LOCAL POLICIES AND PLANS

Broadland and South Norfolk Recovery Plan (2020)

2.2.73. South Norfolk Council and Broadland District Council have produced a joint coronavirus recovery plan, that aims to deliver the retention and recovery of local jobs and businesses. Modelling by the Centre for Progressive Policy[13] shows that while the economic impacts within the East of England are expected to be lower than a large proportion of the UK, Broadland is expected to show a 32% decline in GVA, and South Norfolk a 25% decline in GVA. Before returning to a position of economic growth, the region first needs to undergo a recovery.

2.2.74. Plans for rebuilding, restoring and rehabilitating the communities and economy are built around a strategic six-point plan and three core themes:

- Create clean, safe and vibrant public spaces (economy)
- Support every business to drive the growth of the economy and employment (economy)
- Develop our Community Hub and partnership working model (communities)
- Support individuals and families through an effective Hardship Offer (communities)
- Secure our finances through transformation and commercialisation (governance)
- Reimagine our service delivery and ways of working (governance).

2.2.75. Tactical actions are matched against each of these objectives for the short, medium and long-term.

13 https://www.progressive-policy.net/publications/which-local-authorities-face-biggest-immediate-economic-hit

2.2.76. The Norwich Western Link both contributes to and is specifically mentioned as a component of the long-term plan for supporting businesses to drive the growth of the economy and employment. This intervention is targeted at unblocking constraints to growth via the delivery of infrastructure projects that will transform the area.

Norfolk Infrastructure Delivery Plan (2020)

2.2.77. The Infrastructure Delivery Plan (IDP) sets out the key infrastructure needed to deliver economic growth in Norfolk. As a working document, it is reviewed on a regular basis as information becomes available and projects progress. The Plan will help NCC and partners to coordinate implementation, prioritise activity and respond to any funding opportunities. Updated in December 2020, the Norfolk Infrastructure Delivery Plan now also takes fallout from the pandemic into account.

2.2.78. The plan lists several key infrastructure projects that NCC, in collaboration with partners, is seeking to progress over the next 10 years. These were judged on four criteria:

- Delivering significant housing and jobs growth
- Identified in existing plans/programmes
- Have a committed route to delivery
- Significant Local Authority control or interest

2.2.79. **Figure 2-1** provides a summary of the location of the proposed Norfolk infrastructure projects.

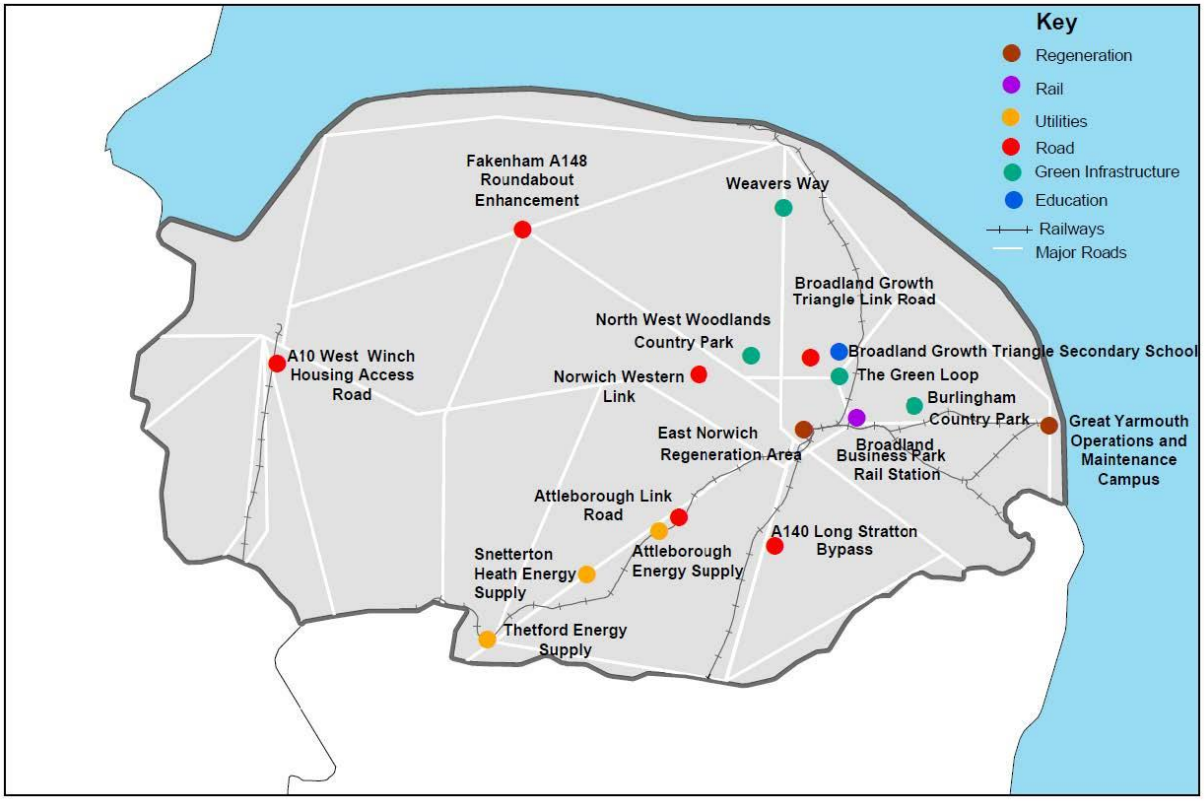


Figure 2-1 - Strategic Infrastructure projects in Local Authority control

2.2.80. The Plan states that "Norwich Western Link… has been identified as one of the County Council's priority road infrastructure schemes". The scheme is listed as:

- Supporting sustainable housing growth in the western quadrant
- Improving the quality of life for local communities
- Supporting economic growth
- Protecting and enhancing the natural environment
- Improving strategic connectivity with the national road network

2.2.81. The NWL also improves connectivity between employment growth locations and enterprise zones that the Norfolk Infrastructure Delivery Plan considers key, as shown in **Figure 2-2**.

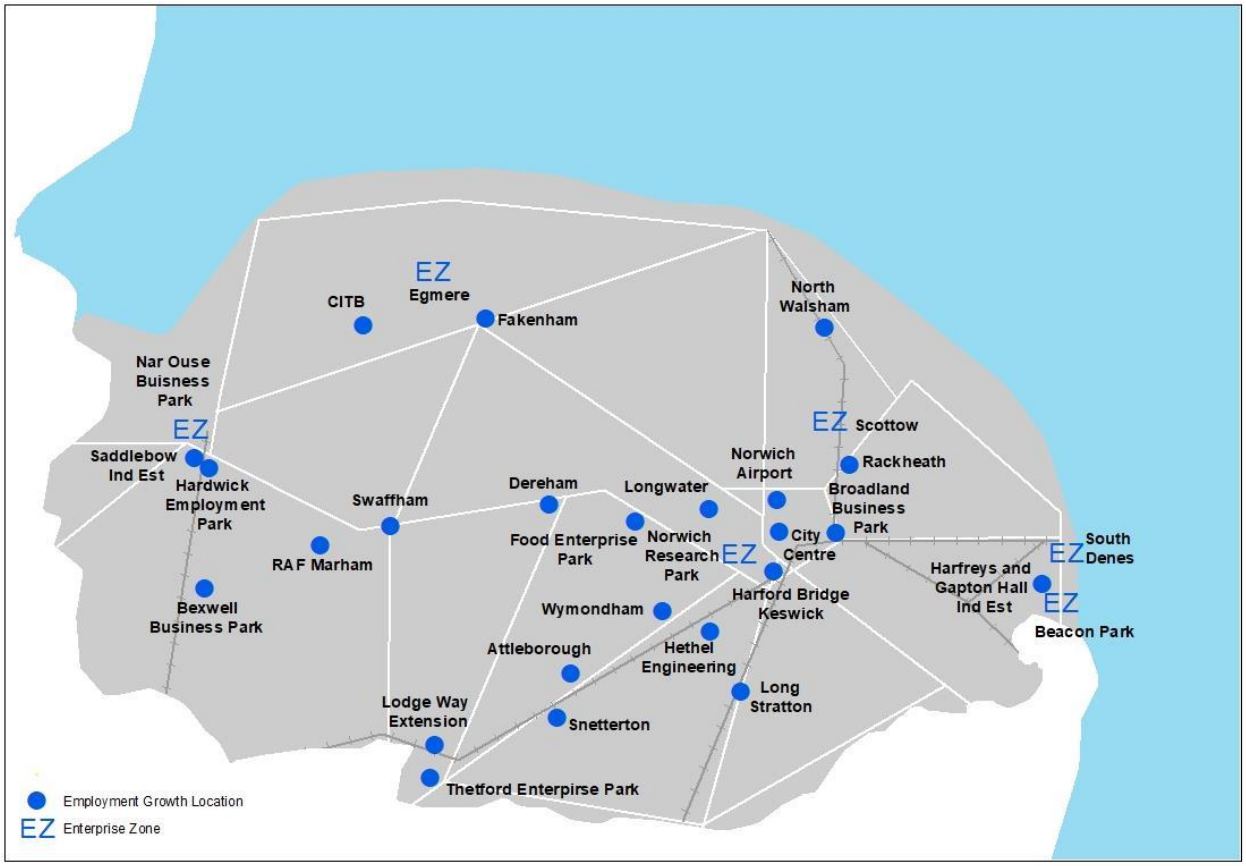


Figure 2-2 - Employment Growth Locations

Norfolk Environmental Policy (2019)

2.2.82. In 2019, Norfolk County Council published an Environmental Policy, building on the Government's 25-year plan. This policy is designed to guide the Council's future decision-making, and is framed around the following goals:

- Clean air for the population
- Ensuring a clean and plentiful water supply
- Encouraging a thriving plant and wildlife community
- Reducing the risk of harm from environmental hazards such as flooding and drought
- Using resources from nature more sustainably and efficiently
- Enhancing beauty, heritage and engagement with the natural environment
- Mitigating and adapting to climate change
- Minimising waste

- Managing exposure to chemicals
- Enhancing biosecurity

2.2.83. These goals are supported by key policy aims, including embedding an 'environmental net gain' principle for both housing and infrastructure development.

2.2.84. The NWL scheme will support improvements in local air quality in terms of NO_2 and $PM_{2.5}$, and therefore aligns with NCC's goal of ensuring clean air for the population. Carbon emissions are expected to reduce by a total of 456,434 tonnes of carbon over the 60-year appraisal period.

2.2.85. The NWL will provide the missing connection to a fully linked road around Norwich. In doing so this will help reduce travel times and improve connectivity to a variety of areas on the outskirts of the city. Removing slow moving traffic from rural roads in the area in combination with mitigation and enhancement measures proposed on the scheme will help improve local air quality and encourage biodiversity.

2.2.86. NCC are in close communication with the Environment Agency in relation to the design of the River Wensum viaduct and the impact of the NWL on the surrounding biodiversity and how this can be mitigated/offset. The NWL will also divert traffic away from existing lower standard routes helping to protect and enhance the local natural and built environments adjacent to these existing routes.

Together for Norfolk (2019)

2.2.87. Together for Norfolk is an ambitious plan released by NCC that makes Norfolk a place that "puts people first, where everyone works together to create a better place to live". It lists Norfolk's priorities for growth, with the goal of addressing drivers of poverty: unemployment, low wages, a lack of job security, low skill levels, and high housing costs.

2.2.88. Investment in infrastructure to drive growth across the County is one aspect that enables change. Norfolk is determined to contribute resources and energy to an inclusive economy, that provides opportunities to everyone, including the 120,000 people living in areas classed as deprived. This includes parts of the Bowthorpe and North Earlham residential areas, for whom connectivity is expected to be improved by the NWL. Investment in this scheme is listed alongside the A47 dualling scheme as part of Together for Norfolk's critical planned infrastructure.

Norfolk Strategic Framework (2017)

2.2.89. This document sets out shared objectives and strategic priorities for Norfolk, to be considered in developing plans to at least 2036. This approach enables NCC to work collaboratively in developing evidence and securing external funding for natural and built environments and infrastructure within the region.

2.2.90. The Norfolk Strategic Framework objectives are:

- To realise the economic potential of Norfolk and its people
- To reduce Norfolk's greenhouse gas emissions as well as the impact from, exposure to, and effects of climate change
- To address housing needs in Norfolk
- To improve the quality of life for all the population of Norfolk
- To improve and conserve Norfolk's environment.

2.2.91. The NWL is identified as a priority road project for promotion in the framework where it is listed as "key infrastructure needed to deliver economic growth in Norfolk and will help to coordinate

implementation, prioritise activity and respond to funding opportunities". It aims to improve access and connectivity, encourage investment in the local area through increased links to targeted employment areas.

2.2.92. The NWL will improve journey times while reducing delay and congestion. It will, through reassignment of traffic, lead to improved air quality within local villages and urban areas adjacent to existing routes, helping to improve the health of residents and visitors. This will also support the delivery of new and existing housing sites and provide greater connectivity between employment and housing areas.

2.2.93. Access to a wider range of goods and services will be improved for those currently constrained by the lack of an appropriate route or those impacted by rat running on existing local roads.

South Norfolk District Local Plan (2015)

2.2.94. South Norfolk District Council's Site-Specific Allocations and Policies Document (adopted October 2015) designates areas of land for development, including housing, employment, recreation, open space and community uses. Policy 10 of the Greater Norwich Joint Core Strategy identifies a list of major new or expanded communities in the Norwich Policy Area, including Easton and Costessey within South Norfolk.

2.2.95. Policies EAS 1 and EAS 2 of the document state that the settlement of Easton has 52.6ha of land allocated for 900 dwellings and associated infrastructure, as well as 1.4ha of land allocated for a new Gymnastics Centre. Costessey has a number of policies within the document (COS 1, COS 2 and COS 3), which outline an allocation of 29.6ha of land for 500 dwellings and associated infrastructure (with an additional 5.5ha for green infrastructure), and 13.3ha of land allocated for employment uses.

2.2.96. While none of the developments at Easton or Costessey are dependent on the NWL, the inclusion of the NWL will help to future-proof the network against planned growth.

Joint Core Strategy for Broadland, Norwich and South Norfolk (2014)

2.2.97. The Joint Core Strategy for Broadland, Norwich and South Norfolk (JCS) was adopted in 2011 and updated in 2014. The JCS sets out the long-term vision and objectives for the area, identifying broad locations for housing and employment growth, and improvements to transport infrastructure. At the time of its publication, the JCS noted that it could not be delivered without the implementation of the Norwich Area Transportation Strategy.

2.2.98. The JCS lays out a number of spatial planning objectives for the region, including:

- The promotion of economic growth and diversity to provide a wide range of jobs
- The promotion of regeneration and reduction of deprivation, particularly in towns, villages and rural areas
- The enhancement of transport provision to meet the needs of existing and future populations while reducing travel need and impact

2.2.99. The NWL will enhance strategic connectivity between employment sites, including Norwich Airport, Imperial Park, the Food Enterprise Zone, and the Norwich Research Park. Improved links to diverse employment areas will not only encourage economic growth, but also work to reduce deprivation in local communities. By creating a more resilient network and providing additional route options, the

NWL will help safeguard Broadland, Norwich and South Norfolk from the impact of planned future growth.

EMERGING POLICY

Local Transport Plan 4 Strategy, 2021 – 2036 (expected 2021)

2.2.100. The draft Local Transport Plan (LTP4) sets out NCC's plans, policies and programmes on transport infrastructure to 2036. The plan is expected to be adopted in August 2021 and will be accompanied by an implementation plan for the short, medium, and long-term.

2.2.101. The draft LTP4 reflects on the achievements since the 2011 Local Transport Plan, including the completion of A1270, Government commitment to A47 improvements, and the acceptance of the SOBC for the Norwich Western Link.

2.2.102. It responds to the challenges ahead, including addressing air quality and carbon reduction, infrastructure deficits, and the impact of the Covid-19 pandemic.

2.2.103. Enhancing connectivity is a core principle, referring to the connections that people make between the major places within the county, as well as the major places outside. It also refers to how people access vital services such as employment, education, health services and retail. For these trips, connectivity must be improved from surrounding rural areas.

2.2.104. The NWL is identified as a strategic priority. It will provide improved accessibility and connectivity to Tier One Employment Areas, and transport gateways such as Norwich Airport, all of which aim to encourage local investment.

2.2.105. The NWL will significantly improve connectivity in the local area through the provision of a more direct north to south link while also removing some east to west movements from the A47 and A1067. The scheme will provide a shorter, more direct route with improved journey times, enabling more efficient fuel use on journeys due to continuous speeds (no deceleration/acceleration caused by junctions and bends). The new link should also reduce traffic at the Longwater interchange.

Transport East Transport Strategy (emerging)

2.2.106. Transport East is the sub-national transport body for Norfolk, Suffolk, Essex, Thurrock and Southend-on-Sea. Transport East was launched to deliver a collective vision for the future of transport and infrastructure:

- "A thriving economy for the East, with fast, reliable and resilient transport infrastructure driving forward a future of inclusive and sustainable growth for decades to come."

2.2.107. As of February 2021, the Transport East Transport Strategy is under development. It will "set out ambitions and priority areas for improved connectivity and build upon established growth strategies and corridor-specific evidence-based campaigns."

2.2.108. Transport East has identified three key themes that together define the unique transport geography and provide an overarching narrative for the strategy:

- **Global Gateways** – Better connected ports and airports to help UK businesses thrive and boost the nation's economy through greater access to international markets and facilitating Foreign Direct Investment.
- **Multi-Centred Connectivity** – Enhanced links between our fastest growing places and business clusters; enabling the area to function as a coherent economy and improving productivity.

- **Energised Coastal Communities** – A reinvented, sustainable coast for the 21st century, which delivers on our ambition to become the UK's foremost all-energy coast, as well as a competitive visitor offer.

2.2.109. 59 miles to the south of Norwich lies Felixstowe Port, the region's and nation's largest freight gateway. Currently goods movements to Felixstowe from the coastal areas north of Norwich are constrained for potential routing alternatives.

2.2.110. Improved access to international markets is critical for future growth, which will help business-to-business connectivity for realising opportunities and developing trade. Currently, the missing link within the NWQ constrains existing goods movements and equates to higher transport costs for businesses. The provision of a higher quality and more direct route for goods movement would prove more economically efficient for business and produce a more freight and goods friendly environment for the region as whole.

2.2.111. The NWL will improve connectivity to centres of excellence and improve the flow of traffic around the growing communities. It will provide improved connectivity to Norwich Airport and the Space to Innovate Enterprise Zone sites (Norwich Research Park, Scottow Enterprise Park, Egmere Business Zone) and The Great Yarmouth and Lowestoft Enterprise Zone along with the Norfolk and Suffolk Energy Coast.

2.2.112. Tourism is a significant contributor to the regional economy with visitors attracted to the Norfolk Broads and the Norfolk coastline as well as other locations. Many visitors travel via the A140, which runs north-south from the northern edge of Norwich adjacent to the Airport towards Cromer. Visitors accessing this route from the A11 or A47 will have a desire line through the NWQ.

2.2.113. The NWL will provide better connectivity to the North Norfolk coast from the west. At peak seasonal times of the year, the NWL would help to further alleviate pressure on the Norwich outer ring road and prevent strategic long-distance visitor traffic from routing inappropriately via local minor roads within the NWQ.

Greater Norwich Local Plan (expected 2022)

2.2.114. The Greater Norwich Local Plan (GNLP) (Regulation 19) will set out the planning strategy across the three districts of Broadland, Norwich and South Norfolk until 2038. The Plan is currently at Publication Stage, and is expected to go to Public Examination in November 2021, and to be adopted by September 2022.

2.2.115. The strategy, along with adopted site allocation plans, area action plans and neighbourhood plans for each district, will set out the locations where a high proportion of growth will be needed. It aims for Greater Norwich to have 'vibrant, healthy, inclusive and growing communities', through 'clean and resource efficient' growth that allows Greater Norwich to meet is national commitments on tackling climate change.

2.2.116. It will be part of a wider package of joined up measures the councils are taking to work with the Government, New Anglia LEP, the development industry and service and infrastructure providers to fund and deliver the high-quality growth.

2.2.117. It will include policies that:

- Provide jobs and services for a rising population and develop Greater Norwich's role as an engine of the regional economy

- Facilitate enhanced growth potential with a target of at least 33,000 additional jobs in the period 2020 – 2038
- Increase the proportion of higher value, knowledge economy jobs, while ensuring that opportunities are available for development that can support all types and levels of jobs in all sectors of the economy and for all the workforce
- Be supported by investment strategies that focus on overcoming constraints to the release and development of key employment sites

2.2.118. The GNLP establishes a settlement hierarchy with associated strategic policies for growth. The Norwich urban area and its fringe areas are classified together; this includes the parishes of Costessey, Easton, Taverham, among others). This urban area is considered to play 'a key role on meeting employment growth needs, providing sites for the growth of both strategic and local employment uses.'

2.2.119. Finally, the current draft discusses planned enhancements to the transport system by 2038. This includes improvements to connectivity via road improvements to the A11, A47, A140 and the Norwich Western Link.

Transport for Norwich (TfN) Strategy, (2004 [NATS], under review)

2.2.120. The existing Transport for Norwich Strategy (previously the Norwich Area Transport Strategy, NATS) was prepared by NCC in partnership with Norwich City Council, Broadland District Council and South Norfolk Council and adopted in 2004. The strategy covered the city of Norwich, its suburbs and the first ring of surrounding villages. In 2010, NCC agreed an Implementation Plan, which also re-aligned a small number of policies to reflect the evolution of national policy The Implementation Plan was also updated in 2013.

2.2.121. The document set out a transportation strategy for the Norwich area until 2021 to help deliver growth within the Norwich area and address the problems, such as congestion. The strategy also promoted sustainable travel choices, recognising the need to maintain the economic health of the Norwich area. The NATS includes six strategic themes and objectives, which underpin the vision and are:

- Accessibility
- Congestion
- Pollution
- Safety
- Economic viability
- Liveability and community

2.2.122. Development of the NWL will improve the area's and region's accessibility. Rerouting trips away from the existing routes between the A1067 and A47 will help to improve accessibility to employment and services. both locally and regionally. This will improve the journey times of both the reassigned trips and those trips remaining on the existing routes. This will, in turn, help promote an efficient economic environment, with reduced traffic flows on existing routes encouraging more tourism.

2.2.123. The introduction of the NWL is also expected to reduce the incidence of rat running and associated speeding. Removing traffic from local roads would also reduce severance in local villages and affected residential areas.

2.2.124. The Transport for Norwich strategy is currently under review, having undertaken a consultation exercise in 2018. This will build on the work already completed and being delivered through TCF, and will set out the transport proposals for the future across the Greater Norwich area.

2.2.125. Part of the plan to improve the way people travel is to provide improved transport infrastructure so that trips that do not need to be routed through the city have viable alternatives. The NWL forms part of this improved infrastructure.

SUMMARY OF THE BUSINESS STRATEGY

2.2.126. The NWL scheme is closely aligned with national, regional, and local transport policies and plans.

2.2.127. Regional and local strategies reflect the Government's view, expressed in the National Infrastructure Plan and Transport Investment Strategy, that high quality infrastructure is needed to improve productivity and support jobs and growth.

2.2.128. The Norfolk and Suffolk Economic Strategy underscores this with a focus on well-connected places, that have the links people and businesses need to prosper.

2.2.129. Norfolk's recovery and growth ambitions, which support the Government's wider support for levelling up economic centres outside of London, require a transport network that is future-proofed. The NWL will increase capacity around Tier One Employment Sites identified as part of Norfolk's Strategic Planning Framework, which lists the scheme as a priority project. In addition, communities' sense of place will be enhanced by the NWL, with rat-running, inappropriate traffic, and the resulting severance being alleviated.

2.2.130. The case for the NWL is not only about relieving congestion in a small area. Unlocking orbital connectivity to the west of Norwich will strengthen the resilience of the network, improve the quality of life for locals and visitors, and prepare Norfolk for years of future growth.

2.3 PROBLEMS IDENTIFIED

2.3.1. There are a number of problems that the proposed scheme has been developed to address. These include:

- Connectivity
- Congestion and delay
- Productivity gap
- Journey time reliability
- Road use in rural communities
- Speeding
- Severance
- Barriers to walking and cycling
- Personal injury collisions

CONNECTIVITY

2.3.2. As shown in **Figure 2-3**, there is a gap in orbital connectivity on the western side of Norwich, with no Primary A Road standard routes available between the A140, and the A1065 route, some 35km west of the A140.

2.3.3. The NWL would fill in the missing MRN link between the A47 and A1067 in the west, extending the A1270 to meet the A47 on the west of Norwich. This route would increase orbital connectivity and provide a suitable north-south alternative for vehicles to circumnavigate Norwich to the west.

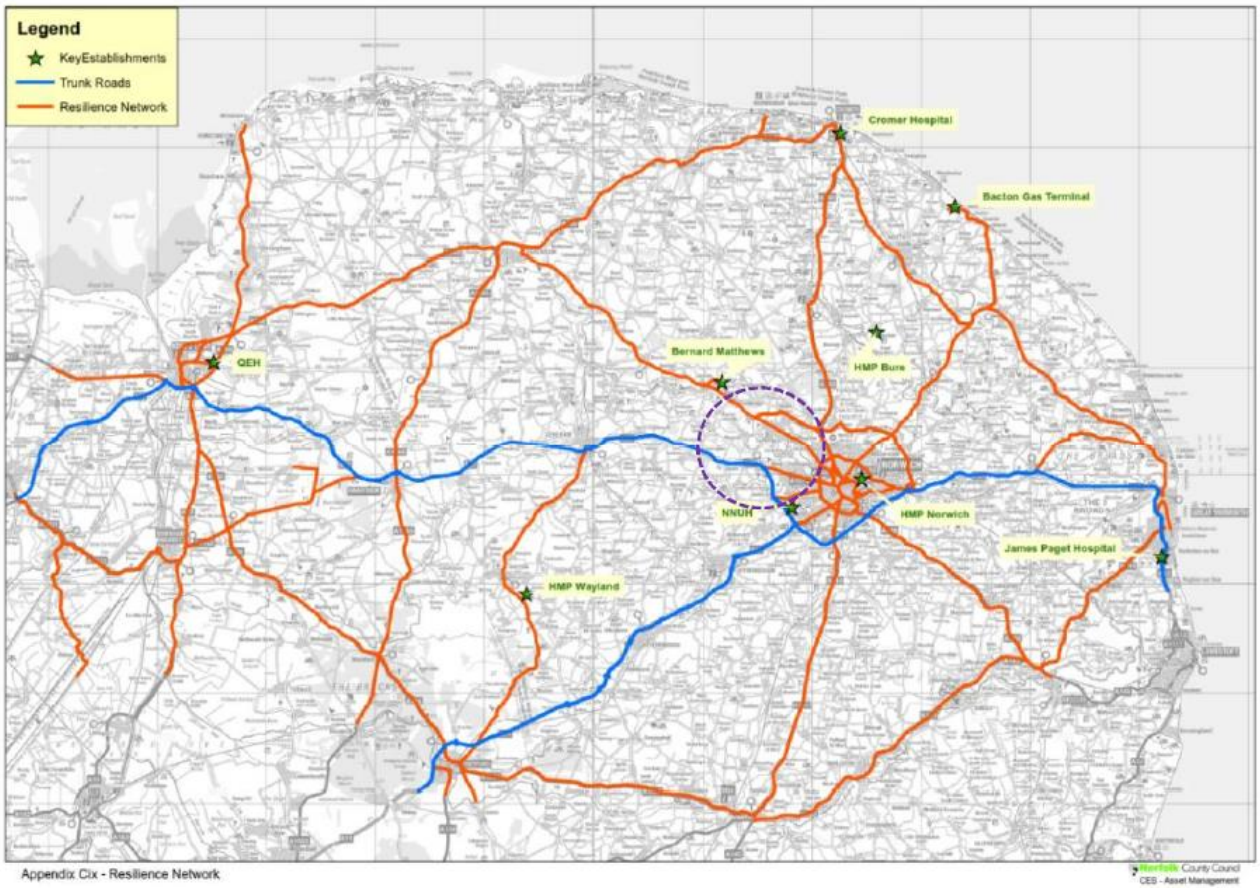


Figure 2-3 - NCC Trunk Road and Resilience Network

2.3.4. The other alternative north-south routes within the study area are predominantly rural minor single carriageway roads, which offer indirect and inefficient travel routes. While efforts have been made by NCC to prevent attracting additional through traffic to these routes, many network users have local knowledge of the area and access to satellite navigation devices and use the routes on a daily basis to avoid congestion on higher standard routes.

Freight

2.3.5. The A47 is the main route connecting Norwich and Norfolk to the Midlands and the North of England. Freight movements are currently constrained within the study area by the lack of high-standard routes for north-south movements.

2.3.6. Currently, freight traffic is directed along the B1535 or via the A1074 and A140/Cromer Road. The signed HGV route between the A1067 and the A47 via the B1535 is remote from Norwich, some 10km west of the A140. The recent upgrade of the B1535 has helped reduce HGV movements on some local roads, but the alignment of the B1535 remains constrained by existing property boundaries and includes a number of tight bends

2.3.7. The A1074/A140 route experiences congestion and delay leading to journey time reliability issues. The current routes used for freight lead to journey time inefficiencies, which will have productivity

consequences. As noted by the Road Haulage Association, the NWL "would make the area North of Norwich, which contains critical infrastructure, considerably more accessible."

2.3.8. Improved access to national and international markets is critical for future growth which will help business to business connectivity for realising opportunities and developing trade. The missing link within the NWQ lengthens journey times for freight, and may impact potential for growth within the NWQ. The provision of a more appropriate route for goods movements would prove more economically efficient for business.

2.3.9. This will also support the delivery of new and existing housing sites, and provide greater connectivity between employment and housing areas, which is a consideration for employers planning to locate to new areas.

CONGESTION AND DELAY

2.3.10. The radial routes and ring roads around Norwich suffer from congestion and delay during both AM and PM peaks. **Figure 2-4** and **Figure 2-4** - AM Peak Junction Capacity

2.3.11. show those junctions around Norwich that are operating at over 75% practical capacity – Volume / Capacity (V/C), during the AM peak and PM peak.

2.3.12. During the AM peak[14], five junctions around the A47 are above 75% in practical capacity. While this number is lower during the PM Peak, congestion shifts to the city of Norwich itself.

[14] AM peak (08:00-09:00); interpeak (average 10:00-16:00); PM peak (17:00-18:00)

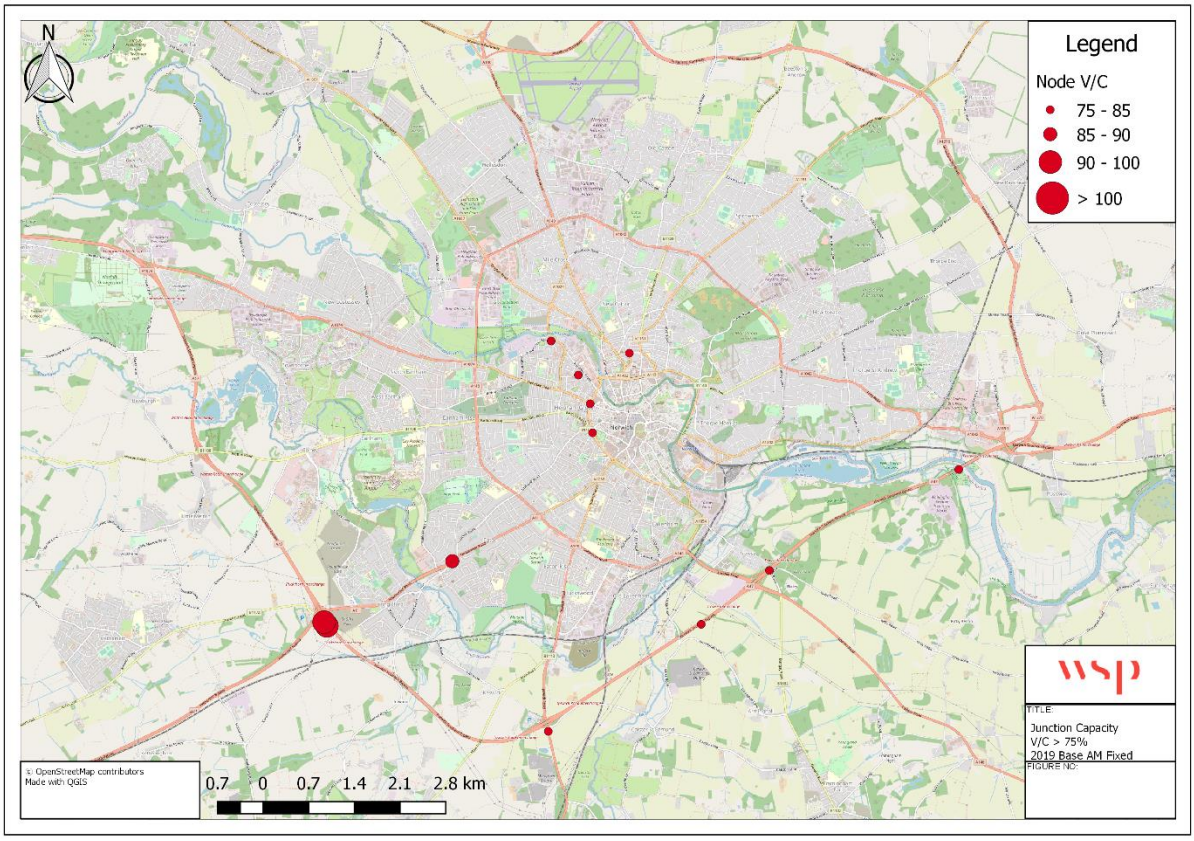


Figure 2-4 - AM Peak Junction Capacity

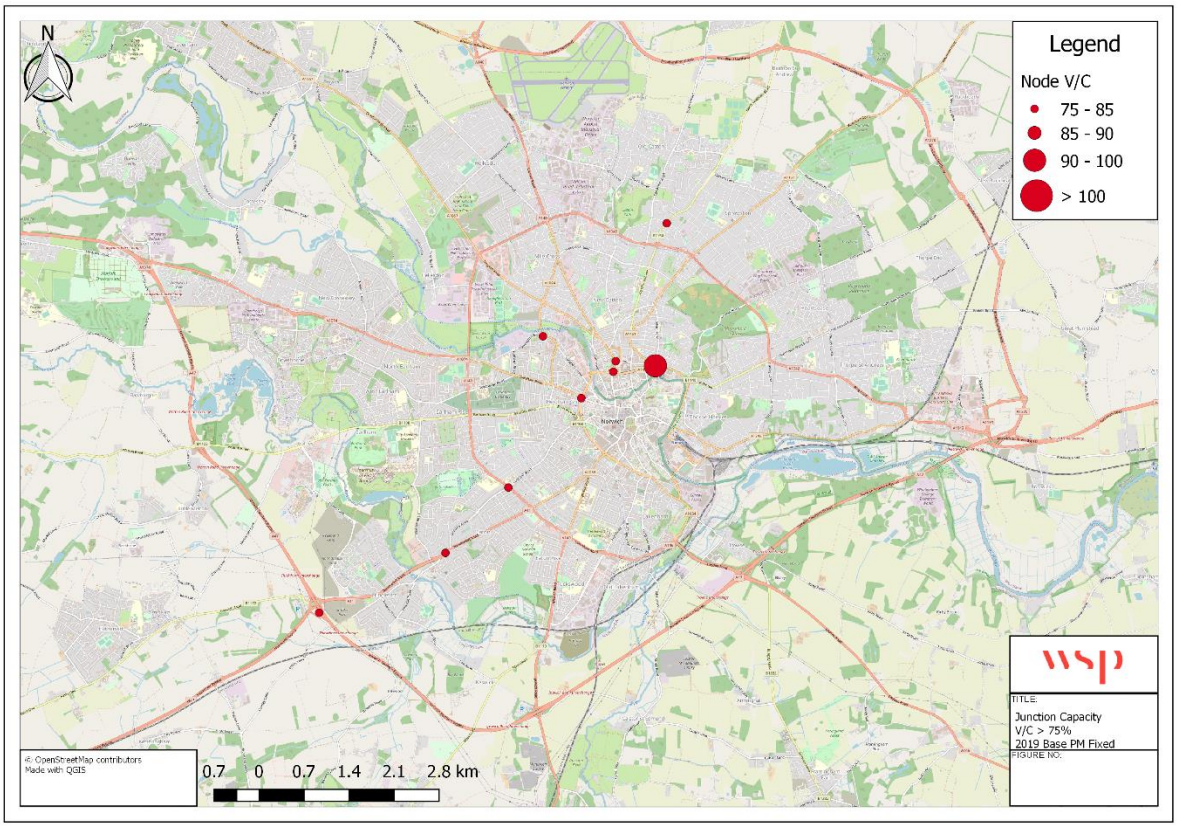


Figure 2-5 - PM Peak Junction Capacity

2.3.13. **Figure 2-6** and **Figure 2-7** show those links in the study area where delay exceeded 25 seconds in the 2019 AM peak and PM peak. This includes some sections of the A1074, including the junction of A1074 /Longwater Lane and the A1074 /Norwich Road junction. Sections of the A146 Lakenham Road and A140 (Colman Road) were found to have delays of over one minute.

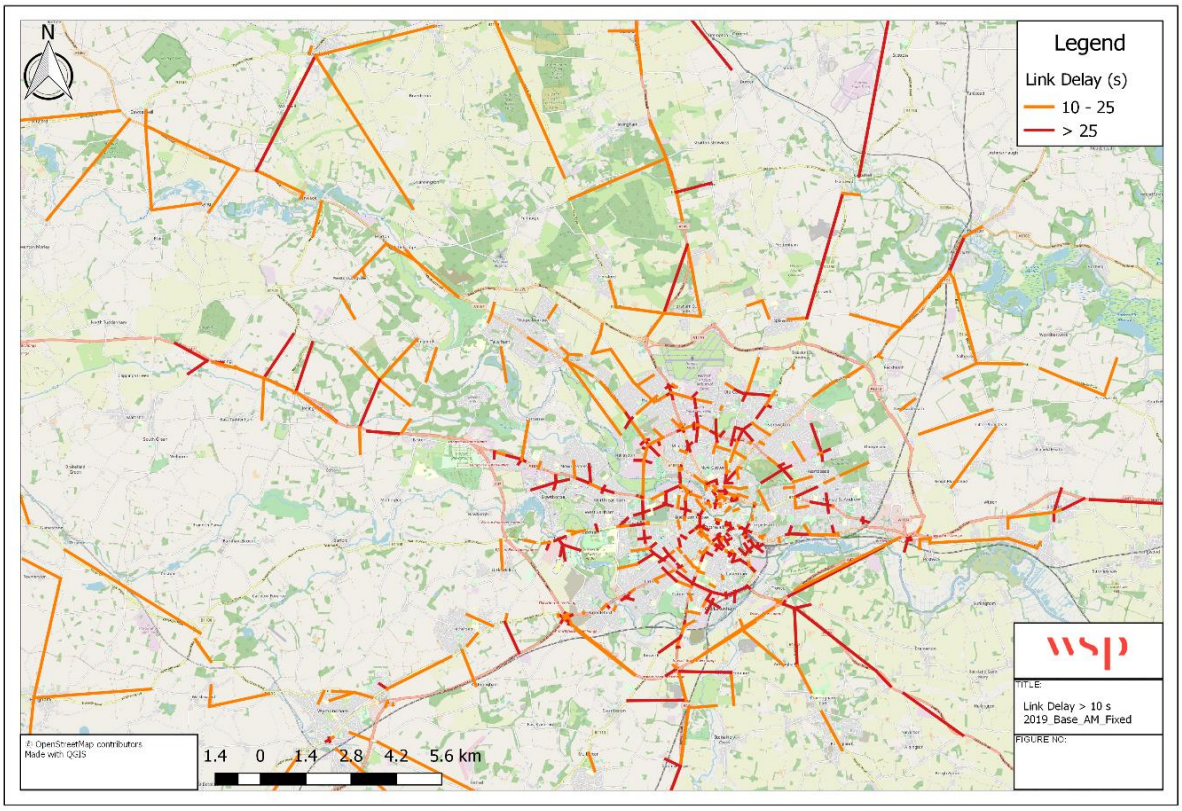


Figure 2-6 - AM Peak Road Delay (seconds)

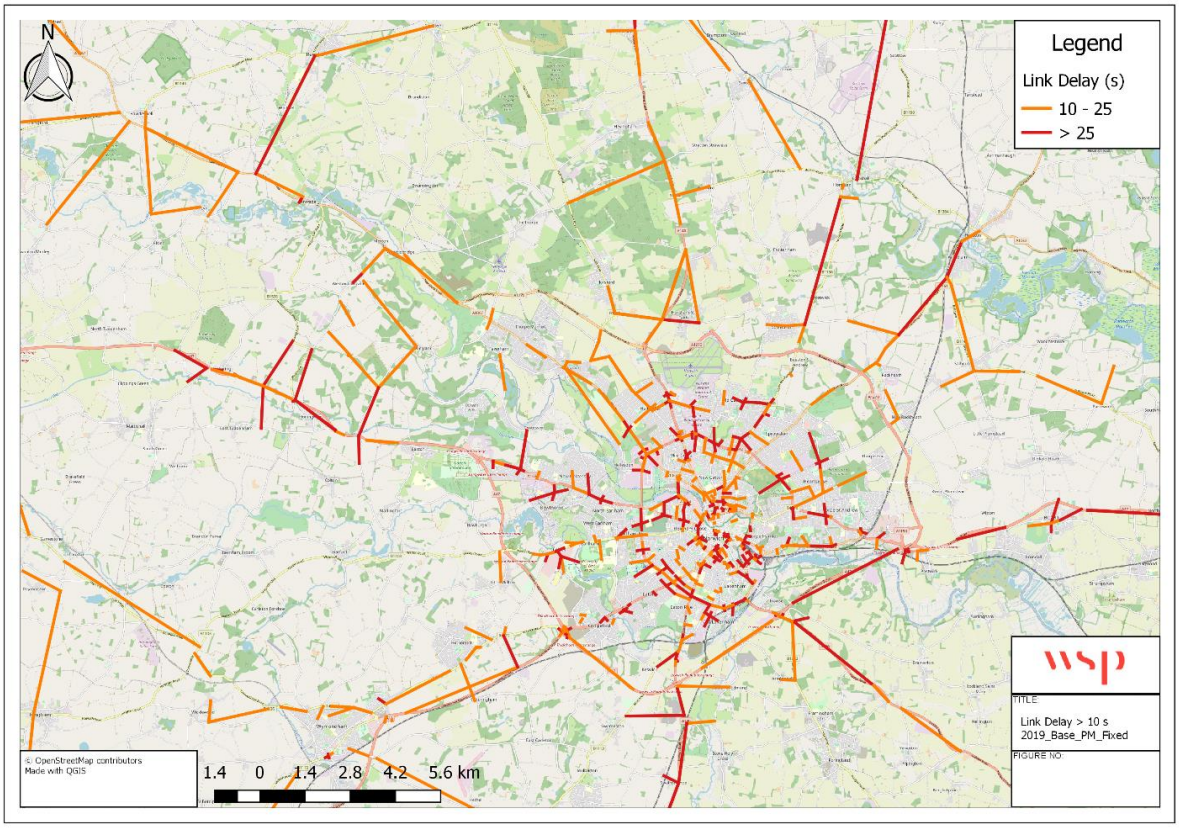


Figure 2-7 – PM Peak Road Delay (seconds)

PRODUCTIVITY GAP

2.3.14. Prior to the pandemic, the East of England's economy had been performing strongly since the 2010 recession, with three of the ten fastest growing cities in the UK (Norwich, Ipswich and Peterborough) located in the region.

2.3.15. Norwich is a key driver of the East of England's economy, as well as a major regional centre for new homes and jobs, leisure, cultural, and educational development. Norwich was ranked eighth nationally for annual GVA growth in Quarter 1 (Q1) of 2019, with a growth rate of 2.4%[15].

2.3.16. Despite this steady growth trajectory, Norwich still lags behind some other areas in the UK, including London, with respect to economic indicators. ONS data collated in December 2018 shows that Gross Value Added (GVA) per head in Norwich and East Norfolk lags behind the national average, which the Norfolk Strategic Planning Framework attributes to the area's dependence on lower-wage, lower-skill sectors.

15 https://www.irwinmitchell.com/newsandmedia/2019/july/uks-most-sustainable-cities-revealed-in-new-report

2.3.17. Figure 2-8 shows that in 2018, the average wage in Norwich was £501.40 per week, lower than the £558.10 and £570.90 average for the East of England and Great Britain respectively. This gap has widened over the last decade, increasing from £54.80 to £56.70 in the East of England, and from £64.80 to £69.50 across Great Britain.

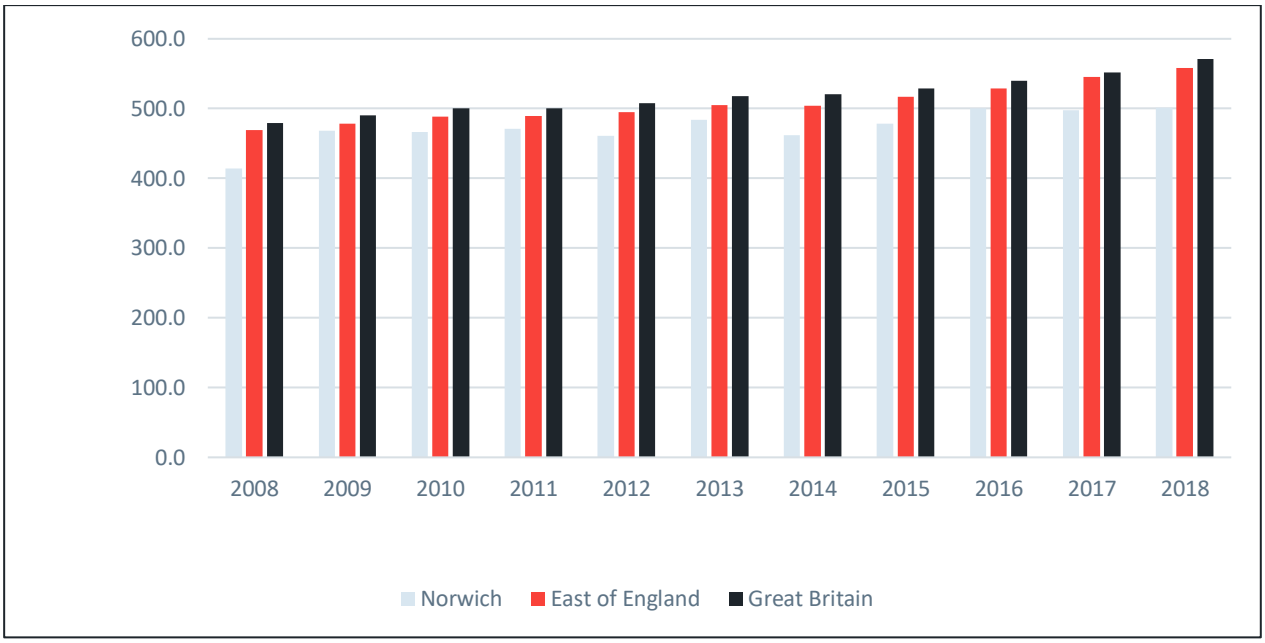


Figure 2-8 - Gross Weekly Earnings 2008-2018 (ONS Nomis)

2.3.18. As shown in Figure 2-9 and Table 2-1, not only has the GVA per head in Norwich historically lagged behind that of the UK, but the productivity gap has been widening over time. A significant gap in GVA has opened up between Norwich and the rest of the UK since 2010, with the difference being at its largest for the latest available year, 2017.

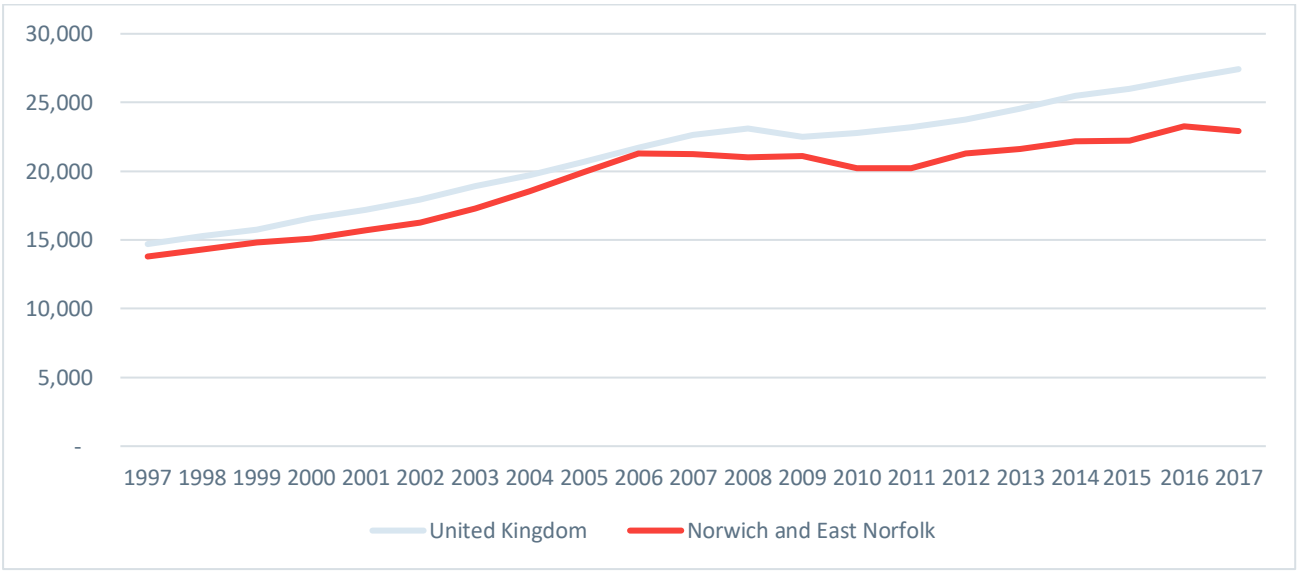


Figure 2-9 - GVA per head trends 1997 to 2017 (ONS)

Table 2-1 - GVA 2010-2017, selected areas (ONS)

	2010 – GVA (Income Approach) per head of population at current basic prices	2017 – GVA (Income Approach) per head of population at current basic prices	Growth between 2010-2017, %
East of England	21,034	25,217	19.9%
East Anglia	20,810	24,850	19.4%
Norwich and East Norfolk	20,228	22,926	13.3%
England	22,998	27,949	21.5%

2.3.19. The links between transport investment and productivity are widely accepted, with transport infrastructure changing both the effective density of people in an affected area, and the jobs that are available to skilled workers.

2.3.20. Continued economic development is dependent on attracting new businesses and increasing the productivity of existing firms. Enhancing regional labour mobility will be essential to unlocking further economic growth if the area is to remain competitive.

2.3.21. In line with evolving government policy on Levelling Up, assessment on the economic impact of the scheme on the local economy has been undertaken to better understand place-based impacts. The greatest productivity benefits stemming from the introduction of a Norwich Western Link are expected in Broadland and Breckland (£21.6m and £23.9m respectively). More detail can be found in **section 2.5.6**.

2.3.22. In addition, **section 3.8** breaks down the scheme's monetised benefits into business and commuting trips, showing an economic benefit of £81.7m across 60 years in terms of time and distance travelled on business trips, and £66.1m on commuting trips.

JOURNEY TIME RELIABILITY

2.3.23. To assess the extent to which journey time variation impacts network users, open access mapping data was used to compare journey times across the local road network at different times of the day. Journey times were found to be significantly longer during peak periods than in the off-peak (10:00 – 16:00).

2.3.24. Modelled journey time data has been extracted from the 2019 base year model for the morning peak and evening peak periods for the routes shown in **Figure 2-10**, where:

- JT1: junction of Dereham Road and Marlingford Road (Easton) to the A1270 Broadland Northway (Fir Covert roundabout), via Ringland Hills and Taverham
- JT2: junction of Berrys Lane and Mattishall Road (Honingham) to the A1270 Broadland Northway (Fir Covert roundabout), via Weston Longville
- JT3: junction of A47 / B1535 / Berrys Lane (north-west of Honingham) to the A1270 Broadland Northway (Cromer Road roundabout), via Dereham Road and the A140

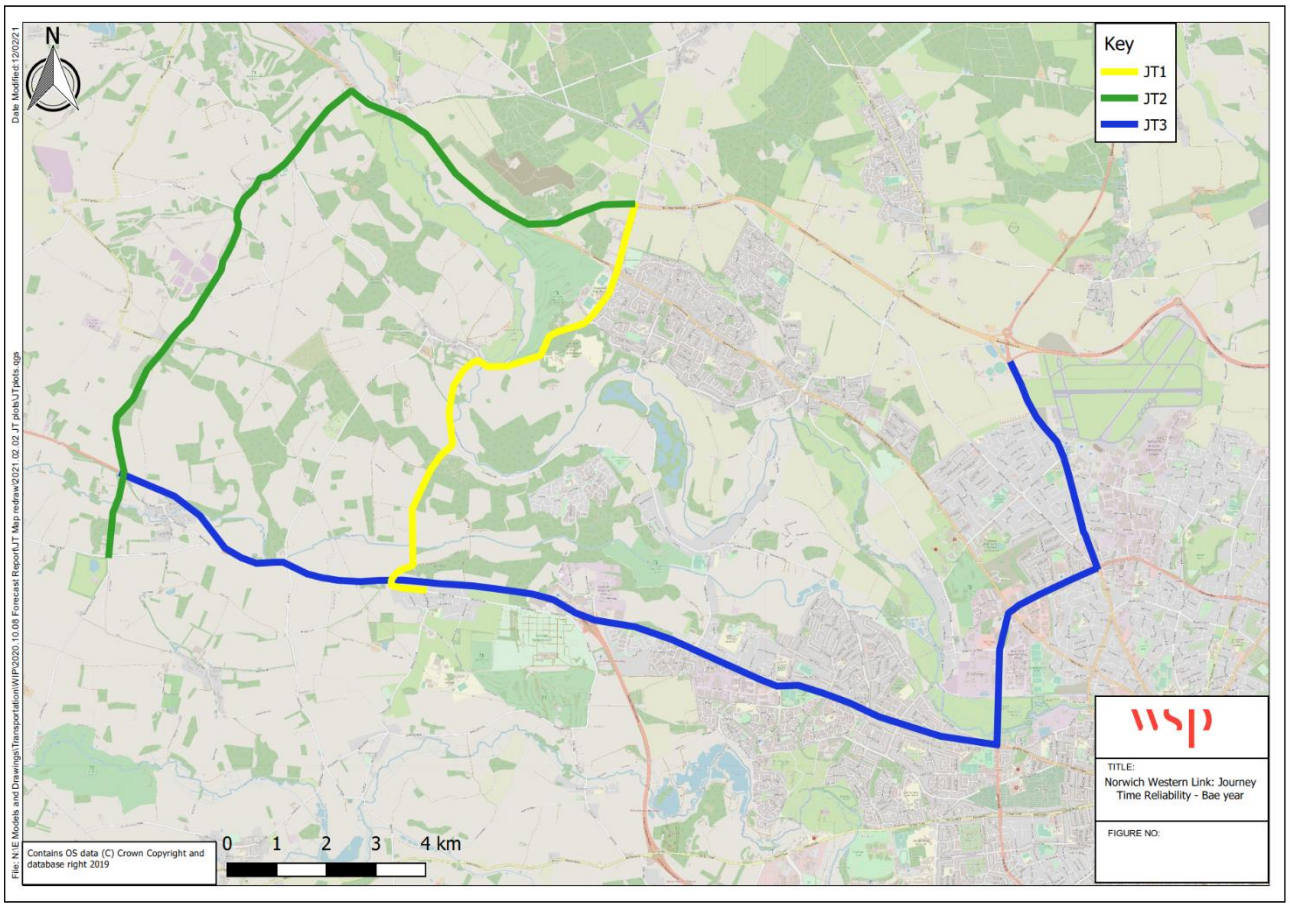


Figure 2-10 - Journey Time Reliability 2019

2.3.25. In **Table 2-2**, the journey times during the AM peak and PM peak periods have been compared to the off-peak period to show the delay experienced by vehicles due to the congestion. Where the difference between peak and off-peak exceeds a minute, it has been marked in red.

Table 2-2 – Journey times within NWQ for north-south routes 2019

Name	Distance (m)	AM peak (s)	PM peak (s)	Off-peak (s)	Variation between AM peak and Off-peak (s)	Variation between PM peak and Off-peak (s)
JT1: Northbound	6,747	647	643	585	62	58
JT1: Southbound	6.747	618	637	587	31	50
JT2: Northbound	11,036	771	780	647	124	133
JT2: Southbound	11,036	773	780	647	126	133

Name	Distance (m)	AM peak (s)	PM peak (s)	Off-peak (s)	Variation between AM peak and Off-peak (s)	Variation between PM peak and Off-peak (s)
JT3: Eastbound	17,341	1,771	1,463	1,200	571	263
JT3: Westbound	17,341	1,653	1,525	1,279	374	246

2.3.26. As of 2019, the JT1 route in the northbound direction experienced approximately 1 minute of delay in the AM peak and PM peak when compared to the off-peak i.e. free flow conditions. JT2 experienced over two minutes delay in both the northbound and southbound directions in the AM peak and PM peak periods.

2.3.27. JT3 experienced between 4 minutes of delay on the westbound direction in the PM peak to approximately 9.5 minutes of delay in the eastbound direction in the AM peak. This route terminates at Norwich Airport and Imperial Park, a key employment site for the region.

ROAD USE IN RURAL COMMUNITIES

2.3.28. Those living in communities to the west of Norwich have raised concerns about traffic problems they were seeing and experiencing on a daily basis, most notably during the peak hours when their villages, and the small, often single-track rural roads running through and between them, were congested with traffic. There were concerns raised relating to the volume and speed of traffic, the severance it causes and the loss of amenity within their communities. People reported not feeling safe to walk or cycle within and between their local communities due to the level of traffic on local roads.

2.3.29. With drivers having access to satellite navigation that prioritises the fastest route via inbuilt navigation systems or their smart phone, commuters are using rural roads to bypass the increased journey times associated with trips into Norwich city centre, Norwich Airport and other identified employment areas.

2.3.30. The lack of a direct, high-capacity, high-standard route between the A1067 and the A47 results in trips on existing local routes such as Lyng Road, Heath Road, Sandy Lane, Paddy's Lane, Taverham Road and Ringland Road.

2.3.31. **Figure 1-15** show the scale of trips using these six north-south routes in the northbound direction, while **Figure 1-16** shows the same in the southbound direction. Each would benefit from the implementation of the NWL, with traffic rerouting from local routes onto a more suitable and direct link.

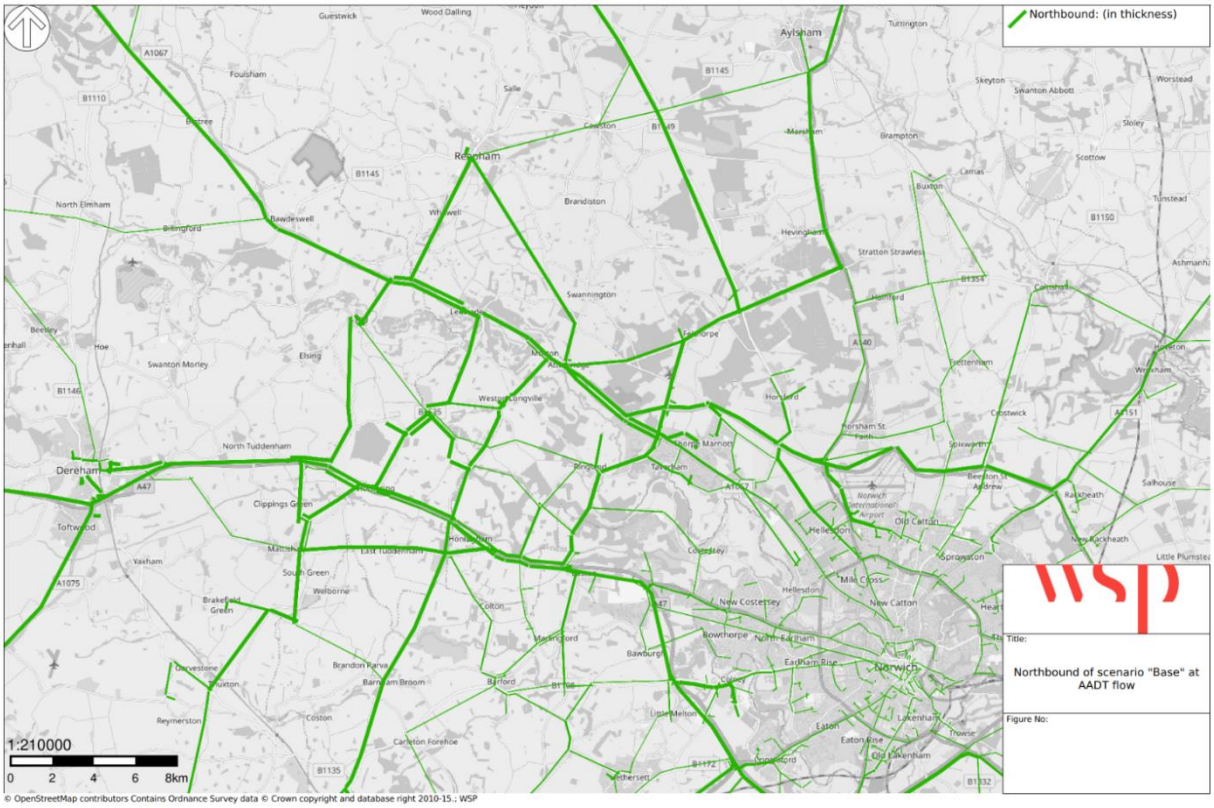


Figure 2-11 - Select Link Analysis across six routes: 2019 Northbound

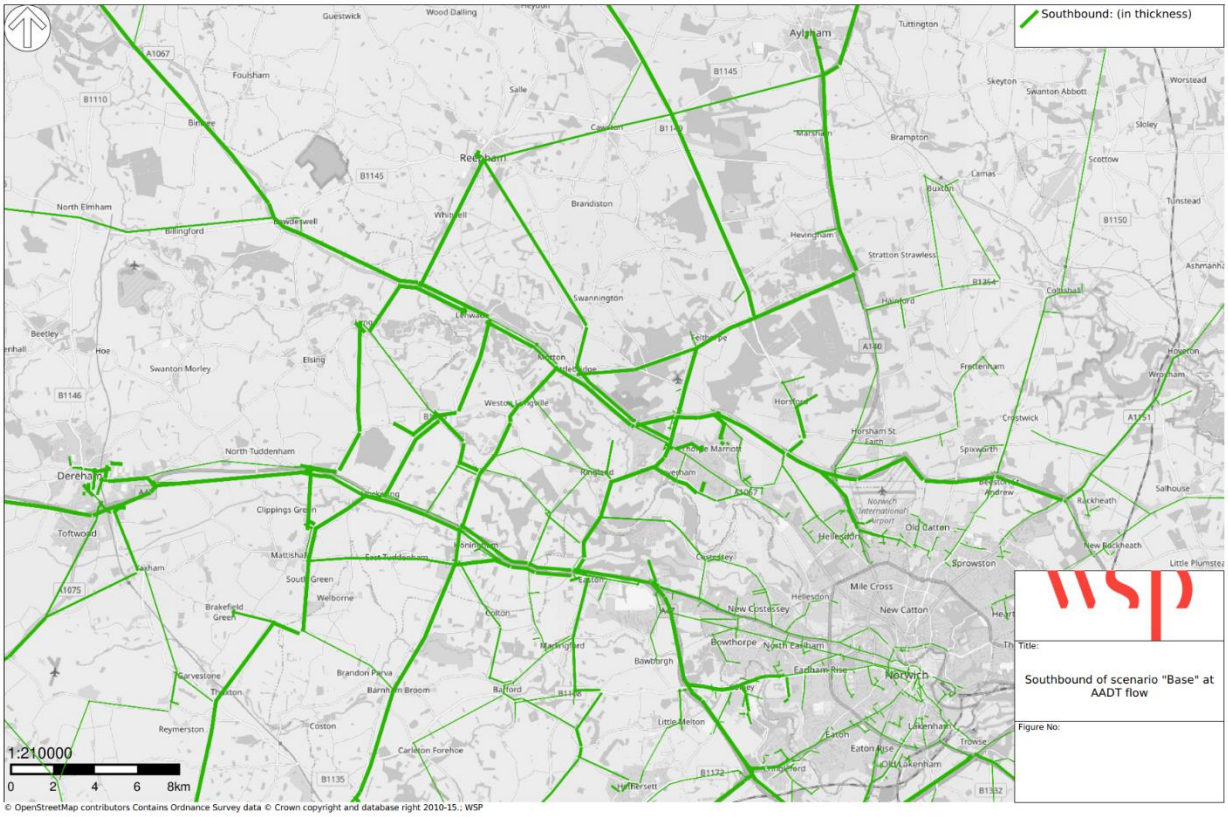


Figure 2-12 - Select Link Analysis across six routes: 2019 Southbound

2.3.32. These routes within the NWQ are predominantly unclassified roads, unsuitable for carrying more than 5,000 vehicles per day. These rural roads are less than 6m in width, often with tight bends and narrow verges or protected verges. There are also pinch points on some of the routes where the road width is substantially less than 5.5m or where the radii of bends are less than 10m. These parameters are set out as desirable minimums within Manual for Streets 2 Guidance for through routes carrying two-way traffic to enable safe passing of two large vehicles. Several examples of tight roads, often with traffic calming measures or signage, as well as their corresponding location are shown in **Figure 2-13.**

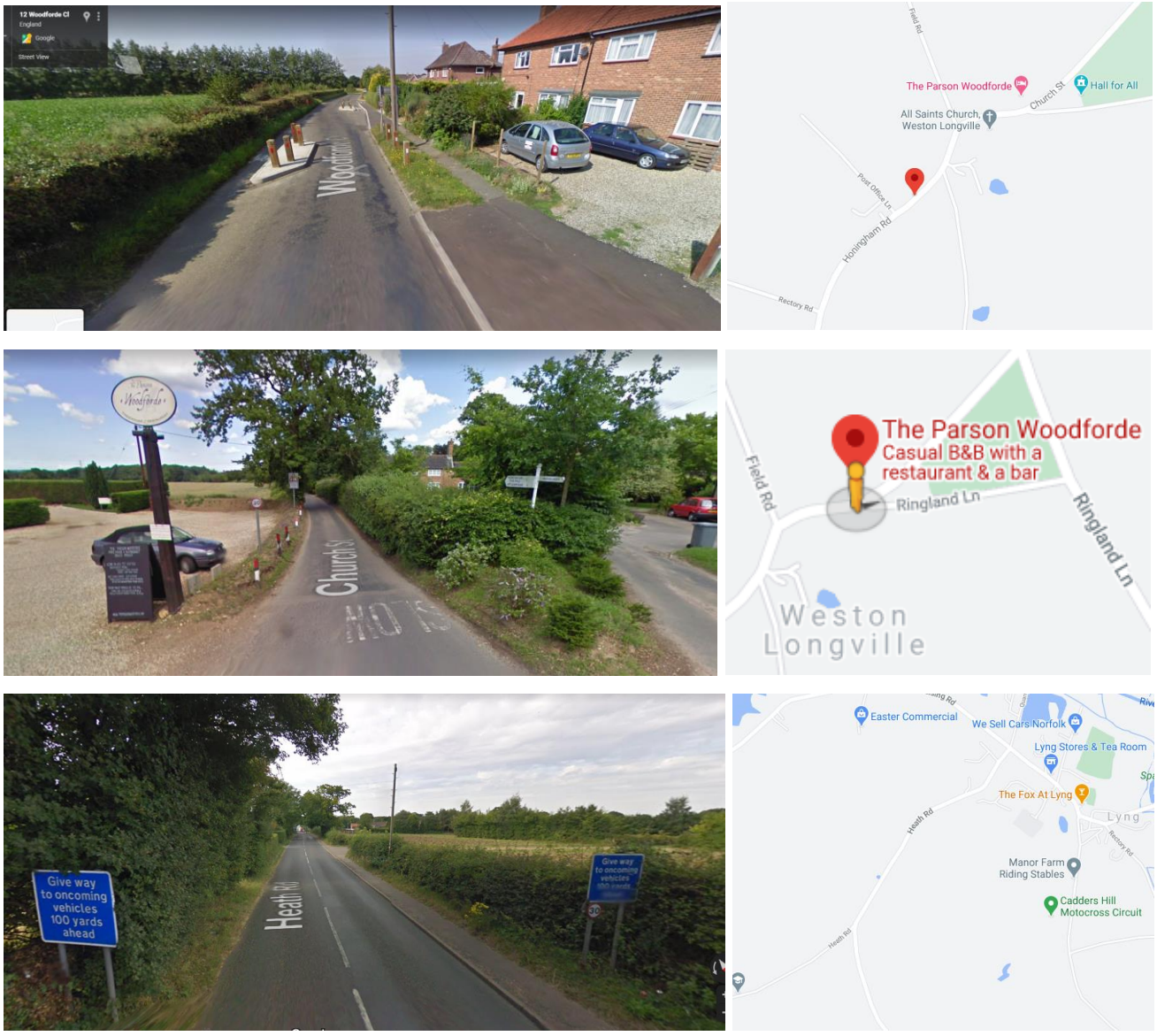


Figure 2-13 – Rural roads, Woodforde Close, Church Road, Heath Road (Google maps)

2.3.33. **Table 2-3** indicates the count locations (where data was collected in 2019) on the north-south routes that pass close to residential areas such as Taverham, Costessey, Lyng and Weston Longville. The data summarises the total flow (across a 24-hour period), the number of Heavy Goods Vehicles (HGVs) and the associated HGV percentage.

Table 2-3 – 2019 Survey Data - Composition

ATC Site	Location	Traffic Flow	HGVs	HGV%
1	C198 The Common, Lyng	2,035	19	0.9%
2	B1535 Weston Hall Road, Weston Longville	4,019	380	7.7%
3	C167 Marl Hill Road, Morton on the Hill	3,327	18	0.5%
4	C167 Honingham Road, Weston Longville	3,113	13	0.4%
5	C167 Paddy's Lane, Weston Longville	2,788	23	0.8%
6	C173 Heath Road, Hockering	1,631	13	0.8%
7	C198 Lyng Road, North Tuddenham	2,721	94	3.5%
8	B1535 Wood Lane, Honingham	5,375	326	6.1%
68	C172 Ringland Road, Taverham	4,312	6	0.1%
69	C461 Taverham Lane, Costessey	5,264	16	0.3%
76	C171 West End, Costessey	7,389	58	0.8%
77	C171 Townhouse Road, Costessey	4,781	18	0.4%
78	C162 Longwater Lane, Costessey	10,808	57	0.5%

2.3.34. While there are relatively low numbers of HGVs using the north-south routes between the A47 and A1067, the areas of Weston Longville and Honingham are experiencing 7.7% and 6.1% HGVs respectively. As the majority of these rural routes are under 6m wide, they are not ideally suited to this type of traffic, particularly when coming into conflict with vehicles from the opposite direction.

SPEEDING

2.3.35. Traffic survey data, collected in 2019, was also used to assess the speed of vehicles using these routes. **Table 2-4** shows the speed limit at the point of survey and the proportion of vehicles exceeding this limit.

2.3.36. The Royal Society for the Prevention of Accidents notes that two-thirds of all crashes in which people are killed or injured happen on roads with a speed limit of 30mph or less. As shown below, those roads with lower speed limits (20 and 30 mph) have the highest incident of vehicles exceeding the stated speed limit. Two of the sites measured had over 75% of vehicles exceeding the stated speed limits at the time of the surveys.

Table 2-4 – 2019 Survey Data - Speed

ATC Site	Location	Speed Limit (mph)	85th Percentile (mph)	% > Speed Limit
1	C198 The Common, Lyng	30	29	11.9%
2	B1535 Weston Hall Road, Weston Longville	60	43	0.0%
3	C167 Marl Hill Road, Morton on the Hill	60	49	1.9%
4	C167 Honingham Road, Weston Longville	20	35	**93.8%**
5	C167 Paddy's Lane, Weston Longville	60	45	3.0%
6	C173 Heath Road, Hockering	30	39	**72.3%**
7	C198 Lyng Road, North Tuddenham	60	47	0.3%
8	B1535 Wood Lane, Honingham	50	49	13.0%
68	C172 Ringland Road, Taverham	60	40	0.1%
69	C461 Taverham Lane, Costessey	60	50	1.7%
75	Taverham Road, east of Penn Road, Taverham	30	36	**53.9%**
76	C171 West End, Costessey	30	28	7.5%
77	C171 Townhouse Road, Costessey	40	37	7.1%
78	C162 Longwater Lane, Costessey	30	33	**34.3%**

SEVERANCE

2.3.37. North-south movement for freight between the A47 and A1067 is constrained by the River Wensum, and to a lesser extent the River Tud.

2.3.38. **Figure 2-14** shows the existing bridge structures within the study area. Four bridges within the study area that cross the River Wensum are suitable for use by vehicular traffic:

- Costessey Lane
- Taverham Lane/Costessey Road
- Ringland Road
- A1067

2.3.39. The Costessey Lane and Ringland Road bridges have weight limit restrictions of 7.5 tonnes, constraining HGV movement. Only the A1067 bridge has a carriageway of over 6m width, with the other three bridges unsuitable for heavy, two-way vehicle traffic. These bridges cannot be appropriately widened or strengthened in their current position due to the Special Area of Conservation and SSSI ecological designations that apply to the River Wensum.

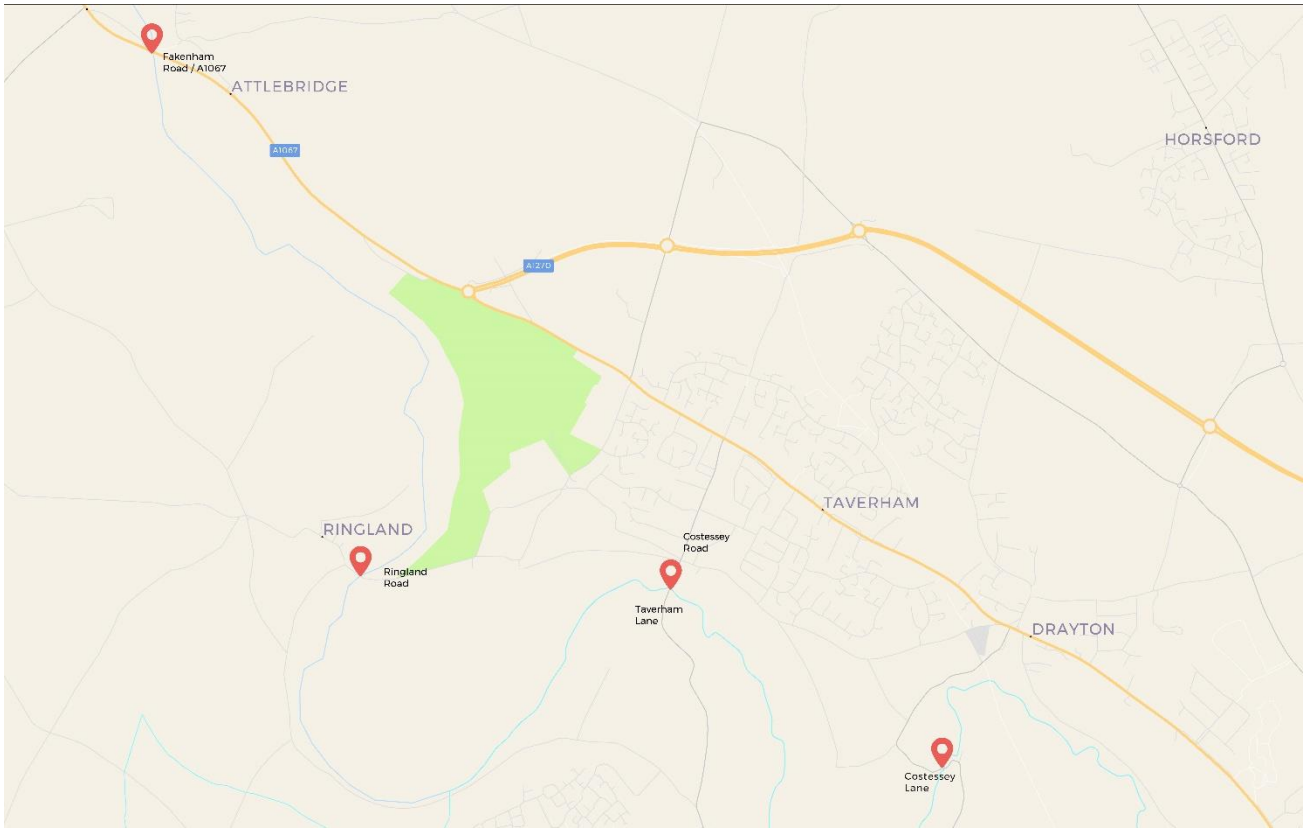


Figure 2-14 - Existing structures within NWQ

2.3.40. **Figure 2-15** shows an example of the potential for conflict between oncoming vehicles that can occur at Costessey Lane bridge. This two-way crossing cannot accommodate two vehicles, and there would be little space to the right or left of the road to allow an oncoming vehicle to pass. This problem is exacerbated by light goods vehicles.

Figure 2-15 - Costessey Lane Bridge

WALKING AND CYCLING INFRASTRUCTURE

2.3.41. Walking infrastructure across the study area varies in quality. The NWQ has a number of PRoWs available for use (**Figure 2-16** and **Figure 2-17**). A breakdown of the accessible areas via walking and cycling from each settlement is shown in the Walking, Cycling and Horse-Riding assessment report.

2.3.42. Within more built-up areas, the provision is generally adequate, with footways in place adjacent to roads. Provision between different villages and towns, however, varies in quality, with villages such as Horsford and Taverham unable to reach many other settlements within a 30-minute walk. In other cases, including Attlebridge, Hockering, Lenwade, access is constrained in some directions by busy roads, or by a lack of safe pedestrian infrastructure.

2.3.43. The A47 corridor and Longwater interchange are major barriers to pedestrian access, with limited infrastructure available for users wishing to access local community facilities, such as Saint Peter's Church (Easton) or Saint Andrew Honingham Church, or access shops and services on William Frost Way.

2.3.44. Easton College and the Food Enterprise Zone are both located south of the A47. Both sites are poorly connected for north-south trips, with the A47 currently presenting a physical barrier with no crossing facilities. The A1067 also creates a barrier to pedestrian access, with limited opportunities to cross safely to shops and services along the corridor.

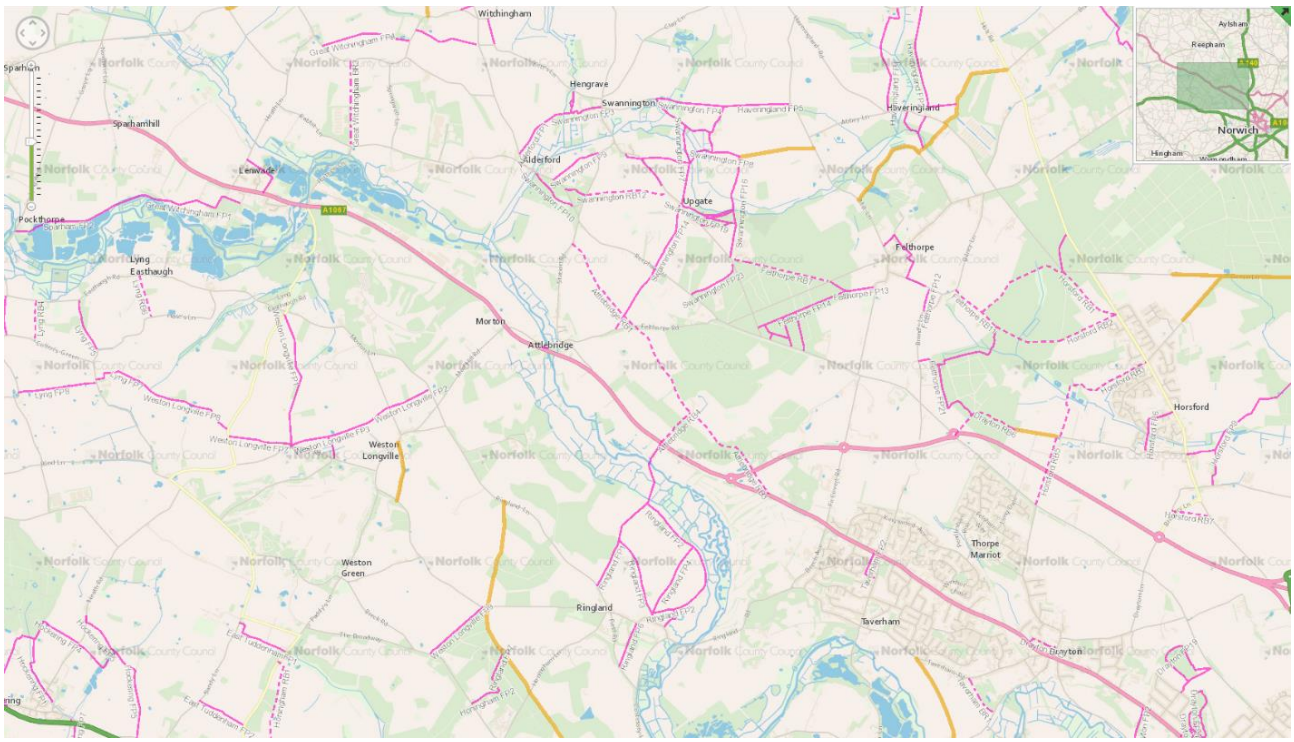


Figure 2-16 - PRoWs - Study Area, North View (Source: Norfolk County Council)

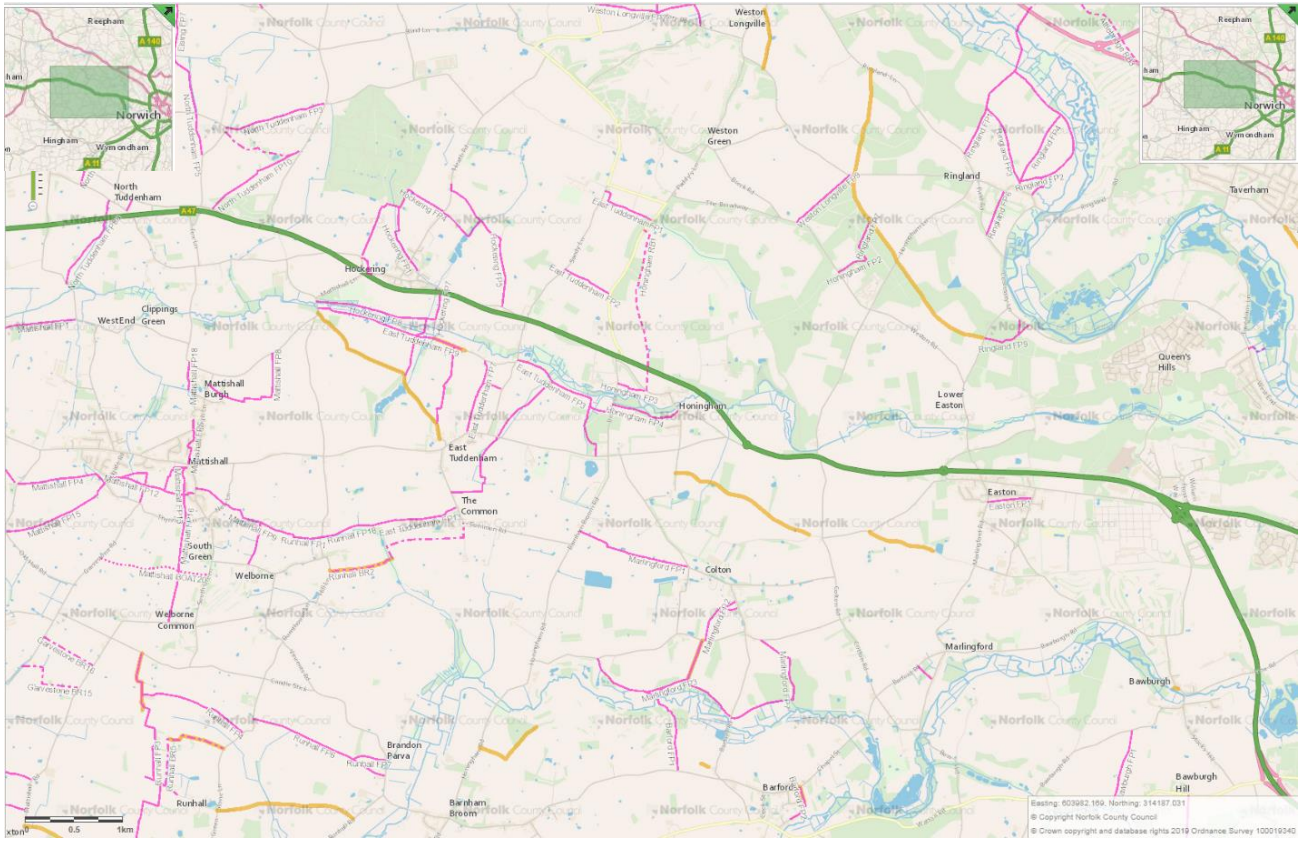


Figure 2-17 - PRoWs - Study Area, South (Source: Norfolk County Council)

2.3.45. As noted in **Section 1.5.45,** cycling infrastructure within the study area is limited, with local (on-road) routes running to the south-east and the NCN1 crossing through the northern extents. There is no existing north-south cycle route within the NWQ. The lack of cycling infrastructure linking residential areas and employment areas is likely to limit the number of commuting journeys made.

2.3.46. The NWL scheme will seek to improve the existing walking and cycling facilities in the surrounding area by reducing traffic on rural minor roads, enabling them to be made more suitable for all users, whilst also enhancing off-road connections.

PERSONAL INJURY COLLISIONS

2.3.47. During the five-year period from 2016 to 2020, there were 550 recorded collisions within the study area (**Figure 2-18**), involving 699 casualties. Of these, 8% (54) were pedestrians, 13% (94) were cyclists, and 12% (83) were motorcyclists or motorcycle passengers. Collisions are primarily located along the main arterial routes to, or from, Norwich city centre. **Table 2-5** lists the frequency and number of casualties, as well as their severity.

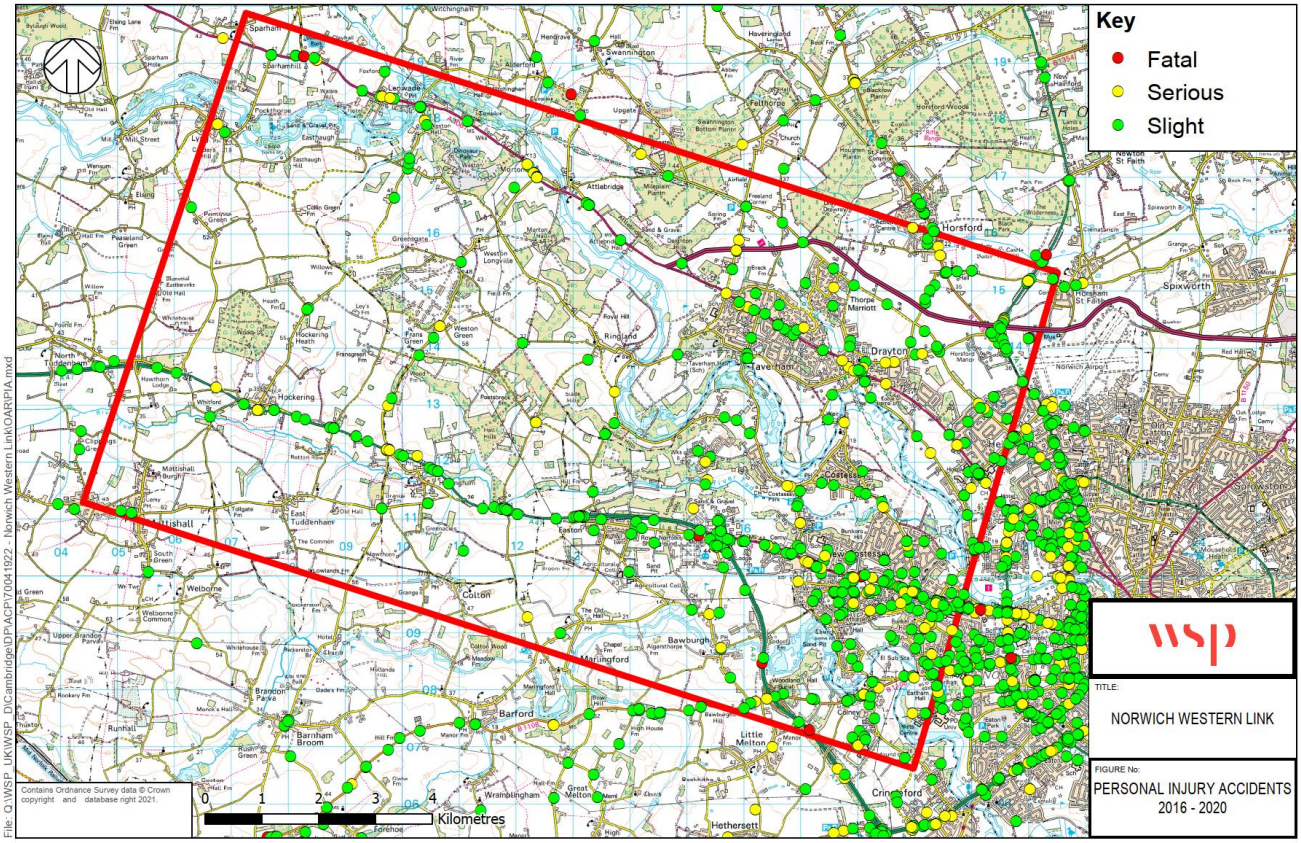


Figure 2-18 Study Area PIAs (2016-2020)

Table 2-5 Severity & Casualties of Accidents in Study Area (2016-2020)

Severity	Collisions	Casualties
Fatal	8	12
Serious	113	156
Slight	429	531
Total	**550**	**699**

A1067

2.3.48. Figure 2-19 shows the accident record between 2016 and 2020 along the A1067 from Drayton to Morton. The A1067 between the A1270 and Morton demonstrates a low collision rate, with a small cluster of accidents (7) located at the Marl Hill Road / A1067 junction. Through Taverham there are significantly more accidents, with clusters located at most junctions along the A1067. Three accidents are located at the Sandy Lane / The Street / Taverham Road / Costessey Road roundabout and four accidents at the School Road / A1067 signalised junction.

Attlebridge

Drayton

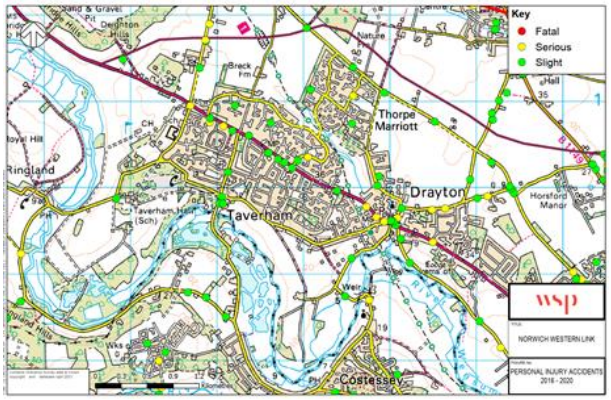


Figure 2-19 PIAs – A1067 (Attlebridge & Drayton)

A47

2.3.49. **Figure 2-20** shows the accident record between 2016 and 2020 along the A47 from Easton to the A1074 through New Costessey. The Longwater interchange and the Taverham Road junction shows 14 accidents, all of which were slight; 8 accidents at the A47 / Taverham Road / Blind Lane junction; and 12 accidents at the A47 / Church Lane / Dereham Road roundabout. The introduction of an NWL, in addition to the Highways England A47 scheme, which includes a key objective to improve road safety for all users, is likely to support improved highway safety.

2.3.50. The A1074 through New Costessey shows a number of accidents, including two fatal accidents that occurred in 2019. Particular clusters are located at Longwater Lane / Dereham Road junction (5); Dereham Road / Barnard Road / Wendene / Breckland Road roundabout (9); and Dereham Road / Norwich Road junction (9).

Easton

New Costessey

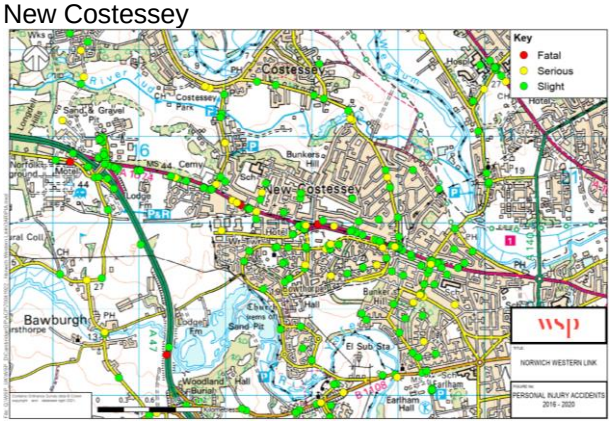


Figure 2-20 PIAs – A47 / A1074

A1270

2.3.51. There have been low number of accidents recorded along the A1270, with the only cluster site located at the A1270 / A140 roundabout (8). **Figure 2-21** shows the location of accidents along the A1270 between Drayton and Horsford.

Drayton & Horsford

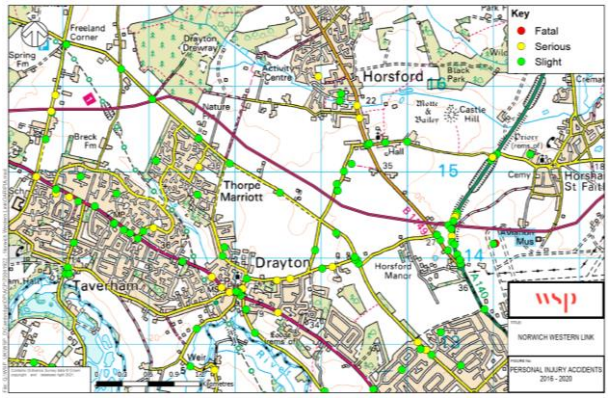


Figure 2-21 PIAs – A1270

2.4 IMPACT OF NOT CHANGING

2.4.1. As shown in section 2.3, there are a number of existing problems that the NWL aims to address. By leaving these problems unaddressed, the current situation will only worsen.

2.4.2. Large-scale employment and housing growth are planned for the north and south west of Norwich over the next decade. Strategic employment sites that have been identified and integrated into policy include Norwich Airport to the north (see **Section 1.5.5**), and the Food Enterprise Zone and Norwich Research Park to the south west. Major housing development is either planned or already underway at Hethersett, Cringleford, Costessey and Easton.

2.4.3. The traffic associated with this growth is expected to exacerbate the problems already identified. The dualling of the A47 between North Tuddenham and Easton will also increase traffic accessing Norwich through the NWQ, with the existing single carriageway section currently acting as a bottleneck and constraining traffic approaching from the west.

CONNECTIVITY

2.4.4. The lack of an appropriate western link restricts access to businesses both locally and in areas to the west of Norfolk and the Midlands.

2.4.5. Transport modelling undertaken to assess the need for the scheme predicts that traffic volumes are expected to grow by approximately 20% between 2019 and 2040 in the NATS model area. **Table 2-6** shows forecast traffic growth figures to 2040, split by AM peak, interpeak, and PM peak periods.

Table 2-6 – Forecast traffic growth to 2040

	Vehicle Class	2019 to 2025	2019 to 2040
AM peak	Car	6.23%	19.60%
	Light Goods Vehicles	6.66%	27.85%
	Heavy Goods Vehicles	1.89%	10.36%
	All vehicles	**6.01%**	**19.66%**

	Vehicle Class	2019 to 2025	2019 to 2040
Inter peak	Car	7.38%	22.86%
	Light Goods Vehicles	6.66%	27.84%
	Heavy Goods Vehicles	1.90%	10.37%
	All vehicles	**6.92%**	**22.30%**
PM peak	Car	5.99%	18.91%
	Light Goods Vehicles	6.65%	27.83%
	Heavy Goods Vehicles	1.88%	10.36%
	All vehicles	**5.88%**	**19.05%**

CONGESTION AND DELAY

2.4.6. The increase in traffic growth shown in **Table 2-6** is expected to impact the local road network. **Figure 2-22** shows the modelled link delay information for the 2040 forecast year during the AM Peak, for the Do Minimum scenario (i.e. without the NWL), while **Figure 2-23** shows the same for the Do Something scenario (i.e. with the NWL).

2.4.7. Due to traffic switching from local roads to the NWL scheme, there is a decrease in links with delays greater than 24 seconds in the surrounding area.

2.4.8. The same pattern can be seen in the PM peak for 2040, as shown in **Figure 2-24** and **Figure 2-25**.

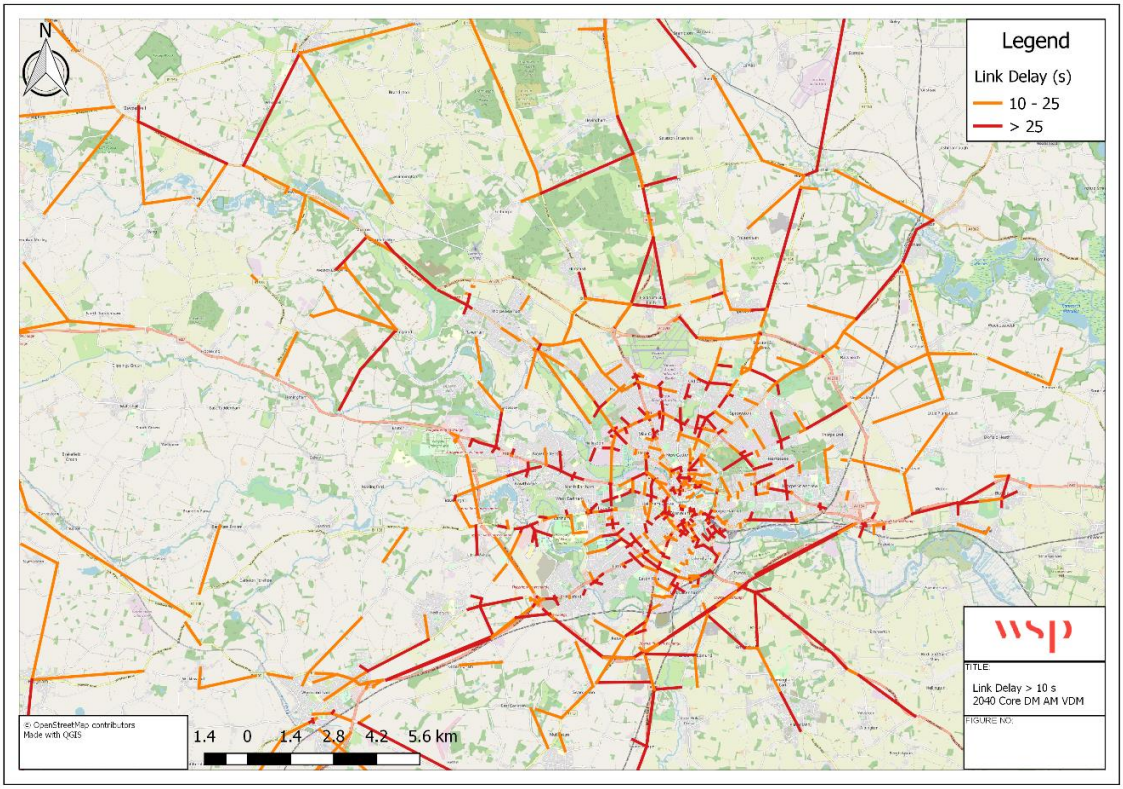


Figure 2-22 - Link delays AM Peak 2040 – Do Minimum (without NWL)

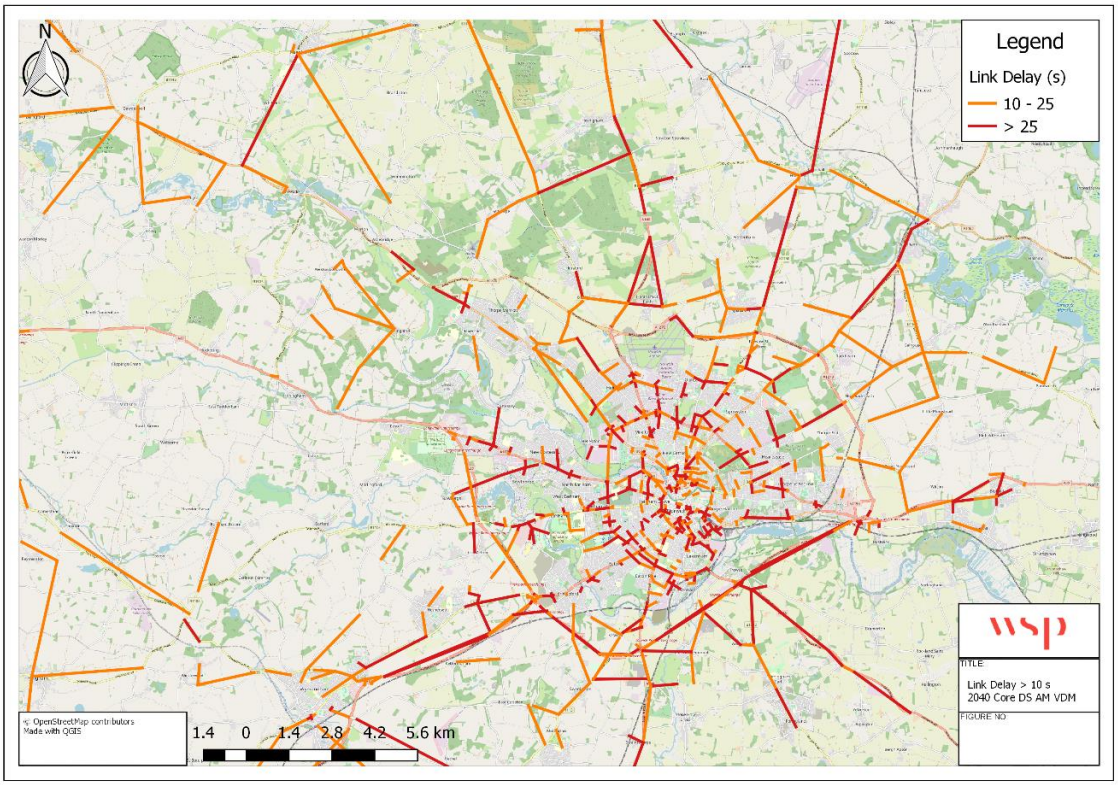


Figure 2-23 – Link delays AM Peak 2040 – Do Something

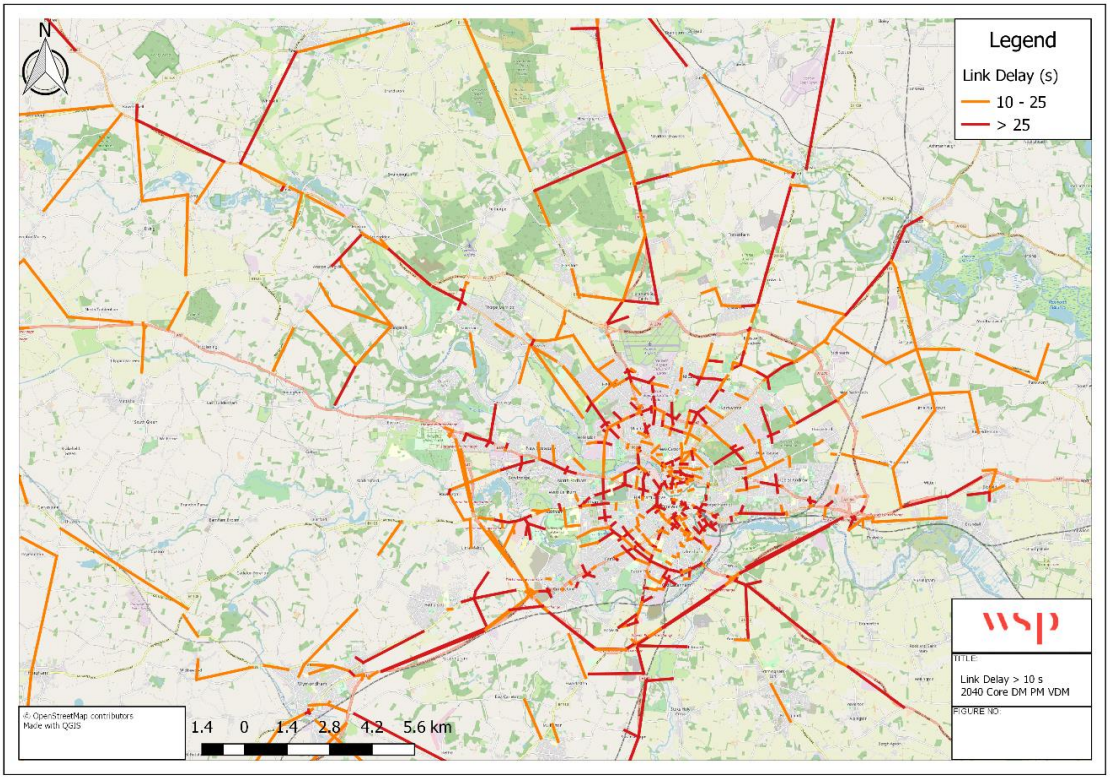


Figure 2-24 - Link delays PM Peak 2040 – Do Minimum (without NWL)

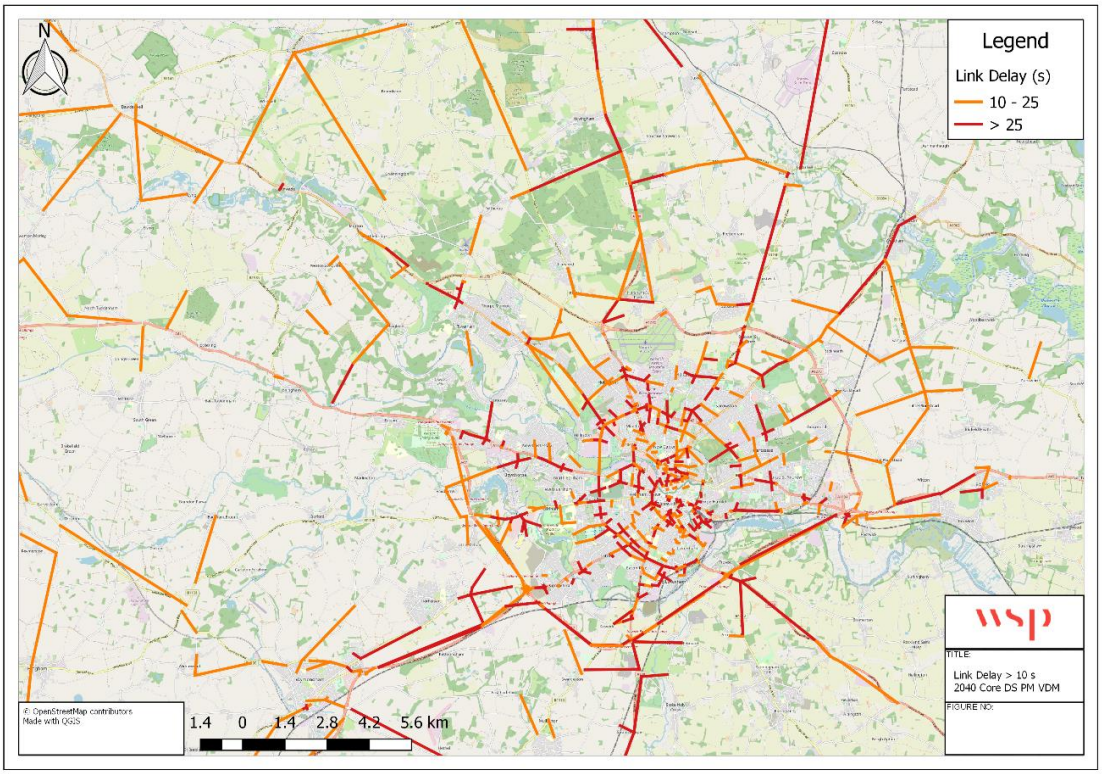


Figure 2-25 - Link delays PM Peak 2040 – Do Something

FUTURE GROWTH AND ADDRESSING THE PRODUCTIVITY GAP

Housing

2.4.9. The Strategic Housing Market Assessment carried out in 2017 indicated that there is an Objectively Assessed Need (OAN) for an estimated 39,586 dwellings across the Broadland, South Norfolk and Norwich areas between 2015 and 2036.

2.4.10. In Broadland, parishes forming part of the Norwich Policy Area have a combined allocation of between 1,462 and 1,662 new houses. The Easton / Costessey area plans to accommodate 1,500 new homes, as well as enhanced local services.

2.4.11. The NWL is expected not only to provide connectivity to those housing sites, but also link housing and employment areas around Norwich.

Employment

2.4.12. Broadland District Council, Norwich City Council and South Norfolk Council are working together with NCC to prepare the Greater Norwich Local Plan (GNLP, expected 2022), which will include strategic planning policies to address the area's productivity gap and allocate individual sites for development.

2.4.13. In addition to the City Deal, which seeks to deliver 13,000 jobs by 2031, the Joint Core Strategy plans for 27,000 new jobs by 2036.

2.4.14. Broadland District Council has also progressed a Local Development Order to facilitate a Food Enterprise Zone (FEZ) west of Easton Village (**Figure 2-26**). Once complete, the FEZ is expected to provide 2,000 agri-food jobs by 2050. The first phase of development is already under construction.

2.4.15. Given the economic importance of Norwich Airport, the NWL will help to provide a more appropriate and reliable primary route to the airport and will support future employment growth at the airport. With Norwich Airport's draft masterplan targeting an increase in passenger numbers from 530,000 to 1.4 million and an additional £170 million generated in the local area, the scope for the NWL to support this planned expansion is considerable.

2.4.16. This need is strengthened by the recent granting of a planning consent for Imperial Park Norwich, a 115-acre business park for industrial and office occupiers located on the north side of Norwich Airport (**Figure 2-27**).

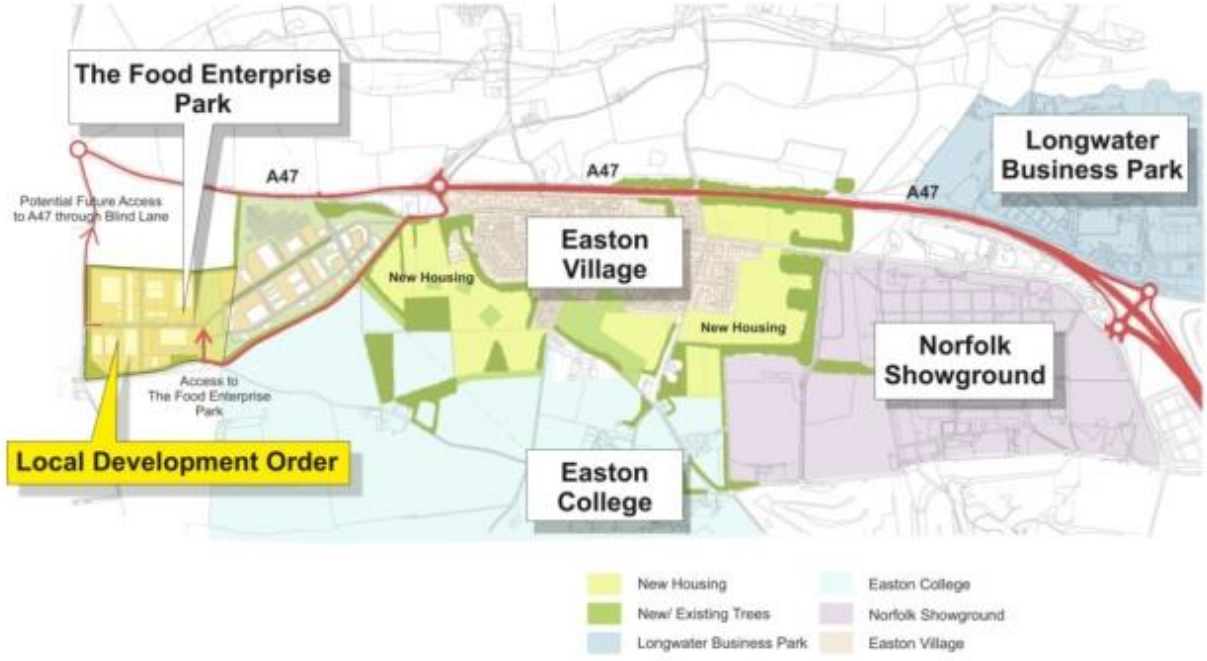


Figure 2-26 - Proposed Development

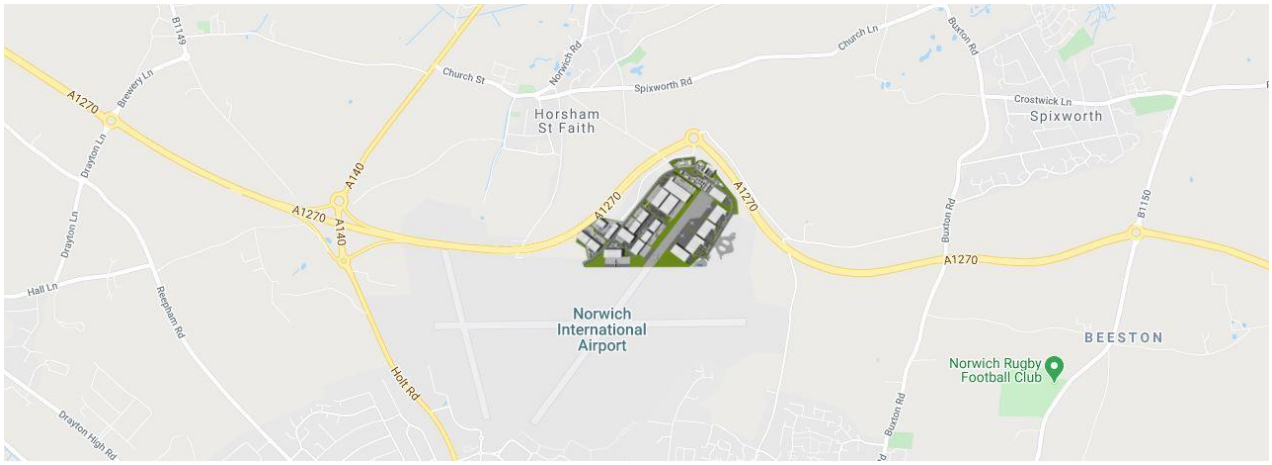


Figure 2-27 - Imperial Park Norwich (Source Rigby Real Estate)

2.4.17. The absence of an NWL is likely to affect business investment and growth, both locally and regionally. Key employers are located in or adjacent to the study area (including the FEZ, the Norfolk and Norwich University Hospital, the Norwich Research Park and Norwich Airport). The increased journey times along the signposted freight routes for north to south movements between the A1067 and the A47 will lead to increased vehicle operating costs and productivity inefficiencies.

JOURNEY TIME RELIABILITY

2.4.18. Journey times have been extracted from the 2025 model for those routes set out in **section 2.3.24**. **Figure 2-28**.

2.4.19. As with the 2019 data, journey times during the morning and evening peak periods have been compared to the off-peak period to demonstrate the delay experienced by vehicles as a result of

congestion. The variation between the off-peak and peak periods is shown in **Table 2-7**. Where the difference between peak and off-peak exceeds a minute, it has been highlighted in red.

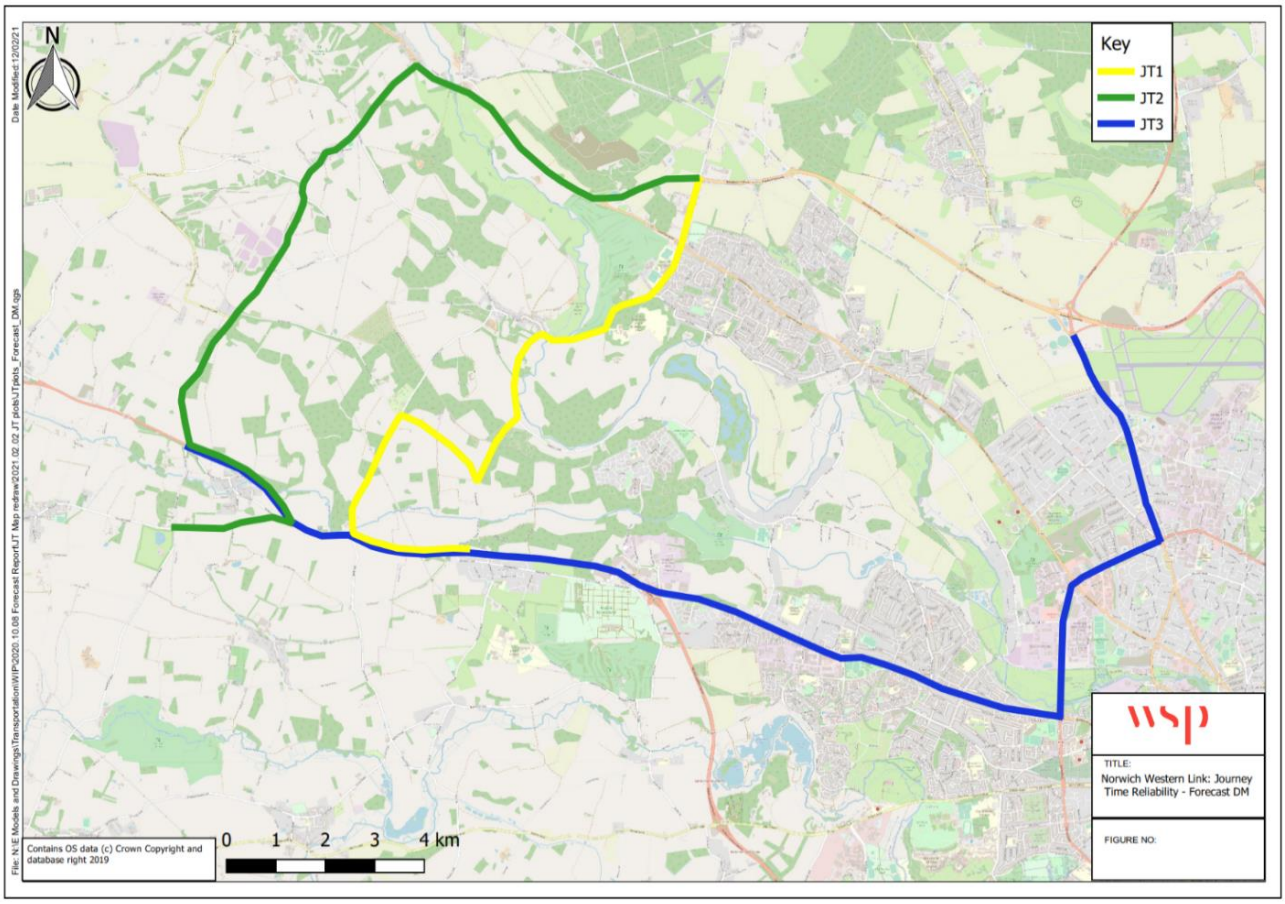


Figure 2-28 - Journey Time Reliability, Do Minimum north-south routes 2025

Table 2-7 – Journey times within NWQ for north-south routes 2025

Name	Distance (m)	AM peak (s)	PM peak (s)	Off-peak (s)	Variation between AM peak and Off-peak (s)	Variation between PM peak and Off-peak (s)
JT1: Northbound	10,594	978	971	914	+64	+57
JT1: Southbound	10.594	927	1,022	857	+70	+165
JT2: Northbound	13,562	854	857	850	+4	+7
JT2: Southbound	13,751	850	849	843	+7	+6
JT3: Eastbound	18,089	1,675	1,545	1,218	+457	+327
JT3: Westbound	17,365	1,595	1,463	1,239	+356	+224

2.4.20. The introduction of the A47 North Tuddenham to Easton scheme results in the distance of the JT1 route being increased by almost 4km, and the JT2 route being increased by 2km. The variation between 2019 and 2025 figures has therefore not been shown. It is notable, however, that even with the A47 scheme improving journey times, the variation between peak and off-peak travel is still significant, particularly for the JT3 route ending at the key employment areas of Norwich Airport and Imperial Park.

2.4.21. Forecast journey times have also been extracted from the 2040 model. The results are shown in **Table 2-8**. As the route length is unchanged from the 2025 forecast, the variation between 2025 and 2040 data is also shown.

Table 2-8 – Journey times within NWQ for north-south routes 2040

Name	Distance (m)	AM peak (s)	PM peak (s)	Off-peak (s)	Variation between AM peak and Off-peak (s)	Variation between PM peak and Off-peak (s)	Variation between 2025 and 2040 (AM)	Variation between 2025 and 2040 (PM)
JT1: Northbound	10,594	1,112	1,116	914	+198	+202	+134	+145
JT1: Southbound	10,529	1,002	1,053	857	+145	+196	+75	+31
JT2: Northbound	13,562	1,069	1,032	850	+219	+182	+215	+175
JT2: Southbound	13,751	940	921	843	+97	+78	+90	+72
JT3: Eastbound	18,089	1,932	1,779	1,218	+714	+561	+257	+234
JT3: Westbound	17,365	1,750	1,654	1,239	+511	+415	+155	+191

2.4.22. Without the NWL scheme, those routes already expected to suffer from journey time delays in 2025 will worsen. Congestion is expected to spread to rural roads, with most routes now showing a variation of over a minute when compared to off-peak levels.

Do something versus do minimum journey time

2.4.23. A comparison of the journey times has been undertaken for those routes shown in **Figure 2-28**, which use existing routes, and those shown in **Figure 2-29** (JT1, JT2 and JT3), using the Norwich Western Link.

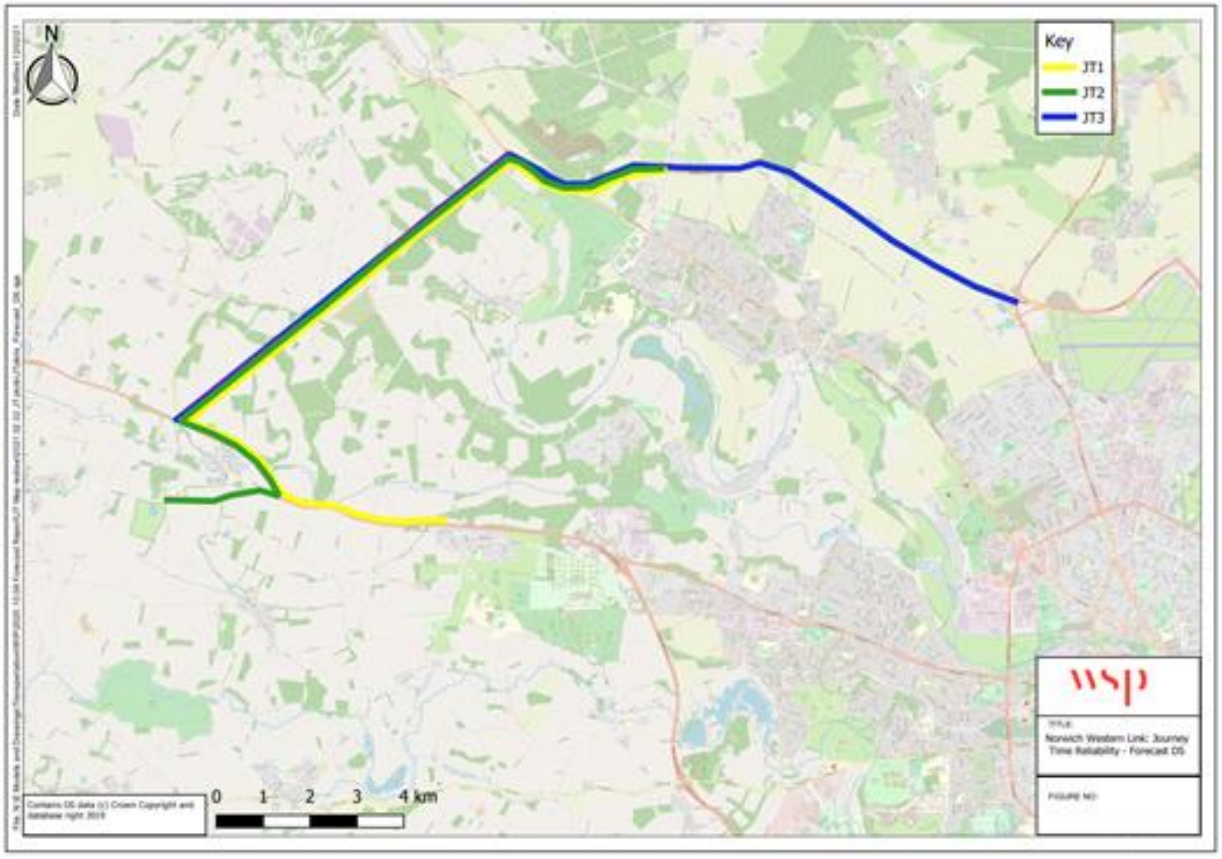


Figure 2-29 - Journey Time Reliability, Do Minimum north-south routes 2025

2.4.24. **Table 2-9** shows the modelled journey time improvements on these routes for the 2025 and 2040 forecast years in the AM peak, inter-peak and PM peak periods.

Table 2-9 - Journey times improvements – DS versus DM (2025 and 2040)

Name	2025 AM peak (s)	2025 inter-peak (s)	2025: PM peak (s)	2040: AM peak (s)	2040 inter-peak (s)	2040: PM peak (s)
JT1 Northbound	444	424	480	456	426	484
JT1 Southbound	451	511	524	479	510	535
JT2 Northbound	429	379	427	472	404	458
JT2 Southbound	434	380	400	445	405	430
JT3 East/ Northbound	1241	948	1085	1310	1019	1189
JT3 South/ Westbound	1119	946	967	1224	1017	1129

2.4.25. The inclusion of the NWL creates from a 379 second improvement in journey time for JT2 (northbound) in the 2025 inter-peak time period, to a 1,310 second improvement in journey time for JT3 (eastbound and northbound) in the 2040 AM peak time period.

2.4.26. As can be seen from **Table 2-9** there are journey time savings on the three specific routes chosen, with the transport model showing a reduction in both the total travel time and the total travel distance across the whole network. This is reflected in the level of scheme benefits as shown in the Economic Case.

2.4.27. Outputs from the forecast year transport models (2025 and 2040) are used in the assessment of the scheme economics using the Transport User Benefits Appraisal (TUBA) program. The outputs from the TUBA scheme economic assessment splits the monetised benefits into Business, Commuting and Other user classes for road traffic. Along with the input information from the transport model (time, distance and trip matrices) the TUBA program uses information on Economic Parameters, reflecting economic data from the DfT Transport Analysis Guidance (TAG) Data Book i.e. v1.13.1 (July 2020).

2.4.28. The economic assessment of Business, Commuting and Other (including leisure) trips all show a positive monetised benefit over the 60 years of the economic appraisal period. This can be related to reductions in the time and distance spent travelling between home and work or travelling on business. A reduction in these can be related to an increase in productivity as the NWL helps to provide a more appropriate and reliable primary route to employment sites.

2.4.29. In economic terms there is a monetised benefit, across 60 years, within the transport model area for:

- Business: £81.766m
- Commuting: £66.192m
- Other: £83.580m

2.4.30. In the Opening Year of the NWL (2025), the monetised benefits are:

- Business: £1.459m
- Commuting: £1.784m
- Other: £1.464m

2.4.31. In the Design Year (2040), the monetised benefits are:

- Business: £1.666m
- Commuting: £1.244m
- Other: £1.711m

IMPACT OF ROAD USE ON RURAL COMMUNITIES

2.4.32. Average Annual Daily Traffic (AADT) flows have been produced from the 2025 opening year and 2040 design year. **Table 2-10** shows flow changes at key locations on the network, rounded to the nearest 1,000 vehicles between the 2019 base year and the forecast years of 2025 and 2040. The forecast year models (2025 and 2040) include the proposed Highways England A47 North Tuddenham to Easton dualling scheme.

Table 2-10 – 'Do Minimum' AADT changes

Location	2019-2025	2019-2040
A47 west of Sandy Lane (2 way)	+15,000	+23,000

Location	2019-2025	2019-2040
A47 east of Wood Lane (2 way)	+17,000	+26,000
B1535 Wood Lane	+1000	+3,000
Weston Longville	+1700	+2,600
Total on existing North-south routes through study area (Taverham Road, Lyng Road, Heath Road)	-3,000	+5,000
A1067 Attlebridge to A1270	+1,000	+5,000

2.4.33. The existing routes between the A47 and A1067 (including Lyng Road, Ringland Road, Honingham Road and Taverham Road) are also predicted to show increases in traffic of an estimated 5,000 vehicles by 2040. This would nearly double the existing flow on these routes and put them well over capacity. The village of Weston Longville is predicted to show an increase of 1,700 vehicles between 2019 and 2025 and by 2,600 vehicles between 2019 and 2040.

2.5 PLACE-BASED IMPACTS

2.5.1. In response to the evolution of government policy on Levelling Up and emerging DfT guidance, assessment has been undertaken to understand the place-based impact of the NWL on the surrounding local communities (area of impact).

2.5.2. Measures against three categories have been assembled to provide insight on the local context and drive outcomes around economic growth:

- **Socio-economic measures**: showing the socio-economic profile of the targeted area
- **Transport measures**: reviewing the performance of the transport network, which may constrain people's ability to access employment sites
- **Economic impact measures**: the impact of the scheme on the local economy

2.5.3. In **Table 2-11** and **Table 2-12**, a Red-Amber-Green (RAG) rating has been used to categorise socio-economic and transport connectivity metrics.

2.5.4. Breckland, South Norfolk and Norwich all perform worse than the regional and national average in terms of gross weekly earnings and proportion of the population educated to a degree level. With the exception of South Norfolk, which benefits from employment opportunities including the Norfolk and Norwich University Hospital, the area of impact performs lower than the regional and national averages across all metrics.

Table 2-11 – Place-based impacts: socio-economic measures

	Breckland	South Norfolk	Norwich	Regional average	National average
Gross weekly earnings	£516 🔴	£602 🟡	£505 🔴	£610	£587
Unemployment rate	2.9% 🟡	2% 🟢	4.4% 🔴	3.2%	3.9%
Employment rate	78% 🟡	83% 🟢	72% 🔴	77%	76%

Proportion of population educated to degree level or equivalent.	27% 🔴	35% 🟡	32% 🔴	37%	40%
Deprivation ranking out of 317 LADs	142 🟡	235 🟢	52 🔴		

2.5.5. **Table 2-12** shows the level of transport connectivity for a selection of built-up areas within NWQ. The measures indicate that the study area is poorly connected by both car and public transport, both within the built-up areas themselves, and between urban and rural centres. The City of Norwich's inter-urban connectivity is the exception, with strong links into London, Ipswich and other regional cities placing it in the 'Green' category.

Table 2-12 – Place-based impacts: transport measures

Connectivity measures	Norwich	Hethersett	Wymondham	Dereham
Intra-urban connectivity (car)	1 🔴	3 🔴	4 🟡	4 🟡
Intra-urban connectivity (public transport)	1 🔴	5 🟡	3 🔴	4 🟡
Inter-urban connectivity (car)	6 🟡	5 🟡	6 🟡	7 🟡
Inter-urban connectivity (public transport)	10 🟢	7 🟡	6 🟡	6 🟡

2.5.6. The evolving guidance also assesses the economic impacts of the scheme. A breakdown of the expected productivity impacts across each Local Authority in Norfolk is shown in **Table 2-13**. The greatest benefits are to be found in Broadland and Breckland (over 51% of total) in the Producer and Consumer Services sector.

Table 2-13 – Place-based impacts: productivity

Local Authority	Productivity gains (£m, 2010 prices and values)
Breckland	£23.9m
Broadland	£21.6m
Norwich	£11.1m
South Norfolk	£6.0m
Great Yarmouth	£6.0m
King's Lynn and West Norfolk	£13.6m
North Norfolk	£7.1m
Total	**£89.3m**

2.5.7. The NWL scheme is also expected to support the delivery of housing and employment sites that could come forward as a result of the improved connectivity the scheme creates. With the NWL in place, there will be benefits for those making commuting journeys as well as for those who are currently unemployed and looking to re-enter the labour market. Changes in transport costs can incentivise individuals to work, thus increasing the numbers choosing to work and the amount of labour supplied in the economy.

2.5.8. To examine this impact, regional housing, commercial and industrial developments were compared against the Greater Norfolk Local Plan (GNLP). The focus was on developments that have not been allocated in the Local Plan due to reasons associated with poor transport connectivity in the area.

2.5.9. A total of 735 of new homes within Broadland and South Norfolk were found to be viable with improved transport links.

2.5.10. In addition, new commercial and industrial sites identified are expected to create 904 new jobs in Broadland, including those expected to be introduced through supply chain expenditure and wage growth.

2.5.11. Taking socio-economic, transport, and economic factors into account, NWL is therefore expected to help Norfolk Level Up, improving access to diversified employment opportunities and addressing deprivation in local communities through a better-connected transport network.

2.6 OBJECTIVES

2.6.1. The objectives for the NWL have been developed in line with the national, regional and local policies set out in **section 2.2**, and in response to the specific problems set out in **section 2.3**.

2.6.2. It is anticipated that the NWL will improve strategic north-south and orbital connectivity, addressing congestion and journey time delays, as well as local issues in the NWQ related to rat-running and severance.

2.6.3. The scheme is designed to close the gap in the orbital network, strengthen the resilience of the surrounding routes, and safeguard the network from increased congestion future growth will bring.

2.6.4. In line with DfT guidance in TAG: The Transport Appraisal Process (DfT May 2018), these are presented as a hierarchy of objectives comprising:

- **High-level or strategic outcomes** – the desired end state, reflecting the aims and ambition for the area. The scheme will contribute to these, but not always in a direct manner
- **Specific or intermediate objectives** – representing the direct effects of the scheme
- **Operational objectives** – the outputs necessary for the specific objectives to be achieved

2.6.5. As far as possible, the specific and operational objectives are SMART (specific, measurable, achievable, realistic and timed).

HIGH LEVEL OBJECTIVES

2.6.6. The NWL's high-level objectives support the principal aim of a modern and efficient transport system. These have been refined since the submission of the SOBC, with the previously separate objectives of supporting sustainable growth and supporting economic growth combined to form objective H1, thereby emphasising the need for sustainable economic growth. The high-level objectives are:

- H1 Support sustainable economic growth

- H2 Improve the quality of life for local communities
- H3 Promote an improved environment
- H4 Improve strategic connectivity with the national road network

SPECIFIC OBJECTIVES

2.6.7. The specific objectives for the NWL have been developed to both support the high-level objectives and respond to the local challenges identified. These have been reviewed and revised since the SOBC. There are now six scheme specific objectives, which are:

- S1 Improve connectivity and journey times on key routes within the Greater Norwich area
- S2 Reduce the impact of traffic on people and places within the western area of Greater Norwich
- S3 Encourage and support walking, cycling and public transport use in Greater Norwich
- S4 Improve safety on and near the road network, especially for pedestrians and cyclists
- S5 Protect and improve the natural and built environment, including the integrity of the River Wensum SAC
- S6 Improve accessibility to key sites in Greater Norwich

OPERATIONAL OBJECTIVES

2.6.8. The operational objectives are:

- To provide the NWL, which will provide an additional crossing of the River Wensum for vehicles and ancillary cyclist and pedestrian facilities
- To reduce overall journey times in the wider Norwich area
- To minimise environmental impact, compulsory purchase and the demolition of residential and commercial property

2.7 MEASURES FOR SUCCESS

2.7.1. In alignment with the objectives identified within **section 2.5**, measurable outcomes are to be developed using the 'SMART' target methodology. This involves the development of Specific, Measurable, Attainable, Realistic and Time bound targets, which provide a structured approach to measuring the success of the scheme. These are outlined in **Table 2-14**. The interdependencies of the scheme impacts, and objectives are summarised within **Figure 2.30.**

Table 2-14 – Scheme impacts

Objective	Impacts
S1 Improve connectivity and journey times on key routes within the Greater Norwich area.	Improve journey times on routes through the area west of Norwich Reduce congestion and delay through the area west of Norwich Reassignment of traffic away from existing routes Provide a more suitable direct route for HGV/LGV vehicles Reduce trips on local minor roads for vehicular traffic
S2 Reduce the impacts of traffic on people and places in the Greater Norwich area	Reassignment of trips onto appropriate routes

Objective	Impacts
	Reduce net emissions of CO2 and other greenhouse gases Improve NMU connectivity Improve air quality, especially in the built-up areas of West Norwich Minimise traffic impacts on local residents during construction
S3 Encourage and support walking, cycling and public transport use in Greater Norwich	Increase in number of trips taken by walking, cycling and public transport over current levels Increase access to public transport, walking and cycling facilities
S4 Improve safety on and near the road network, especially for pedestrians and cyclists	Reduce overall network accident rate Reduce the number of people killed or seriously injured on roads in the area west of Norwich Minimise highway safety impacts and severance
S5 Protect and improve the natural and built environment including the integrity of the River Wensum SAC.	Biodiversity net gain Minimise impact on landscape Minimise impact on heritage Not affect the integrity of the River Wensum SAC Supports improvements in local air quality Minimise impact of scheme on climate change Minimise adverse environmental impacts arising from construction
S6 Improve accessibility to key sites (employment, leisure, education and healthcare) in Greater Norwich	Improve accessibility to Norwich Airport, Norfolk and Norwich University Hospital and key employment, housing and education sites Improve accessibility to green areas Improve access to the cycle and Public Right of Way networks

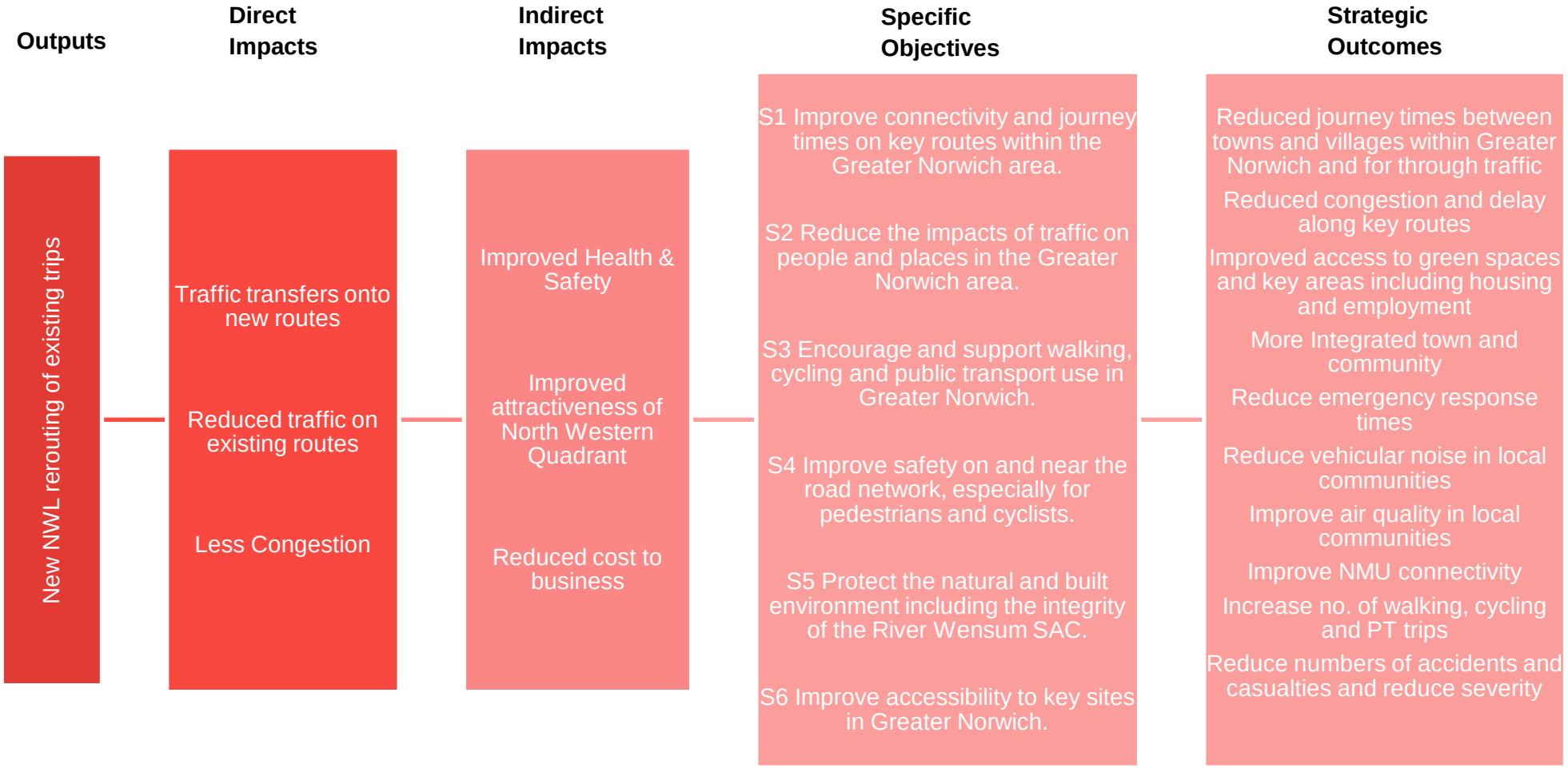


Figure 2.30 - Scheme objectives

2.8 SCOPE

2.8.1. The scheme is comprised of:

- A dual carriageway road, including a viaduct over the River Wensum and associated floodplain
- A “grade separated” junction with the A47
- An “at grade” junction with the A1067
- Dualling of a section of the existing A1067 between the proposed NWL roundabout and existing A1270 roundabout
- A bridge carrying the NWL over Ringland Lane
- New pedestrian crossing points, green bridges and bat underpasses where deemed to be required
- A wider network of walking and cycling-friendly route options, as per the Sustainable Transport Strategy
- Diversion and extension of existing Public Rights of Way to create a coherent joined up network
- Surface water drainage – principally infiltration basins, sediment forebays and associated carrier drains/ channels

2.8.2. The scheme also includes landscaping, planting, ancillary works, and significant environmental mitigation work. Environmental net gain and biodiversity net gain measures are also considered as part of the NWL design philosophy.

2.9 CONSTRAINTS

2.9.1. A number of physical, and environmental constraints were considered in the development of the preferred option. These are outlined at length as part of the Options Assessment Report, and summarised as follows.

PHYSICAL CONSTRAINTS

2.9.2. The main physical constraints are:

- The limited number of locations where a bridge across the River Wensum could be constructed
- The need to tie into the existing SRN and MRN. The simplest location for a tie in to the A47 is at one of the new junctions being constructed as part of the Highways England North Tuddenham to Easton dualling scheme
- The need to acquire land for the construction of the scheme, in addition to the land already acquired by NCC.

ENVIRONMENTAL CONSTRAINTS

2.9.3. NCC is progressing the NWL scheme on the basis that a crossing of the River Wensum is compatible with the indicative proposals already provided to Natural England and the Environment Agency.

2.9.4. A number of environmental constraints and considerations act upon the scheme and will be considered as part of the design. The Construction Environmental Management Plan (CEMP) sets out a comprehensive list of the statutory and non-statutory designated sites and natural features of the site and provides control measures proposed for construction. Designated and significant features include:

- River Wensum Special Area of Conservation and Site of Special Scientific Interest

- Fakenham Road, Road Side Nature Reserve
- County Wildlife Sites
- Ancient and veteran trees, hedgerows, and woodland including their route protection areas
- Important environmental features and species present on site.

2.9.5. Environmental constraints within the study area are shown in **Figure 2-31**.

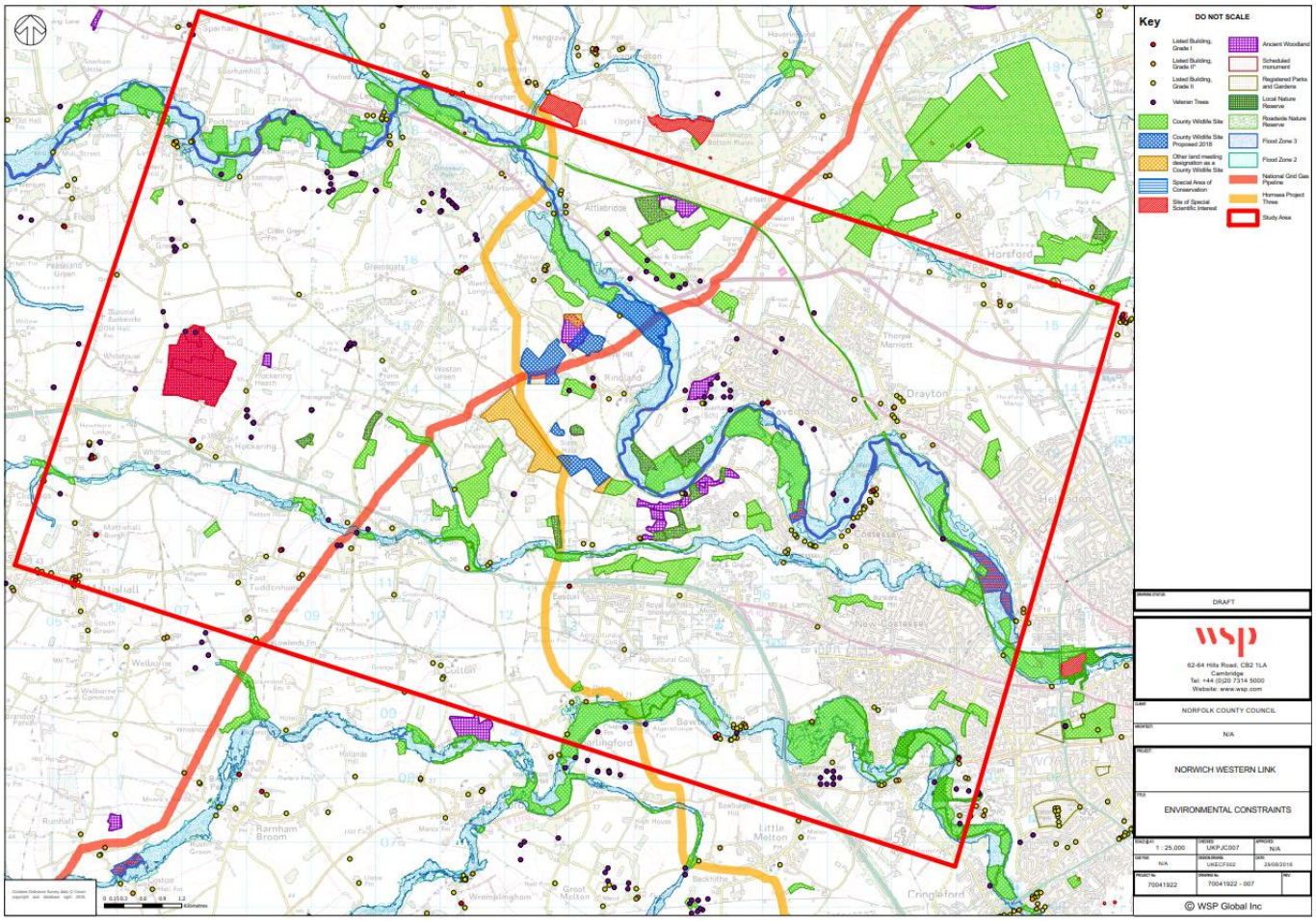


Figure 2-31 – Environmental Constraints

2.9.6. The Options Assessment Report details the environmental constraints acting on the NWL. While additional information can be found in this supplementary report, a table summarising the key environmental challenges affecting the NWL study area and the potential mitigation measures is outlined in **Table 2-15**. The role of environmental considerations in the options assessment process is described in **Section 2.12.18**.

Table 2-15 – Potential Mitigation Measures

Challenge	Description	Mitigation
River Wensum SAC / SSSI	Need to demonstrate no adverse effects on the integrity of the River Wensum SAC	▪ Regular consultation is being held with key consultees including Natural England and the Environment Agency to ensure key project information is communicated

Challenge	Description	Mitigation
		and concerns from these bodies are understood and addressed ▪ Habitat Regulations Assessment (HRA) will address the Scheme in detail identifying any potential adverse effects on the River Wensum SAC
Surface water runoff	Highway runoff into the River Wensum. Attenuation of this runoff to the greenfield runoff rate will require lagoons, swales, which all require land.	▪ Structural best management practices and appropriate mitigation measures will be outlined in the Construction Environmental Management Plan (CEMP) and will reduce significant impacts of runoff into the river ▪ Development of the Drainage Strategy to incorporate pollution prevention measures ▪ A detailed Water Framework Directive (WFD) and geomorphology assessment is being undertaken using 2D modelling of geomorphological processes. This will identify any potential adverse impacts and inform the required mitigation ▪ Indicative mitigation concepts are being developed, aligned with ecological mitigation and taking into account the River Wensum Restoration Plan
Flood risk	No increase in flood risk due to the structures in the floodplain	▪ Flood modelling is being undertaken to identify potential requirements of flood risk mitigation and changes in the floodplain.
Archaeological deposits	Unknown archaeology present along the river corridor leading to potential impacts on archaeological features and the setting of heritage assets along the river corridor. Land access for surveys along the river corridor. Considerable cost that can be incurred.	▪ Construction and demolition will need to be carried out with relevant mitigation and best practice guidance in mind ▪ A Written Scheme of Investigation (WSI) has been produced and trial trenching is recommended as part of the planning application ▪ The final mitigation strategy will be determined on the basis of the results of the geophysical survey and trial trenching ▪ Continued consultation will be held with the county archaeologist to gain a better understanding of the setting of potentially unknown heritage and archaeology
Protected species	Particularly bats. Land access may be an issue for some surveys. Timing of all of the surveys at an appropriate time of year and ensuring sufficient data capture will be important.	▪ Regular discussions are being held with Natural England and the NCC county ecologist to keep them abreast of the surveys, findings and emerging likely mitigation ▪ Land access for surveying is being agreed in advance to ensure availability

Challenge	Description	Mitigation
		▪ Data is regularly being reviewed and updated to ensure quality and robustness for the EIA
Air Quality	A new road in a rural location will introduce a pollution source into an area with relatively unpolluted air. The challenge is to identify through the application that the benefits outweigh the disbenefits and to keep any increases as low as possible.	▪ Good site practice and mitigation will reduce the effects of dust and particulate matter during construction ▪ A CEMP will be provided as part of the ES which will outline key construction mitigation measures ▪ Quantitative modelling and assessment of the potential air quality and greenhouse gas (GHG) impacts has been undertaken as part of the OBC process and presented within TAG worksheets. Further assessment on the impacts of air quality and GHGs will be undertaken as part of the EIA
Landscape and visual	A new link will potentially contribute to a loss of agricultural land, field boundaries, hedgerows and some woodland due to the rural nature of the study area. The challenge is to ensure that the route does not cause significant loss of tranquillity and sense of place of the area and to ensure suitable mitigation is provided.	▪ Appropriate mitigation to reduce the conflict in the landscape character as a result of the new route through it will be and the requirement for landscape planting and screening will be identified as part of the EIA ▪ Combined mitigation between landscape and other environment specialists may help take into account multiple potential impacts. Combined compensation is being considered as part of the Habitat Compensation Strategy
Built heritage	The Scheme passes in proximity to Listed Buildings and could impact upon the setting of these built heritage assets.	▪ Appropriate desk-based and field survey assessment will be undertaken as part of the EIA to understand the nature of any Listed Building affected ▪ Suitable mitigation such as bunds and suitable planting will be considered as part of the EIA in locations where the setting of a Listed Building is adversely affected ▪ Photomontages have been produced which will inform the EIA of setting and there will be liaison with English Heritage as appropriate with regard to the location of these photomontages and the scope of the assessment

FINANCIAL CONSTRAINTS

2.9.7. Without funding support from the Government, NCC does not have the resources to deliver the NWL. The scheme is not eligible for Growth Deal funding, as it exceeds the New Anglia LEP's guideline threshold of £75 million.

2.9.8. NCC will undertake to contribute 15% of the scheme's capital cost, including previous expenditure on land acquisitions and scheme preparation, and is able to meet anticipated future operating and maintenance costs.

2.10 INTERDEPENDENCIES

STATUTORY PROCESSES

2.10.1. Delivery of the scheme depends on the successful completion of a number of statutory processes.

2.10.2. A planning application for the NWL is due to be submitted in October 2021. It is envisaged that a Compulsory Purchase Order (CPO) will be required to secure the land to construct the NWL, with some land and property along the route having already been acquired by NCC. The remaining land required is owned by approximately 15 different landowners. This is subject to detailed land referencing works, which will be undertaken to establish all parties with interests in the land required.

2.10.3. A Side Road Order (SRO) will be required to cover alterations made to the existing highway network e.g. where existing roads are stopped up, diverted or where they connect to the new highway. Traffic Regulation Orders will also be required, this includes both permanent orders, as well as temporary orders to cover the construction period.

2.10.4. It is likely that Public Inquiries for the various Orders and planning permission will be required. These are expected to run concurrently.

2.10.5. If all Orders and permissions are obtained, the completion of CPO powers will not take place until after the final funding has been confirmed. Possession of land would be taken via General Vesting Declarations (GVD) or Notice to Treat & Notice to Enter.

PROJECT LINKS

2.10.6. The NWL connects with the A47 North Tuddenham to Easton scheme via a proposed grade separated junction on the A47 at Wood Lane / Berry's Lane in Honingham. This proposed dualling scheme, shown in **Figure 2-32**, is expected to relieve the congested single carriageway section of the A47. Highways England submitted a DCO Application to the Planning Inspectorate in March 2021. This was accepted in April 2021 and is now progressing to examination in public. Should the DCO be unsuccessful or the scheme not brought forward for delivery this would have an effect on the NWL in its present form as Highways England have included for the improvements to the Wood Lane junction and the NWL connection.

2.10.7. NCC and Highways England are working collaboratively to plan the interface of the NWL with the A47. The cumulative impact of the A47 and other relevant schemes, including the NWL, will be assessed as part of Highways England's environmental statement.

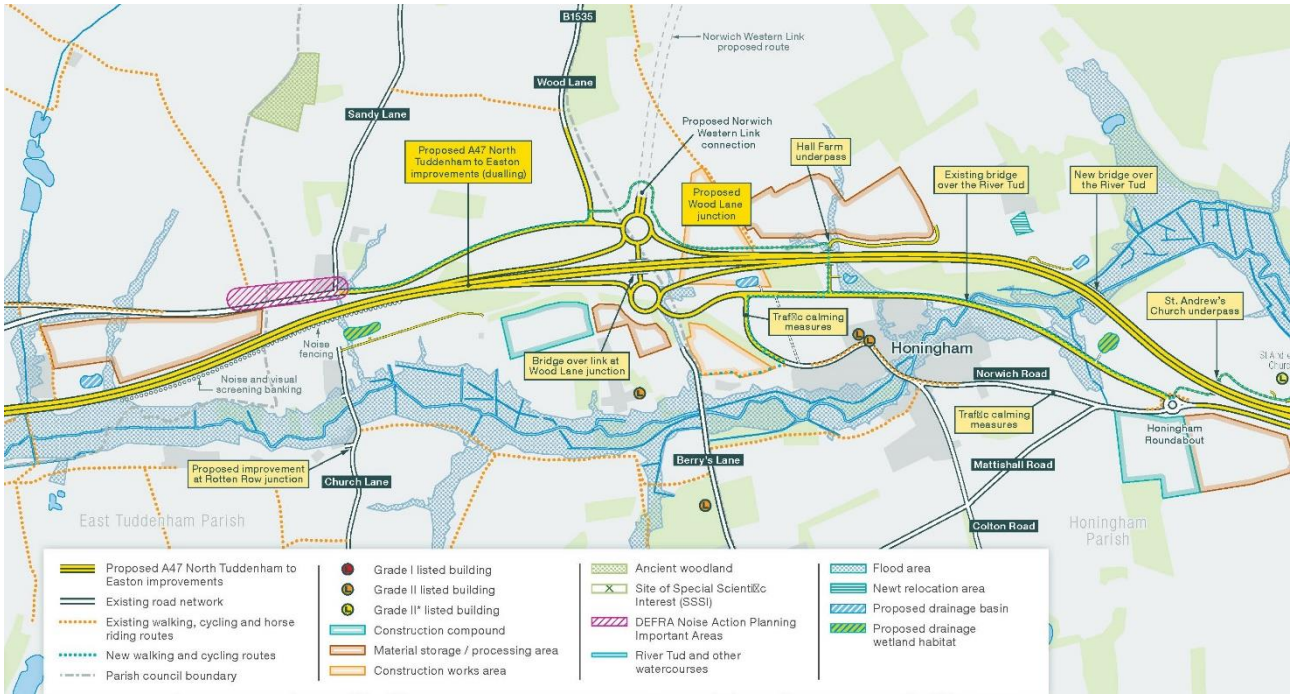


Figure 2-32 – A47 North Tuddenham to Easton scheme – Crop as of December 2020

2.10.8. Based on the two scheme programmes, elements of both projects are likely to proceed in parallel. The construction of the NWL is currently scheduled to commence 6-9 months after that of the A47.

2.10.9. The majority of the A47 dualling scheme and NWL main alignment will be constructed offline, which will help to minimise disruption to the surrounding network. Prior to the opening of the NWL, the B1535 will remain as the designated HGV route for strategic traffic through the western quadrant of Norwich, allowing some traffic to avoid the works on the A47.

2.10.10. Since July 2019, monthly interface calls between the Highways England design team and the NWL design team have taken place. Sharing of drawings and surveys commenced in September 2019, seeking to maximise integration opportunities. Discussion points have included junction design, transport modelling, constructability, strategic utilities, Non-Motorised User strategies, surveys and data collection, ecology and environmental mitigation measures.

2.10.11. Highways England is part of the NWL Project Board and has been attending Project Board meetings since December 2018. They have also provided updates to the Local Liaison Group meetings with local parish representatives. Discussions between the project teams for both schemes will be maintained throughout the construction phase.

2.10.12. The funded improvements to the A47 will, when delivered, exacerbate the traffic problems and issues already experienced in communities to the west of Norwich. The NWL will provide a direct, high-standard transport link between the western end of the A1270 and the A47, alleviating local transport issues, improving orbital connectivity, and reducing the need for traffic to enter the city.

2.11 STAKEHOLDERS

STAKEHOLDER GROUPS

2.11.1. Key stakeholders have been actively engaged with the scheme since 2017 via a series of bi-monthly Local Liaison Group (LLG) workshops with Parish Council representatives from within the study area. A group of elected Council Members has also provided guidance via bi-monthly Member Working Group (MWG) meetings. Both the LLG workshops and MWG meetings have included other relevant stakeholders as necessary.

2.11.2. The NWL team maintains a database of stakeholders, with whom it shares project information in line with its Stakeholder Communication Strategy (see **section 6.7** of the Management Case), rolled out in December 2020. This database includes:

- Norfolk county councillors, particularly the Leader and Deputy Leader, cabinet members, the Norwich Western Link member group and local members
- Norwich City Council
- The NWL Project Board
- The NWL Local Liaison Group (made up of local parish council representatives)
- Parish council clerks
- Local MPs
- District councils, particularly chief executives and councillors
- Natural England
- English Heritage
- The Environment Agency
- The Norwich Western Link ecology liaison group (made up of groups with an interest and expertise in wildlife and habitats and their preservation and management)
- Norfolk Chamber of Commerce
- New Anglia Local Enterprise Partnership
- Highways England
- Department for Transport
- Businesses in the area to the west of Norwich
- Local landowners
- Norwich Airport
- Norfolk and Norwich University Hospital
- Norfolk Constabulary
- Norfolk Fire and Rescue Service
- East of England Ambulance Service
- Norwich Research Park
- Easton and Otley College
- Road Haulage Association
- Regional haulage companies
- Public transport providers
- The Food Enterprise Park at Easton
- Walking and cycling groups
- Local Access Forum
- Campaign groups

2.11.3. Many of these stakeholders have provided feedback on the proposed scheme; response summaries are set out in **Table 2.16**.

Table 2.16 - Stakeholder feedback

Organisation	Position	Summary
Breckland Council	Support	Breckland Council believe the NWL is of key importance, as traffic congestion is having a negative impact on local industry. Breckland Council mentioned that the NWL would remove HGVs from local roads, providing a positive impact for local residents.
Broadland District Council	Support	Broadland District Council strongly recognises the benefits the NWL would have for the local community and people visiting the area. It is felt that the NWL will reduce rat-running through smaller villages and result in an overall positive outcome.
Landowners	Neutral	Landowners identified as affected by the proposed options were invited to take part in the public consultation. Owners tended to provide the route preferences that least directly impacted their land or adjacent environmental concerns.
Chantry Place Shopping Centre	Support	Chantry Place Shopping Centre has stated that the NWL will directly benefit the businesses that operate there, as well as the full and part time jobs provided by the site. They feel the NWL will also benefit the retail and visitor offer across Norwich, as journey times, reliability, and safety are improved.
Cringleford Parish Council	Support	Cringleford Parish Council has stated that the NWL will have a positive impact on the parish and wish to see a new road connecting with the A47 west of Easton, easing traffic congestion for local residents. However, there are concerns about the River Wensum SAC as a conservation site, with the protection of wildlife habitats being noted as an area of utmost importance
East Winch Parish Council	Support	East Winch Parish Council supports the principle of the NWL, but have outlined some concerns, such as the proximity to the city of Norwich. The Parish Council noted that additional local road improvements are needed, including improvements to the crossroads at Necton.
Great Yarmouth Borough Council	Support	Great Yarmouth Borough Council believes that the NWL will have a positive impact on the local economy and wider county, bringing further investment to the City. The Council acknowledges the environmentally sensitive area of the project, but believes that with careful planning and consideration the NWL can be successfully implemented.
First Bus	Support	First Bus states that a significant amount of traffic uses Dereham Road, the outer ring road, and rural roads to travel between the A47 and A067 and beyond. The NWL will reduce congestion as traffic is able to take a route offering more reliable journey times, and support access to the proposed Food Hub in Easton, enabling light goods vehicles to avoid using the roads within Norwich.
Green Party	Oppose	The Green Party expressed opposition due to the location of the scheme and the presence of the River Wensum SAC, believing the NWL would cause adverse harm. The Green Party also believes the NWL would

Organisation	Position	Summary
		increase carbon emissions surrounding the route and, with the financial cost of such a project, the public should be focused on more sustainable modes of transport.
Highways England	Neutral	Highways England has not expressed a view on a preferred link road option, save opting for a route which maximises the design life of the A47. Highways England will work with Norfolk County Council as both schemes are taken forward, to ensure the outcome of work provides an improved and connected road network.
Jerome Mayhew, MP for Broadland	Support	The MP for the constituency of Broadland in Norfolk confirmed strong local support for the Norwich Western Link. He supports the scheme in terms of its impact on local communities, the environment, value for money, and benefits it will bring to local transport links and safety.
New Anglia Local Enterprise Partnership (LEP)	Support	The LEP outlined that the new link will help deliver the economic strategy for Norfolk and Suffolk, will improve connectivity to centres of excellence, improve journey reliability to economic opportunities, and will enhance the quality of life for residents in the area.
Norfolk Chamber of Commerce	Support	Representing over 900 Chamber members, the Norfolk Chamber of Commerce expressed their support for the scheme, and its intent to embrace growth and development to enable the jobs and house the region needs. It feels that the NWL will facilitate access to both Norwich IAirport and Great Yarmouth port, and help to manage the additional traffic future growth will create. This, in turn, will improve the quality of life for people living in the area.
Norfolk Constabulary	Support	The Norfolk Constabulary feels that a western link road would allow for delivery vehicles to avoid the city centre and improve journey time, as well as reduce the amount of unnecessary traffic, noise and visual intrusion passing through the western area of Greater Norwich. They feel that the NWL would reduce the occasions for stop/start traffic, particularly with HGVs, which are slower running. Less congestion would be beneficial in reducing police response times and reducing driver frustrations. This, in turn, would increase safety.
Norfolk Fire and Rescue Service	Support	The Norfolk Fire and Rescue Service would welcome reduced traffic congestion and increased traffic flow, which they believe will reduce their overall attendance time to incidents in the affected area. They would also welcome a reduction in the number of heavy goods vehicles using minor roads around the Norwich area.
Norfolk and Norwich University Hospital	Support	NNUH stated that the improved infrastructure will make the hospital more accessible, particularly to residents living in North Norfolk.
North Norfolk District Council	Support	North Norfolk District Council supports the Norwich Western Link in principle, urging for the completion of a dual carriageway orbital route around Norwich.
Norwich Airport	Support	Norwich Airport expressed enthusiastic support for the scheme, seeing the NWL as vital to the continued and long-term support of the county. This is particularly true in light of the coronavirus pandemic, after which the local community, economy, and Airport need to recover as quickly as possible.

Organisation	Position	Summary
		The NWL is expected to provide significant benefits, not only by improving accessibility of the commercial development at Imperial Park, but helping to reduce the number of heavy good vehicles using minor roads.
Norwich City Council	Neutral	The City Council's support for the scheme is dependent on being satisfied that certain conditions are fulfilled. In particular, the NWL needs to be set in the context of a clear and environmentally progressive strategy for the development of transport in Norwich.
Norwich Friends of the Earth	Oppose	Friends of the Earth outlined a number of concerns, including the location (in regard to the presence of the River Wensum SAC), the reasoning, cost, air quality and the impact on climate change.
Road Haulage Association Ltd (RHA)	Support	The RHA feel the NWL would reduce journey times, improve air quality and assist in the economic growth of Greater Norwich. Ideally, the RHA would like a dual carriageway solution linking the A47 and A1067. The link would enable traffic to take a shorter route to the area north of Norwich, making critical infrastructure more accessible, and providing resilience in the event of the existing road network failing.
South Norfolk Council	Support	South Norfolk Council believes the NWL will enable the strengthening of residents' connections to jobs, leisure, education and each other, as well as taking traffic off local roads, improving the resilience of the road network, and improving air quality in residential areas.
Stop the Wensum Link Group	Oppose	The Stop the Wensum Link Group argues that the proposed road is environmentally damaging and does not provide good value for money. It argues in favour of a pause to the project to undertake a full and comprehensive consideration of alternative solutions, particularly in light of the pandemic and a gap in post Covid 19 origin and destination data.
The Friends of North Norfolk	Oppose	The Friends of North Norfolk opposed the principle of the NWL, due to the harm that they believe will be caused to the River Wensum and the overall financial cost of the project.
Transport East	Support	Transport East has endorsed the NWL, stating that it will better connect people to key employment, health, leisure and educational sites in and around Norwich, as well as providing an attractive link to Norwich Airport and areas north of the city. In addition, Transport East notes that through a combination of reducing traffic congestion on the local road network and the inclusion of targeted sustainable transport measures, the project will support people to walk, cycle and use public transport.
Wensum Valley Alliance	Oppose	The Wensum Valley Alliance outlined a number of concerns, including: the location (in regard to the presence of the River Wensum SAC), the reasoning, cost, air quality and the impact on climate change.
Weston Longville Parish Council	Support	Weston Longville Parish Council offered conditional support for the scheme, supporting the strategic objectives of an NWL, though advocating for a route that connected the A47 closer to Norwich. Provided proposed mitigation measures were fully implemented, the WLPC would support the scheme.
Wild Wings Ecology	Oppose	Wild Wings Ecology questioned the adequacy of the ecological surveys carried out by NCC, particularly as regards the protected Barbastelle Bat

Organisation	Position	Summary
		species. It feels that the NWL would be damaging to a nationally important area, and that the scheme cannot be delivered in compliance with wildlife laws.
Norfolk Wildlife Trust	Oppose	Norfolk Wildlife Trust believes that the NWL would be damaging to the environment and the impacts would not be adequately mitigated. It expressed concern about loss of habitat by the implementation of the road and the consequent loss to protected species that would occur.
CPRE Norfolk	Oppose	CPRE Norfolk holds the principle that any major road scheme is inappropriate and unsustainable in relation to the global environmental crisis as well as concerns about damage to precious local irreplaceable countryside. Also concerned about release of additional land for development related to construction of the road.
Norfolk Labour Group	Oppose	Norfolk Labour Group position is that the NWL is environmentally damaging and funding should be used to promote sustainable modes of transport, including the improved bus routes and separated carriageway links for walkers and cyclists.
Clive Lewis MP	Oppose	Clive Lewis expressed opposition to the need for roadbuilding and proposed the prioritisation of sustainable modes over car travel to protect the environment by cutting CO2 emissions and allowing wildlife to remain in their natural habitat unaltered.
Bat Conservation Trust	Oppose	The Bat Conservation Trust position statement advises that they have significant concerns that the impacts of the NWL, as proposed, on the barbastelle bat population cannot be adequately mitigated or compensated for based on current available information.

STAKEHOLDER ENGAGEMENT

2.11.4. NCC will build upon the extensive stakeholder engagement undertaken for the Outline Business Case, and on the relationships developed with businesses, residents and all other interested parties. Stakeholders will continue to be involved throughout the development of the Full Business Case, and the delivery phase.

2.11.5. Letters of support that have been received in relation to the development of the NWL have been included within **Appendix 2A.**

2.11.6. Additional detail on stakeholder management activities undertaken to date, as well as the ongoing stakeholder engagement strategy, can be found in the Management Case.

CONSULTATIONS

2.11.7. Extensive stakeholder consultation has been undertaken in preparation for the NWL scheme. The first public consultation, in 2003, showed extensive support for transport improvements to the north and west area of Norwich. As the scheme developed, specific consultation was undertaken on the NWL, the details of which can be found in **section 6.7** of the Management Case.

2.11.8. Between November 2018 and January 2019, NCC consulted on the four shortlisted road options for an NWL, with the following objections:

- Understand the degree of public support for each of the four options

- Understand how each option may rank against one another
- Gauge support for each option from statutory and non-statutory organisations
- Gain knowledge of potential scheme risks and local effects of each of the proposed options that may influence design or cost
- Seeking to identify additional potential social and economic scheme benefits and opportunities, which may arise as a result of each option and any aspects requiring mitigation which may influence the scheme cost.

2.11.9. A total of 1,929 respondents provided feedback to the consultation. Three key themes emerged: connectivity, environment, and rat running.

2.11.10. The need for improved bus services and facilities for cycling and walking was highlighted by respondents. Roads and traffic improvements were strongly supported. Concern over environmental impacts arose for all options, with particular concerns noted over impact on wildlife, woodland, and on the Wensum Valley.

2.11.11. The resulting measures for non-motorised users focus on enhancing accessibility and safety on existing routes, where there would be traffic relief as a result of the scheme.

2.11.12. Concerns regarding the environmental aspects of the scheme were key to scheme development, with NCC liaising extensively with the Environment Agency and various environmental groups, creating a Design and Landscape Strategy as a commitment to delivering good design that conserves and enhances natural assets, and undertaking environmental mitigation works.

2.12 OPTIONS

2.12.1. To address the project evolution between the OAR and the OBC, an OAR Addendum **Appendix 2B** has been created (May 2021) to consider the impact of new information that has become available since the original OAR was prepared. This should be read alongside the OAR for additional detail on the option development process.

OPTION DEVELOPMENT

2.12.2. Following DfT TAG: Transport Appraisal Process guidance, a long list of options was developed to address current and future problems identified within the study area. A long list of 82 options was considered in the Option Assessment Report (October 2018) prior to shortlisting for public consultation.

2.12.3. In an effort to tackle demand-based issues, a number of demand management, freight and improved information schemes were identified. Active travel and public transport options were also developed to encourage modal shift and reduce private vehicle trips on the existing road network. The long list of options is summarised by category in **Table 2-17**.

Table 2-17 – Long list categories

Category	Number of interventions
New link highway options	44
Network improvement schemes	8
Demand management	3
Active travel	8
Information	3
Freight	3
Public transport options	12
Do nothing	1
Total	**82**

2.12.4. A multi-criteria assessment framework (MCAF) was then utilised to assess and sift the options. To allow for greater differentiation between options and a wider consideration of environmental factors, the assessment criteria were expanded to include the categories listed as part of the TAG Environmental Impact Appraisal. The resulting assessment areas are shown in **Table 2-18**.

Table 2-18 – Assessment Areas

Element	Assessment Area
Strategic	▪ Scale of impact against specific objectives ▪ Fit with high-level objectives ▪ Degree of consensus over outcomes
Economic	▪ Economic growth ▪ Socio-distributional impacts and regions ▪ Local environment ▪ Wellbeing ▪ Expected Value for Money (VfM) ▪ Environmental • Air quality • Noise • Greenhouse gases • Landscape / townscape • Biodiversity • Cultural heritage • Water environment
Management	▪ Implementation timetable (years) ▪ Public acceptability ▪ Practical feasibility ▪ Quality of supporting evidence ▪ Key uncertainties

Element	Assessment Area
Financial	▪ Affordability ▪ Capital cost (£m) ▪ Overall cost risk
Commercial	▪ Flexibility of options ▪ Funding source ▪ Income generated

2.12.5. The sifting process was also informed by an initial round of public consultation in summer 2018, in which respondents answered a question about which options they thought would best tackle transport issues in the area. 86% selected the option of a new road link between the A47 and A1270.

2.12.6. An initial sifting led to the removal of all options that did not score as highly as the do-nothing scenario, as these would not represent good value for money. After the first round of sifting, 34 options remained, including 22 new link highway options, five network improvement schemes, three active travel options, three public transport options and a freight option.

2.12.7. At this stage, it was also decided that new single carriageway highway link options would be omitted from the study. These options were discounted on the basis that dual carriageway options would produce the most robust assessment in consideration of potential land take, costing and environmental concerns. It should also be noted that dual carriageway options, in general, provide more benefit in terms of increased capacity and therefore network resilience, improved journey time and associated economic benefit and safer design. The increased speed limit for HGVs on dual carriageways would also significantly improve chances to attract HGVs away from rural routes.

2.12.8. Discounting the single carriageway options removed a further eight options, resulting in a total of 26 options after Round 1. The remaining options were subsequently re-categorised into ‘non-highway options’ (10), ‘new link highway options’ (14) and ‘existing link upgrade options’ (2).

2.12.9. These were then scored against 12 specific objectives for scheme, with their likelihood of addressing the objective scored on a scale of 1 (unlikely) to 5 (fully address the scheme). The final percentage score for each option was compared to the ‘do nothing’ score of 27%.

2.12.10. The new highway link options performed significantly better against a higher number of the specific scheme objectives. The lower scoring non-highway options were found to either not be viable in isolation or not to make a sufficiently significant contribution towards meeting the study objectives. It was, however, decided that they should be carried through as potential schemes that could be packaged up with the shortlisted highway options at a later stage.

2.12.11. A second round of sifting compared the remaining highway options geographically and removed the weaker options from similar competing pairs. Three new highway options and the upgrading of an existing highway route through straightening and widening were chosen as the shortlisted options and taken forward for further assessment. **Figure 2-33** provides an overview of the proposed option routes.

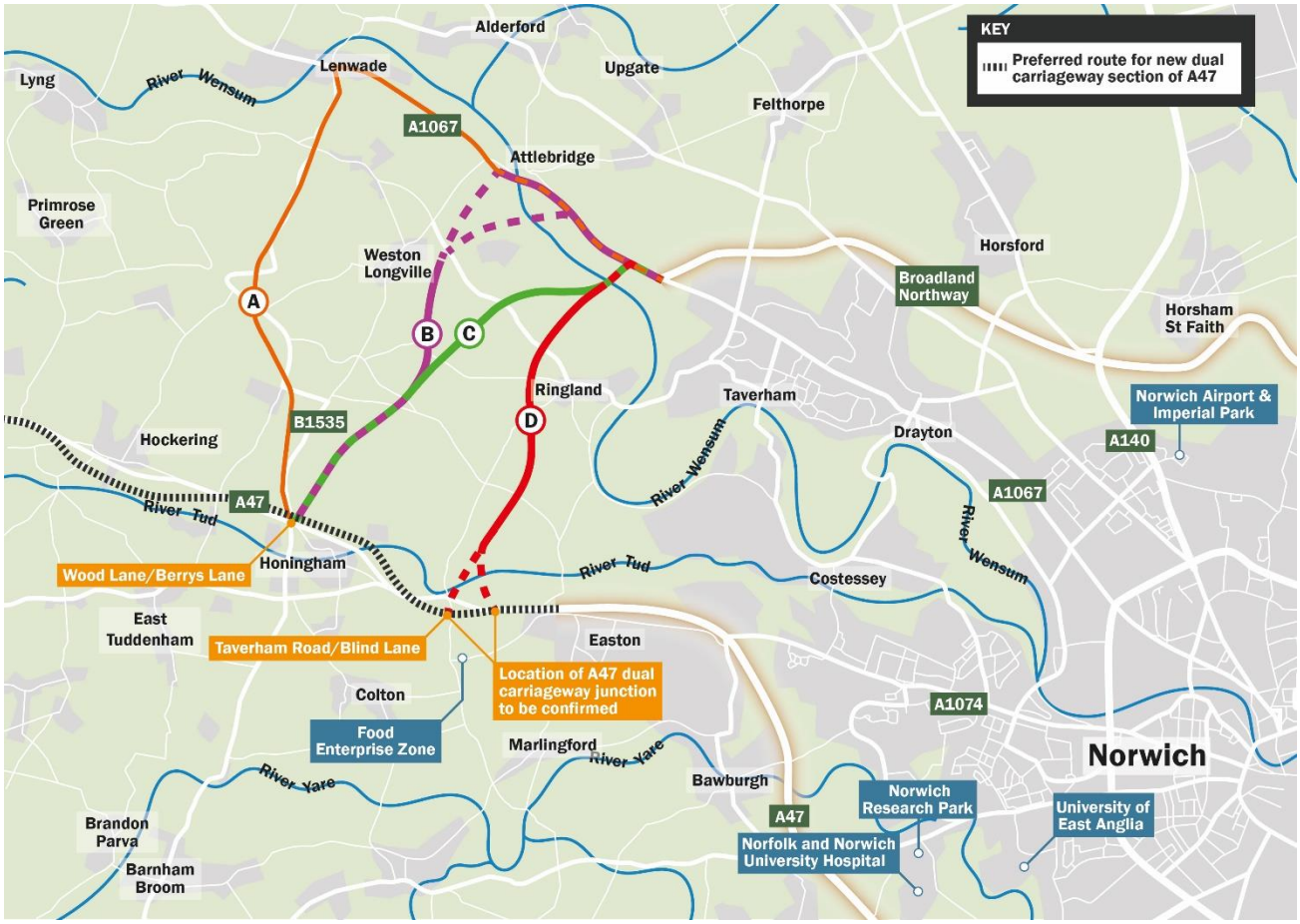


Figure 2-33 - Shortlisted Highway Options

Option A

2.12.12. Option A consisted of a single carriageway upgrade to the B1535 and A1067, linking to the A47 at the Wood Lane junction north of Honingham. This option would significantly realign the current B road, straightening it and widening it to deliver a higher standard route. The route would join the A1067 via a new junction at Lenwade and make use of the existing bridge across the River Wensum at Attlebridge.

Option B West (Existing Bridge) and Option B East (New Viaduct)

2.12.13. Option B consisted of a new dual carriageway route and dual carriageway upgrade of the A1067, with the new route to the east of Weston Longville and linking to the A47 at Wood Lane. At the northern end of this route, two alternatives were given as to how it could join the A1067. One would be via a new junction near Attlebridge, which would include widening the existing River Wensum bridge at Attlebridge, Option B West. The other would see a new viaduct crossing of the Wensum created, joining the A1067 further to the east and is named Option B East.

Option C

2.12.14. Option C consisted of a new dual carriageway route and dual carriageway upgrade of the A1067, linking to the A47 at Wood Lane. A short section of the A1067 would be dualled before a new junction would take the route between Weston Longville and Ringland, crossing the River Wensum on a viaduct.

Option D West and East

2.12.15. Option D consisted of a new dual carriageway route and dual carriageway upgrade of the A1067. The route is similar to Option C at its northern end; it then runs to the west of Ringland and links to the A47 further east. A short section of the A1067 would be dualled with a new junction provided. The NWL would route between Weston Longville and Ringland, crossing the River Wensum on a viaduct, then crossing the River Tud on a second viaduct, before it meets the A47.

2.12.16. Two alternatives for how Option D could join the A47 were shown. This was due to Highways England's plans to dual the section of the A47 between North Tuddenham and Easton. During the development of the SOBC, a limited level of detail was available in relation to the new junction location near Easton, with the possibility of the junction being located near Blind Lane and Taverham Road or closer to the current Easton roundabout junction.

Do Nothing

2.12.17. Do nothing – This option has no proposed measures and was carried through in order to provide a base from which to make comparisons. The A47 dualling scheme was included as part of the Do Minimum scenario, as this Highways England scheme would progress as a standalone scheme irrespective of the scheme selected for the NWL.

OPTION ASSESSMENT

2.12.18. In 2019, an Option Selection Report (OSR) was produced drawing together information relating to the shortlisted highway link options. It considered a wide range of engineering and environmental criteria, as well as feedback from the public consultation.

2.12.19. The six shortlisted options were assessed in line with TAG guidance and the findings set out in the SOBC and the OSR. The decision on a Preferred Route Alignment (PRA) took on board engineering scheme design considerations, such as drainage, geotechnical, structural and topographical considerations, in addition to environmental effects, scheme risks, cost and transport impacts. Feedback from two rounds of public consultation was also incorporated. Additional detail on determining the PRA is set out in the OSR.

2.12.20. The route option assessment compared the route options for the proposed NWL, considering the proposed A47 upgrade, the existing road network, and how the road would traverse through the Wensum Valley with minimal impact.

Engineering

2.12.21. The main engineering challenges identified were related to the provision of new roads within constrained corridors. The options linking the NWL to the A1067 closer to the A1270 were generally dual carriageways, and the structures provided to enable local road crossings. These options would involve more land take, earthworks and have higher corresponding scheme costs.

2.12.22. Considerable access disruption and traffic management was anticipated for those route options that required online construction.

2.12.23. While the engineering challenges identified were not significant enough to completely discount any of the options under consideration, Option C ranked ahead of other options when assessed against design fit with topography, layout constraints, utility and traffic management/disruption during construction (**Table 2.19**).

2.12.24. All NWL shortlisted options were considered as being acceptable for connection to the proposed A47 North Tuddenham to Easton dualling scheme, however due to the physical constraints of the River Tud and steep topography, Options D (East and West) were assessed as more challenging in comparison to the other options.

Table 2.19 - Engineering Decision Matrix for Route Selection

Engineering	Route A	Route B (west)	Route B (east)	Route C	Route D (west)	Route D (east)
Horizontal Alignment, Land Use and Constraints	6	5	4	1	3	2
Junctions and roads	6	3	2	1	4	4
Topography and Profile	1	3	4	2	6	5
Structures	1	4	2	3	6	5
Drainage	1	1	1	1	1	1
Public Utilities	4	3	2	1	6	5
A47 Tie-in	1	2	2	2	5	6
Departures from Standard	1	6	5	1	1	1
Buildability	4	3	2	1	6	5
Overall	3	4	2	1	6	5

Traffic

2.12.25. An updated traffic model was used to assess each route option and test a future year scenario comprised of the proposed NWL and the major developments most likely to be developed by the 2025 (opening year), 2040 (design year), and 2050 (horizon year).

2.12.26. Predicted traffic flow, journey time, and accident changes were analysed, and generally, all routes generated the most journey time savings for local roads nearest to them, with Option C attracting the most NWL traffic, and Option A attracting the least NWL traffic.

Economic analysis

2.12.27. An appraisal of the economic elements associated with the scheme was undertaken in accordance with TAG Unit A1.1 Cost-Benefit Analysis (May 2018). Based on the additional monetised impacts, the scheme options resulted in adjusted Value for Money (VfM) categories in the range of Low to High.

2.12.28. Option A returned the lowest BCR, placing it in the Low VfM range. Option D West reported a Medium VfM, while Options B (east and west), C, and D East all showed High VfM. The breakdown of results is shown in **Table 2-20**.

Table 2-20 –BCR and VfM Summary

	Route Options					
	Option A	**Option B West**	**Option B East**	**Option C**	**Option D West**	**Option D East**
Benefit Cost Ratio (BCR)	1.42	2.62	2.21	2.51	1.87	2.00
VfM Category	Low	High	High	High	Medium	High

Environmental

2.12.29. The environmental impacts of the NWL route options were assessed in line with TAG, where appropriate, as well as best practice, and included the identification of: baseline conditions, environmental effects; mitigation; and consultation, for the topics of noise; air quality; greenhouse gases; landscape; historic environment; biodiversity; and water environment.

2.12.30. These assessments indicated that all six route options would have varying degrees of environmental impacts. **Table 2-21**, which summarises the assessment outcomes, indicates that Option A would have the least overall environmental impact, while Option D (west and east) would have the highest overall impact.

Table 2-21 - **Environmental Appraisal Summary Table**

Environmental Impacts	Route Options				
	Option A	**Option B West**	**Option B East**	**Option C**	**Option D (west and east)**
Noise	Considered to be the best option as it adversely affects (moderate and major impacts) the fewest properties.	Considered to be the worst option as it adversely affects (moderate and major impacts) the highest number of properties.	Considered the third best option moderate and major adverse impacts on properties.	Considered the second best option moderate and major adverse impacts on properties.	Considered the second worst option moderate and major adverse impacts on properties.
Air Quality	Slight beneficial local air quality impact; affects fewest	Negative local air quality impact	Negative local air quality impact	Negative local air quality impact	Worst negative local air quality impact; affects largest numbers of properties

Environmental Impacts	Route Options				
	Option A	Option B West	Option B East	Option C	Option D (west and east)
	numbers of properties				
Greenhouse Gases	Net present value $(CO_2)_e$ of £8,622,855; lowest emissions of greenhouse gases	Net present value $(CO_2)_e$ of -£1,358,528; second lowest emissions of greenhouse gases	Net present value $(CO_2)_e$ of -£4,900,284; second highest emissions of greenhouse gases	Net present value $(CO_2)_e$ of -£4,149,699; third highest emissions of greenhouse gases	Net present value $(CO_2)_e$ of -£10,575,555; highest emissions of greenhouse gases
Landscape	Slight Adverse	Slight Adverse	Moderate Adverse	Moderate Adverse	Moderate Adverse
Historic Environment	Large Adverse	Large Adverse	Moderate Adverse	Moderate Adverse	Moderate Adverse
Biodiversity	Very Large Adverse	Very Large Adverse	Very Large Adverse	Large Adverse	Large Adverse
Water Environment	Minor Adverse	Minor Adverse	Moderate Adverse	Moderate Adverse	Moderate Adverse
Geology and Soils	This Option has the least exposure to the construction of embankments /piled structures over Alluvium layer.	This Option has a limited exposure to construction of embankments and piled structure over Alluvium layer.	This Option has a considerable exposure to construction of embankments and piled structure over Alluvium layer.	This Option has a considerable exposure to construction of embankments and piled structure over Alluvium layer.	This Option has the greatest exposure to construction of embankments and piled structure over Alluvium layer.

2.12.31. Where significant impacts were identified and where feasible, mitigation will be outlined and adopted to minimise impacts at design and construction. To ensure the scheme is adequately addressing environmental issues, regular consultation is being undertaken with the Environment Agency, Natural England and other key stakeholders to ensure their concerns are raised and appropriately addressed.

Stakeholder Acceptability

2.12.32. Feedback was collected from members of the public and a range of stakeholders across two rounds of public consultation. The majority of stakeholders were supportive of an NWL in principle, as long

as adequate environmental mitigation and supporting traffic management measures were put in place to enable the solution to be sustainable. The majority of stakeholders supported Options D or C.

2.12.33. The feedback also included notable responses from the Environment Agency and Natural England. Both require a solution that does not impact on the integrity of the River Wensum SAC and SSSI. The Environment Agency also highlighted that the River Tud is classed as a Priority Habitat as a chalk river in the WWF-UK 2014 report 'The State of England's Chalk Streams'.

2.12.34. The Environment Agency and Natural England consistently indicate a preference to minimise the number of river crossings, though noted that Option A was expected to have the least impact on flood risk and did not require a new crossing. Both confirmed that a new viaduct was considered an acceptable solution – subject to appropriate design and construction methodology – should a new road crossing be required.

OPTION RECOMMENDATION

2.12.35. Considering all factors, it was therefore recommended that Option C be taken forward as the preferred route (**Figure 2-34**). This offers a solution that has high value for money, is publicly acceptable and less environmentally intrusive, easier to build, cheaper to install and lower risk to deliver through the statutory process.

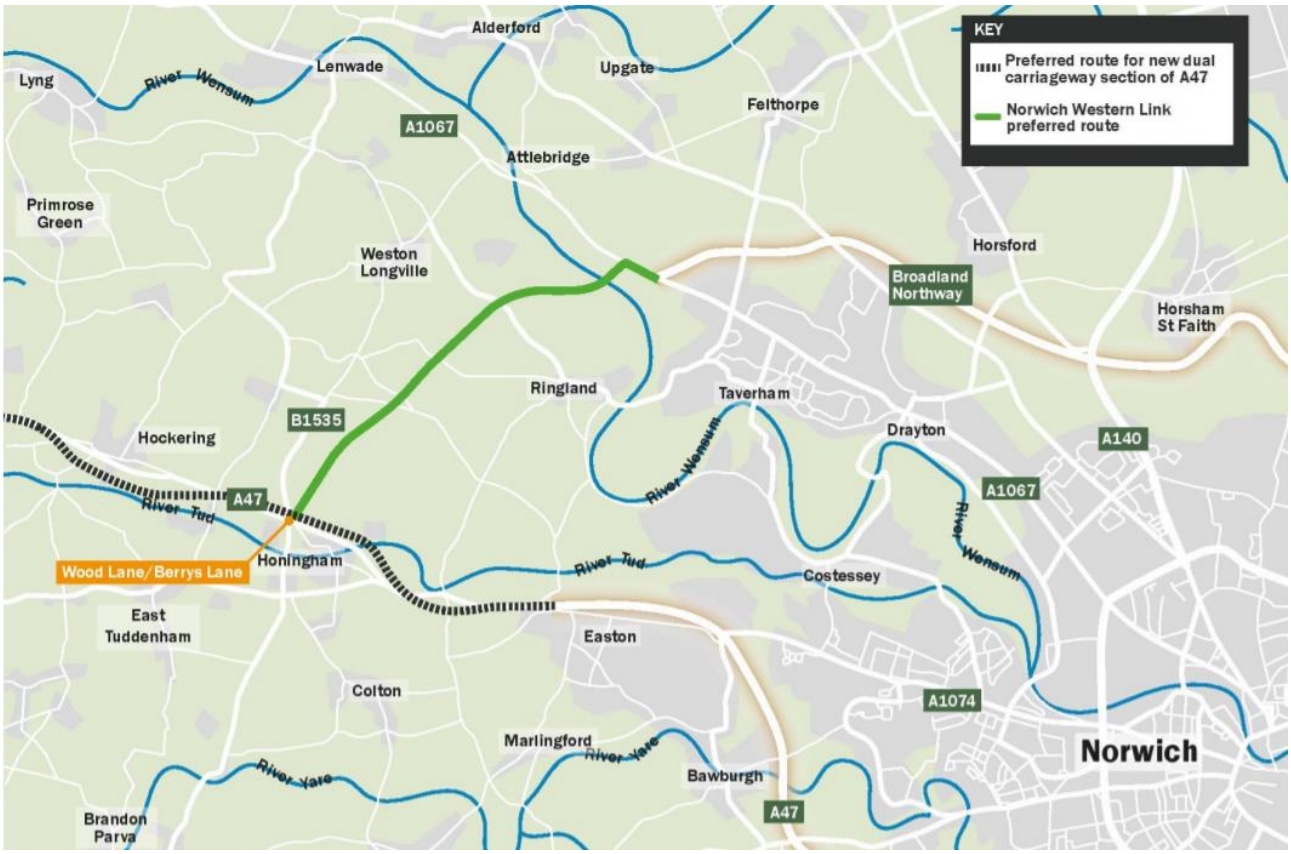


Figure 2-34 – The Preferred Route

2.12.36. It was also recommended that any option taken forward be accompanied by a package of supporting non-motorised user interventions to encourage mode shift away from private car use for those travelling shorter distances within the study area. These are further explored as part of the Sustainable Transport Strategy (STS).

Background

2.12.37. The Sustainable Transport Strategy (STS) provides a framework for a package of measures that will complement the Norwich Western Link scheme and supports the sustainable travel objectives of the NWL.

2.12.38. The scheme creates an opportunity to link up the existing network of Public Rights of Way to maximise local connectivity for pedestrians, cyclists and equestrians. The land take associated with the delivery of the new road, enables the creation of new non-motorised user routes and mitigate severance issues where the NWL crosses existing roads, with local residents supportive of closing the majority of the rural roads crossing the link.

2.12.39. The scheme will offer a comprehensive network of new Public Rights of Ways and joining up the existing fragmented network and improving quality and attractiveness of the routes on the ground. At the southern end of the route, working has been completed jointly with Highways England to secure connections provided to the Walking Cycling and Horse Riding routes proposed as part of their North Tuddenham to Easton dualling scheme; this includes new grade separated crossings of the A47 at Honingham and Easton at the southern part of the route.

2.12.40. Further north the NWL scheme includes a new underpass available to all users with priority given to non-motorised users where the new link crosses. Two new green bridges will also include non-motorised user provision which introduce new routes that cross the scheme and at the north eastern end of the route, onward connections are provided to the Broadland Northway cycleway alongside A1270. The traffic relief provided to the surrounding rural road network will also free up capacity and make conditions safer and more pleasant for cycling in mixed traffic. This will be enhanced via a series of cycle priority measures and crossing improvements, linking to the Marriott's Way (National Cycle Route 1, which offers direct connectivity to the centre of Norwich).

2.12.41. The measures have been generated through three rounds of public consultation and stakeholder engagement to maximise local benefit, most recently a local Access Consultation was held in July 2020 which demonstrated good levels of support for the sustainable transport proposals.

2.12.42. Subsequently, the proposals have been updated to suit new guidance published in July 2021, including LTN 1/20. The recently published Gear Change guidance document, which responds the climate change agenda, describes a vision to make England a great walking and cycling nation, with a target set to double cycling use and increase the numbers walking. This ambition has been partly derived from direct experience during the Covid-19 pandemic in 2020, with a 100% increase in cycling observed and close to 300% in some locations across the UK (Gear Change 2020). The NWL scheme has embraced this vision and is also following the Healthy Streets guidance, as pioneered by Transport for London, at the urban fringe places where people choose to walk and cycle, where they feel safe, and where there are areas for suitable shade and shelter.

Supporting strategies

2.12.43. The STS includes a number of additional strategies that are being developed in tandem, namely the Non-Motorised User (NMU) Strategy, Public Transport (Bus) Strategy, and Side Road Strategy and was informed by a Walking, Cycling and Horse-Riding Assessment (WCHAR).

2.12.44. The NMU Strategy offers increased opportunities for recreational walking, cycling and horse riding in the immediate vicinity of the NWL route, as well as improving connectivity of existing Public Rights of Way and encouraging healthy and active travel by non-car modes on trips within shorter distance bands, informed by the WCHAR. The proposed Strategy includes a mix of over bridges and underpasses to provide grade separated crossings of the NWL dual carriageway, and either on or off site mitigation in the area surrounding the NWL.

2.12.45. The Bus Strategy has been produced as part of the STS to connect key residential and employment areas to the west of Norwich with those in the city centre – these include Norfolk and Norwich University Hospital, Norwich Research Park and UEA. The Bus Strategy will complement other aspects of the STS and make use of routes that will experience lower traffic levels following construction of the NWL, making bus travel more attractive for use and improving journey time reliability.

Shortlisted routes

2.12.46. The STS measures are forecast to increase the number of walking and cycling trips across the study area by making the routes attractive and safe for users, and logically placed to connect key amenities. The shortlisted sustainable transport interventions include two crossing improvements along the A1067 and three cycle friendly links connecting Attlebridge, Taverham, Easton, UEA, NNUH and NRP, with 1,125 daily new trips able to be supported by the proposed cycle friendly route options. The proposals fit well with the aspirations of Transport for Norwich (TfN), which seeks a mode shift away from private cars and an improvement in air quality. There are good opportunities for geographical linkage where the NWL and TfN projects interface at the western fringe of Norwich. The preferred options are shown below:

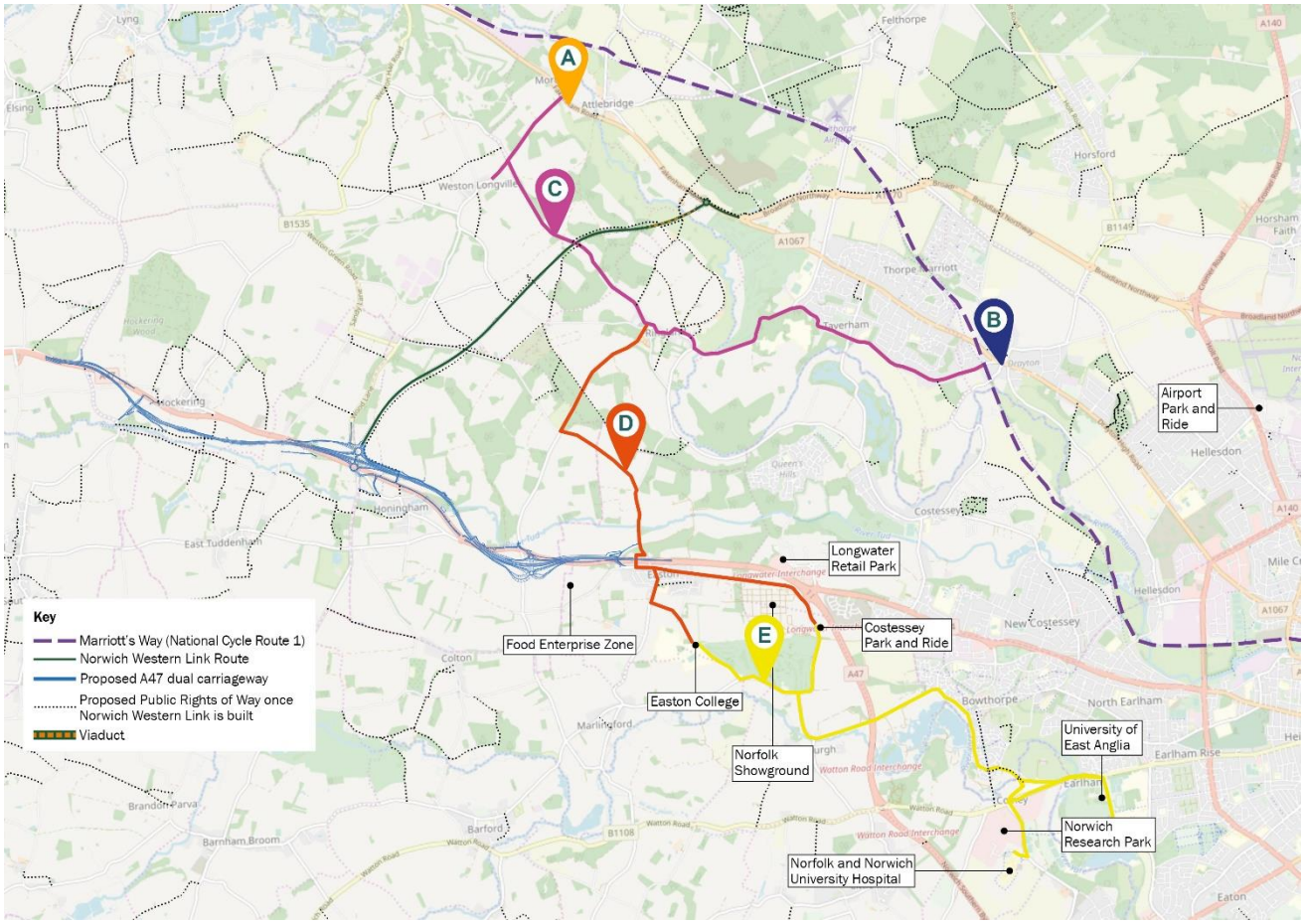


Figure 2-35 - Sustainable Transport Measures Shortlist

2.13 SUMMARY OF STRATEGIC CASE

2.13.1. The proposed NWL scheme is closely aligned with national, regional and local policies and plans, and contributes to the Government's goal of levelling up communities, both on a national scale, and within Norfolk.

2.13.2. The scheme is designed to close the gap in the orbital network, strengthen the resilience of the surrounding routes, and safeguard the network from increased congestion future growth will bring.

2.13.3. Norfolk's plans for post-pandemic recovery and economic growth are ambitious. Over the next decade, it aims to have 57,000 new jobs, many of which are expected to be located in its Tier One Employment Sites. Housing growth is needed to accommodate the need for almost 40,000 new dwellings, and major development is either planned or already underway in Hethersett, Cringleford, Costessey and Easton.

2.13.4. The NWL has been identified as a component of the long-term post-pandemic recovery plan for Broadland and South Norfolk. Addressing existing congestion and connectivity challenges will create a more resilient network as these plans are realised, and linking housing and employment sites around Norwich together will provide a greater scale of opportunity for local communities.

2.13.5. The main problems that the proposed scheme aims to address are:

- Connectivity

- Congestion and delay
- Productivity gap
- Journey time reliability
- Road use in rural communities
- Speeding
- Severance
- Barriers to walking and cycling
- Personal injury collisions.

2.13.6. If the scheme is not provided, these problems are expected to get worse. Growth in Norfolk will come at a price of increased congestion – particularly on rural roads – and a less resilient network overall.

2.13.7. The overall aim of the scheme is therefore to: support sustainable economic growth; improve the quality of life for local communities; promote an improved environment; and improve strategic connectivity with the national road network.

2.13.8. Stakeholder engagement has been key to the scheme's development, with Local Liaison Group workshops being held since 2017. Letters of support have been offered from local organisations and businesses. NCC will continue to build upon the extensive stakeholder engagement undertaken to date, and on the relationships developed with businesses, residents, and all other interested parties as the NWL progresses.

2.13.9. A comprehensive selection process was adopted to assess options for the scheme. This included assessing a range of new highway options, existing route upgrade options, public transport interventions as well as freight and demand management options.

2.13.10. A dual carriageway road, including a viaduct over the River Wensum and associated floodplain, was identified as the preferred option, with over 60% of consultation respondents considering this option to be an effective way of managing the identified problems. It offers high value for money, is publicly acceptable but less environmentally intrusive than other comparable options and is most likely to deliver the objectives.

2.13.11. The scheme will also include a package of sustainable transport measures to complement the Norwich Western Link and encourage mode shift away from private car use for those travelling shorter distances within the study area.

3 ECONOMIC CASE

3.1 INTRODUCTION

3.1.1. This section presents the economic case for the NWL scheme. The economic case appraises the proposed scheme to identify its economic impacts, and the resulting Value for Money (VfM). The appraisal of impacts will not be limited to the monetised measured economy and will include economic and environmental impacts as well as social and distributional impacts.

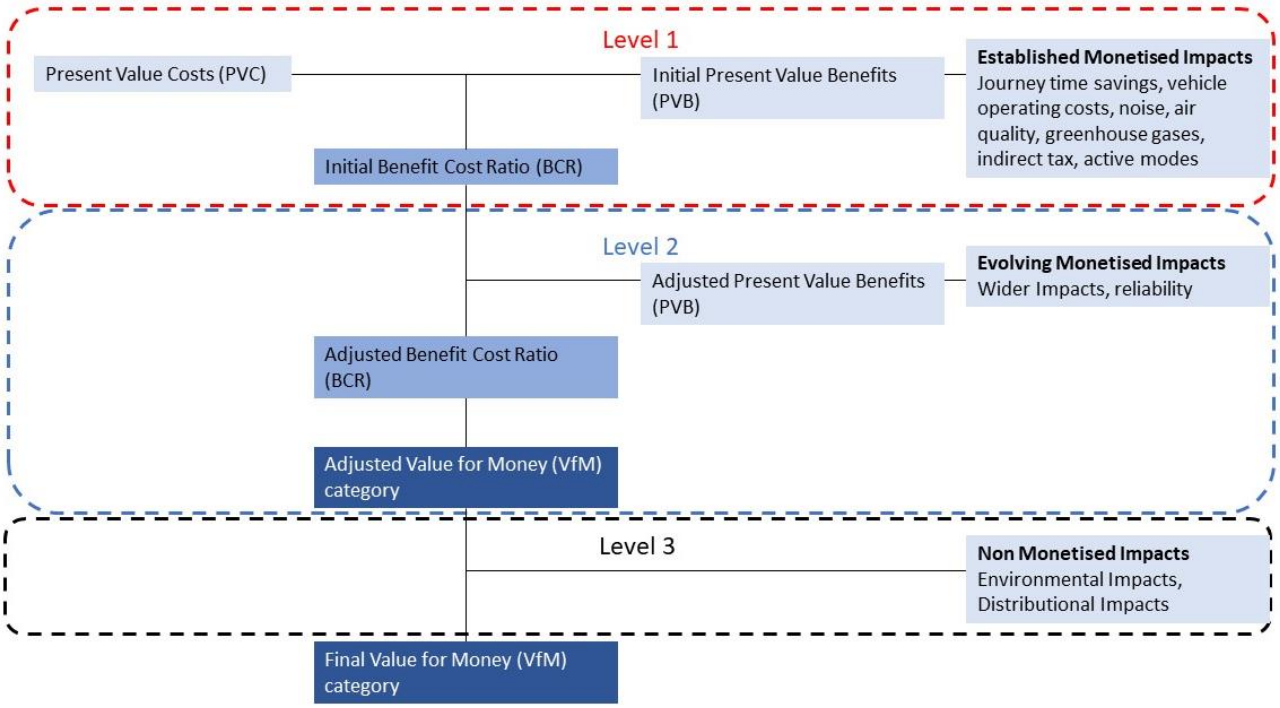
3.2 ECONOMIC APPRAISAL METHODOLOGY

3.2.1. The economic appraisal of the scheme has been undertaken in accordance with current TAG guidance, including:

- TAG Unit A1 cost-benefit analysis
- TAG Unit A2 economic impacts
- TAG Unit A3 environmental impacts
- TAG Unit A4 social and distributional impacts
- TAG Unit A5-1 Active Mode Appraisal and
- DfT Value for Money Framework

3.2.2. The methodology is based on the DfT Value for Money Framework (July 2017) and is illustrated in **Figure 3-1**.

Figure 3-1 - Process to derive BCR and Value for Money Category



3.2.3. The DfT Value for Money Framework identifies three categories of monetised impacts and a set of non-monetised impacts:

- **Established:** where the method for estimating the impact and the monetary value is tried-and-tested (these impacts can be captured in **Level 1** of the VfM analysis and contribute to the initial Benefit Cost Ratio (BCR) calculation)
- **Evolving:** where some evidence exists to support the estimation of a monetary value but is less widely accepted and researched (these impacts can be captured in **Level 2** of the VfM analysis and contribute to the adjusted BCR)
- **Indicative**: where monetary valuation methods are not considered widely accepted or researched to be definitive, with a high degree of uncertainty in terms of the magnitude of the impact (these impacts can be captured in **Level 3** of the VfM analysis)

3.2.4. In line with the DfT Value for Money Framework, both established and evolving impacts were combined to derive the monetised impacts. These were compared with costs to produce the initial and adjusted BCRs.

3.2.5. The final stage of the Value for Money assessment requires consideration of indicative monetised impacts and non-monetised impacts. This involves determining whether these impacts have the potential to alter the overall Value for Money category. This analysis is termed sensitivity or 'switching-value' analysis.

3.2.6. Distributional Impact analysis has been undertaken to support the economic analysis of the scheme.

3.2.7. The methods used to appraise each scheme and how these fit within the Value for Money Framework is summarised in **Table 3-1** below:

Table 3-1 – Impacts appraised

Analysis Level	Scheme Impacts	Selected Appraisal Method
Level 1 - Initial BCR	Journey times and vehicle operating costs	Monetised – Transport Users Benefit Appraisal ("TUBA") software
	Greenhouse gas emissions	Monetised – TAG Unit A3 method
	Noise	Monetised – TAG Unit A3 method
	Air quality	Monetised – TAG Unit A3 method
	Government tax revenues	Monetised – Transport Users Benefit Appraisal ("TUBA") software
	Accidents	Monetised – Cost and Benefits to Accidents – Light Touch ("COBALT") software
	Active mode benefits from walking and cycling	Monetised – Active Mode Appraisal Toolkit (AMAT)
Level 2 - Adjusted BCR	Wider Benefits	Monetised – Wider Impacts in Transport Appraisal (WITA) toolkit emulator
	Reliability	Monetised – Reliability tool
Level 3 – Monetised and non-monetised impacts	Environment	Qualitative – Evaluation of changes in the environmental impacts directly related to the scheme (TAG Unit A3)
	Distributional	Qualitative – evaluation of the impact on selected social and user groups (TAG Unit A4.2)

3.2.8. The economic, environmental, social and distributional impacts of the scheme have all been examined, using qualitative, quantitative and monetised information as appropriate and proportional to the level of the scheme. In assessing Value for Money, all of these are consolidated to determine the extent to which the proposed scheme impacts compare to its costs.

OPTIONS APPRAISED

3.2.9. The scheme option development process and the appraisal of options was summarised in **section 2.12** of the Strategic Case and described more fully in the Options Assessment Report and Option Selection Report. A large number of options were considered to identify the best solution for the NWL. The appraisal has been undertaken for the preferred route alignment (Option C) which comprises a new dual carriageway all-purpose road to the west of Norwich, from the A47 to the A1067/A1270, including a new viaduct bridge over the River Wensum and its floodplain. The scheme will provide a direct connection between the Strategic Road Network and the A1270 Broadland Northway through the west of Norwich. This will complete an orbital route around Norwich, which forms part of the Major Road Network.

3.3 OVERVIEW OF METHODOLOGY AND ASSUMPTIONS OF THE TRAFFIC MODELLING

3.3.1. The development, validation and use of the Highways Assignment (SATURN) model are described in the following reports, with a summary provided in the following paragraphs.

- Local Model Validation Report (LMVR)[16]
- Traffic Forecasting Report (TFR)[17]

3.3.2. The Norwich Area Transport Strategy (NATS) model originally developed in 2012 but updated to a 2019 base has been used in the assessment of the NWL. The existing NATS model consists of:

- A highway assignment model developed in Simulation and Assignment of Traffic to Urban Road Networks (SATURN) modelling software, which is an industry standard tool
- A Public Transport (PT) model developed using PTV's VISUM and
- A Variable Demand Model (VDM) set up in DIADEM

3.3.3. The LMVR details the development of the updated NATS model in line with TAG guidance and the calibration and validation of the model which is within acceptable industry recognised standards.

3.3.4. The NATS model has the following time periods:

- Morning peak hour (AM) 08:00-09:00
- Average inter-peak hour (IP) 10:00-16:00 and

[16] Norwich Western Link Local Model Validation Report, 2020

[17] Norwich Western Link Traffic Forecasting Report (TFR), November 2020

- Evening peak hour (PM) 17:00-18:00

3.3.5. The highway assignment model groups traffic into ‘user classes’. These segmentations differentiate between the characteristics of road users, both in terms of their use and their physical attributes. The user classes are summarised as follows:

- User Class 1: Cars used for Employers Business (Work)
- User Class 2: Cars used for Commuting
- User Class 3: Cars used for Other purposes
- User Class 4: Light Goods Vehicles (LGVs) and
- User Class 5: HGVs

3.3.6. The PT model is split into three user classes:

- PT Work
- PT Commuting and
- PT Other

3.3.7. The future year scenario development has been detailed within the TFR.

3.3.8. A Core Scenario has been developed that reflects growth due to ‘near certain’ and ‘more than likely’ development within the county of Norfolk.

3.3.9. Traffic growth in the Core Scenario has been constrained to the level of growth in the latest NTEM (TEMPro dataset version 7.2). The Traffic Forecasting Report (TFR) provides further detail on which development sites are explicitly represented in the Core Scenario and includes details of highway and public transport improvement schemes that have been added to the network.

3.3.10. For the purpose of the Economic Appraisal two scenarios have been considered:

- Do Minimum – Base year network with all committed (near certain and more than likely) schemes due for completion by the corresponding forecast year (including the Highways England A47 North Tuddenham to Easton upgrade scheme) and
- Do Something – Do Minimum plus the Norwich Western Link

3.3.11. Each scenario has been created for the following years:

- 2025 – Scheme opening year
- 2040 – Scheme Design Year (scheme opening plus 15 years)

3.3.12. Traffic flow information from the transport models has been utilised in the environmental appraisal, which uses air quality and noise models. For each modelled year and design option, the following data has been provided:

- Average link flow data:
  - 24-hour annual average daily traffic (AADT) data for air quality modelling
  - 24-hour annual average weekday traffic (AAWT) data for noise modelling
- Percentage mix of HGV traffic (all vehicles greater than 3.5 tonnes)

3.3.13. In line with TAG, High and Low growth scenarios have been developed around the Core Growth scenario.

3.3.14. In addition, a further scenario has been developed using updated Office for Budget Responsibility (OBR) projections, providing an OBR Core growth scenario. The OBR scenario includes updates to

long-term economic and population projections as well as updated medium-term economic projections which reflect the impact of COVID-19 on economic growth. These updates are due to become definitive in February 2021, however until they are, scheme developers have been asked to include these as sensitivity tests. All these scenarios are described in greater detail in the TFR.

3.4 COSTS

3.4.1. The cost of the proposed scheme has been estimated at 2020 prices, as set out in the Financial Case. It includes all costs associated with scheme preparation and construction, including land costs.

3.4.2. The costs have been calculated in line with TAG A1.2 Scheme Costs (July 2017), which uses the following methodology:

- Estimation of a base cost estimate
- Incorporation of a real cost increases
- Application of risk-cost adjustment
- Application of optimism bias-cost adjustment
- Rebase cost to Department base year
- Discount cost to Department base year
- Convert costs to market prices

3.4.3. Costs have been estimated under two broad headings:

- Investment costs (scheme preparation and construction)
- Maintenance and renewal costs

3.4.4. The breakdown of costs presented above, align with breakdown required for the DfT Cost Pro-forma (See Appendix 3A).

ESTIMATION OF BASE COST ESTIMATES

3.4.5. The initial capital cost estimate of the scheme is **£140.77 million** in 2020 Q3 prices. This includes costs for construction, statutory undertakers work, land and other costs such as professional fees.

3.4.6. In line with TAG Unit A1.2 (Scheme Costs), sunk costs have not been included in the following tables as these are costs that represent expenditure prior to the economic appraisal, and cannot be retrieved apart from land costs.

Table 3-2 - Investment Costs, £000s at 2020 Q3

Investment costs	Total Cost (£000s)	Cost excluding Sunk Costs
Construction cost	103,513,730	103,454,395
Statutory undertakers	732,210	732,210
Professional fees	23,780,932	14,825,127
Land	12,742,825	12,742,825
Total	**140,769,697**	**131,754,557**

3.4.7. This base cost estimate does not take account of real increases in costs and must therefore be adjusted to provide real costs that account for the effects of inflation (this is addressed from **section 3.4.10**).

SCHEME MAINTENANCE AND RENEWAL COSTS

3.4.8. The whole life costs of the scheme have also been estimated. A breakdown of the estimated capital renewal, annual maintenance and operation costs is presented in **Table 3-3**.

Table 3-3 - Breakdown of capital maintenance, renewal and operating costs

Year after opening	Costs (£000s) at base price 2020 Q3	Costs (£000s) adjusted for inflation
Total (60 years)	**30,070**	**63,614**

INFLATION ADJUSTMENT

3.4.9. The current forecast is based on 2.50% per annum for general activities (i.e. fees, utilities and land), 1.60% per annum for Stage One activities as the contract mechanism relies on CPI and 3.96% per annum for Stage Two activities as the contract mechanism relies on a set of weighted BCIS indices. This comes in at £17.68 million, giving an outturn cost of £149.44 million.

INCORPORATION OF REAL COST INCREASES

3.4.10. The first step of cost adjustment is to incorporate real cost increases. A real cost adjustment is calculated by inflating base costs by the construction cost index to bring them to their nominal values, and then dividing by the rate of general inflation to give their 'real' value. For this calculation general inflation is assumed to be around 2.50% per year as provided in the TAG Databook, while construction costs are forecast to increase by 2.1% per year. Using the real cost adjustment to multiply by the initial base estimate derives a 'real' capital cost estimate.

3.4.11. Only the general inflation rate has been applied to the maintenance and renewals costs. Therefore, it assumes zero real cost inflation over the appraisal period.

Table 3-4 - Real adjusted Costs (£000s)

Costs (£000s)	2020	2021	2022	2023	2024	2025	Total
Scheme Base Cost including inflation	2,535	9,264	8,530	27,879	69,849	31.378	149,438
Real Adjustment Factor	1	1.02	1.04	1.06	1.10	1.12	
Investment Cost w/Real adjustment	2,535	9,089	8,205	26,222	63,774	28,005	137,831

APPLICATION OF RISK-COST ADJUSTMENT

3.4.12. Once the base cost estimate has been adjusted to incorporate real cost increases, the risk contribution is calculated. A Quantified Risk Assessment (QRA) of scheme investment costs was undertaken. The QRA provides the weighted average of all risk outcomes and probabilities. The process of capturing and quantifying risk for the scheme is presented in **section 5.7** in the Management Case.

3.4.13. As noted in the Financial Case, the total quantified risk value added to the scheme base costs is £39.975 million at 2020 Q3 prices. This equates to approximately 28.2% of base costs.

3.4.14. No risk-adjustment has been applied to the maintenance and renewal costs.

Table 3-5 – Risk adjusted Costs (£000s)

Costs (£000s)	2020	2021	2022	2023	2024	2025	Total
Total real costs (without risk)	2,535	9,089	8,205	26,222	63,774	28,005	137,831
Total quantified risk cost in real prices		3,211	4,825	6,311	17,392	8,236	39,975
Total risk adjusted costs with real cost adjustment	2,535	12,300	13,030	32,533	81,166	36,241	177,806

OPTIMISM BIAS (OB)

In line with the guidance in TAG Unit A1.2, an optimism bias (OB) uplift to scheme costs, which is necessary to counter the systematic tendency of appraisers to be overly optimistic (and underestimate scheme costs) has been applied. The recommended optimism bias uplifts for each stage of a transport project and type of scheme for Local Authority schemes are set out in **Table 3-6**.

Table 3-6 - Recommended Optimism Bias uplifts

Stage Category	Type of Project	Stage 1 Strategic Outline Business Case	Stage 2 Outline Business Case	Stage 3 Full Business Case
Road	Motorway, Trunk roads, local roads	44%	15%	3%

Source: TAG Unit A1.2, Scheme Costs, Table 8

3.4.15. As funding is sought via the production of an Outline Business Case, and the scheme is comprised of both roads and structures, optimism bias has been applied at 15% of the scheme.

Table 3-7 - Costs adjusted for Optimism Bias

Costs (£000s)	2020	2021	2022	2023	2024	2025	Total
Public Sector Risk adjusted costs	2,535	12,300	13,030	32,533	81,166	36,241	177,806
Optimism bias (15%)	380	1,845	1,954	4,880	12,175	5,436	26,671
Public investment costs with 15% optimism bias	2,915	14,145	14,984	37,413	93,341	41,677	204,477

REBASE COST TO DFT BASE YEAR

3.4.16. For appraisal purposes, all costs should be presented in the DfT's base year, 2010. Costs are deflated to the correct price base by multiplying them by the ratio of the inflation index in the desired base year to the inflation index in the year currently being used.

3.4.17. Costs have been adjusted to 2010 prices using TAG data book (July 2020) values as set out in **Table 3-8**.

Table 3-8 - Adjustment to 2010 prices

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	202
GDP Deflator	100.00	102.04	103.73	105.70	107.63	108.26	110.57	112.66	115.07	117.21	119.37	121.66	124.04	126.50	129.41	132.

Table 3-9 - Rebased Costs to 2010 Prices

Costs (£000s)	2020	2021	2022	2023	2024	2025	Total
Public investment costs with 15% optimism bias	2,915	14,145	14,984	37,413	93,341	41,677	204,477
GDP deflator factor	0.8337	0.8337	0.8337	0.8337	0.8337	0.8337	
Public investment costs with deflation	2,431	11,793	12,492	31,192	77,821	34,747	170,479

DISCOUNT COST TO DFT BASE YEAR

3.4.18. For the purposes of the Economic Appraisal, all the costs have been adjusted to 2010 prices using TAG data book (v1.13.1 July 2020) values as set out in the annual parameters table.

3.4.19. A discount factor based on the HM Treasury "Green Book" is applied, to adjust costs occurring in different periods to a standard base year of 2010. An annual discount rate of 3.5% was applied for the first 30 years and 3% for years 31 to 60. This reflects the lower weighting placed on costs (and benefits) incurred at a future date compared to those incurred in the present.

Table 3-10 - Scheme Costs Discounted to 2010 Present Value

Costs (£000s)	2020	2021	2022	2023	2024	2025	Total
Public investment costs with deflation	2,431	11,793	12,492	31,192	77,821	34,747	170,479
Discount factor	0.7089	0.6849	0.6618	0.6394	0.6178	0.5969	
Public investment costs with deflation & discounting	1,723	8,078	8,267	19,944	48,077	20,540	106,126

CONVERT COSTS TO MARKET PRICES

3.4.20. The last stage in preparing costs for appraisal is to convert them from the factor cost to the market price unit of account. This is done by using the indirect tax correction factor of 1.190, as per the TAG Data Book.

3.4.21. In line with TAG Unit A1.2 (Scheme Costs), the Present Value of Costs (PVC) only includes investment and operating costs incurred by the public sector. Private sector contributions to the scheme costs are not included in the PVC but are recorded as negative values in the Transport Economic Efficiency (TEE) table and Present Value of Benefits (PVB).

3.4.22. The Present Value of Costs (PVC) is presented in **Table 3-11**.

Table 3-11 - Present Value of Costs £(000s)

Risk adjusted costs in £	Scheme Preparation and Construction Cost	Maintenance, Renewal and Operation (60 yrs)	Total
Public Sector risk adjusted costs	177,806	30,070	207,876
Public investment costs with 15% optimism bias	204,477	27,166	231,643
Public investment costs with deflation & discounting	106,831	5,986	112,817
PVC with Market Price Adjustment - Public sector costs only	127,129	7,124	134,253

3.4.23. The total discounted Present Value of Costs (PVC) is £127.13 million.

PUBLIC ACCOUNTS TABLES

3.4.24. The full Public Accounts (PA) Table in the format required by DfT is set out in **Appendix 3B**. The apportionment of costs between local and central government is discussed in the Financial Case.

3.5 APPRAISAL OF SCHEME IMPACTS

ASSUMPTIONS

3.5.1. Table 3-12 sets out the assumptions used in the Transport Users Benefits Appraisal (TUBA) and COBALT appraisals.

Table 3-12 - TEE TUBA/COBALT assumptions

Item	Assumptions/Notes
Software	TUBA Version 1.9.14 COBALT V2.0 (February 2021)
Current year	2020 (defines the first year in which the discount rate is applied)
Appraisal period / Horizon year	60 years after scheme opening, in line with TAG requirements
Forecast year trip, time and distance matrices from traffic model	Construction Period: 2023-2025 Opening year: 2025 Design year: opening + 15 (2040)
User classes	Trip, time and distance matrices for the following user classes will be input into TUBA: Cars used for Employers Business Cars used for Commuting Cars used for Other purposes

Item	Assumptions/Notes
	Light Goods Vehicles (LGVs) HGVs
Economic Parameters	Economic parameters (such as Value of Time) are defined in the standard TUBA economic file. This is *Economics_TAG_db1_13_1.txt* for the Core Growth scenario, Low Growth scenario and the High Growth scenario. For the Sensitivity Testing Growth scenario, the *Economics_TAG_db1_14_0.txt* has been used COBALT V2.0 has used *cobalt-tag-parameters .txt* for the Core Growth scenario, Low Growth scenario and the High Growth scenario. or the Sensitivity Testing Growth scenario, the *cobalt-tag-parameters-sensitivity-testing.txt* has been used..
PCU Factor	The trip matrices obtained from SATURN are in passenger car units (PCUs). These will be converted into vehicles as TUBA requires matrices in vehicles. A PCU factor of 2.3 will be applied to the HGV matrices, with no adjustment made to the car or LGV matrices which have a PCU factor of 1.
Annualisation factors for modelled time periods (AM, IP, PM weekday)	In accordance with the TUBA guidance, the modelled time periods will be converted to annual time periods using annualisation factors derived from local traffic counts. Modelled peak periods (AM and PM) will be extended using annualisation factors to include any adjacent periods where there is no significant change in traffic volume. These annualisation factors will be derived using ATC traffic flow data and will include flow factors to convert the average modelled flows to average annual flows. The modelled flows will be converted to AADT for the COBALT Scheme Input file

3.6 ECONOMIC NARRATIVE

3.6.1. An Economic Narrative has been developed for the scheme and the surrounding area. It sets out the expected economic and other wider impacts of the NWL scheme. The narrative sets out the economic context in the area and describes the types of economic impacts that are in scope. The full narrative has been included as **Appendix 3C**.

3.7 SCHEME IMPACTS

3.7.1. The Appraisal Summary Table (AST) summarises the impacts of the scheme across Economic, Environmental, Social and Public Accounts categories. Reporting the impacts as monetised, qualitative or quantitative dependent on the aspect and the method of the appraisal. The completed AST is shown in **Appendix 3D**.

ECONOMIC IMPACTS

3.7.2. Economic Impacts cover the Transport Economic Efficiency, Reliability and Wider Economic Impacts.

3.7.3. The full assessment results are reported in the Economic Assessment Report.

ENVIRONMENTAL IMPACTS

3.7.4. Environmental Impacts have been assessed across six environmental categories, which are:

- Noise
- Landscape and Visual
- Heritage
- Air Quality and Greenhouse Gases
- Biodiversity
- Water Resources.

3.7.5. The full assessment can be found in the Environmental Impact Appraisal Report

SOCIAL IMPACTS

3.7.6. Social Impacts across the nine categories are reported in full in the Social Impacts Report.

3.8 LEVEL 1 IMPACTS

Transport Economic Efficiency (TEE)

3.8.1. TEE benefits for the scheme were assessed using the DfT's TUBA software. TUBA calculates the benefits associated with journey time savings and vehicle operating cost savings using information taken from the traffic model, in accordance with the procedures and economic parameters in TAG Unit A1.

3.8.2. The transport user benefits for the DS scenario relative to the DM scenario have been assessed using TUBA v1.9.14 with the standard TUBA 1.9.14 economics file. Transport user impacts as forecast by TUBA are shown in **Table 3-13** for the Core Growth scenario, **Table 3-14** for High Growth and Table 3-15 for Low Growth. **Table 3-13** - TEE Impacts (TUBA Results) – Core Growth Scenario **Table 3-16** shows the TUBA results for the OBR sensitivity test growth scenario.

3.8.3. The TEE impacts for the NWL are £314.86 million for the Core Growth scenario, this drops to £265.34 million for the Low Growth scenario and increases to £408.75 million for the High Growth scenario.

Table 3-13 - TEE Impacts (TUBA Results) – Core Growth Scenario

Benefit	Non-Business – Commuting	Non-Business – Other	Business	Total
Travel Time	66,192	83,680	81,766	**231,638**
Vehicle Operating Costs	-7,704	84,124	6,803	**83,223**
Present Value of Transport Economic Efficiency Benefits (TEE)	**58,488**	**167,804**	**88,569**	**314,861**

Results ('£000's, 2010 prices discounted to 2010)

Table 3-14 - TEE Impacts (TUBA Results) – Low Growth Scenario

Benefit	Non-Business – Commuting	Non-Business – Other	Business	Total
Travel Time	58,603	67,572	65,818	**191,993**
Vehicle Operating Costs	-6,369	74,700	5,018	**73,349**
Present Value of Transport Economic Efficiency Benefits (TEE)	**52,234**	**142,272**	**70,836**	**265,342**

Results ('£000's, 2010 prices discounted to 2010)

Table 3-15 - TEE Impacts (TUBA Results) – High Growth Scenario

Benefit	Non-Business – Commuting	Non-Business – Other	Business	Total
Travel Time	92,611	115,804	105,664	**314,079**
Vehicle Operating Costs	-8,292	92,559	10,407	**94,674**
Present Value of Transport Economic Efficiency Benefits (TEE)	**84,319**	**208,363**	**116,071**	**408,753**

Results ('£000's, 2010 prices discounted to 2010)

Table 3-16 - TEE Impacts (TUBA Results) – OBR Sensitivity Test Growth Scenario

Benefit	Non-Business – Commuting	Non-Business – Other	Business	Total
Travel Time	51,625	64,540	,64,269	**180,434**
Vehicle Operating Costs	-8,468	75,572	5,222	**72,326**
Present Value of Transport Economic Efficiency Benefits (TEE)	**43,157**	**140,112**	**69,491**	**252,760**

Results ('£000's, 2010 prices discounted to 2010)

3.8.4. The scheme is expected to provide a net benefit in terms of journey times to all users both within the study area and for those beyond and passing through the study area.

Accidents

3.8.5. COBALT (COst and Benefit to Accidents – Light Touch) V2.0 (February 2021) has been used to understand the likely impact of the scheme on accidents in the study area. The impacts on users and road safety (accidents) have been appraised for a period of 60 years from the first year of scheme opening.

3.8.6. COBALT V2.0 has used *cobalt-tag-parameters .txt* for the Core Growth scenario, Low Growth scenario and the High Growth scenario. or the Sensitivity Testing Growth scenario, the *cobalt-tag-parameters-sensitivity-testing.txt* has been used. The scheme input file has been created containing details of all junctions and links in the study network, along with traffic flows in the base, opening and design years. The traffic flow information was derived from the current NATS traffic model developed to assess the scheme.

3.8.7. The results indicate that the scheme will result in a reduction of 529 accidents over the 60-year appraisal period, leading to a reduction of 674 casualties (2 Fatal, 56 Serious and 616 Slight) and a cost saving of £18.6m.

Physical Activity

3.8.8. Physical activity is concerned with whether the intervention is likely to generate significant additional numbers of walking or cycling trips. The assessment has been undertaken in line with the following guidance:

- TAG Unit A5.1 Active Mode Appraisal
- TAG Unit A5.5 Highway Appraisal Appendix A: and
- Design Manual for Roads and Bridges (DMRB) LA 112.

3.8.9. The methodology for monetising the scheme impacts has focused on estimating the increase in the amount of cycling and walking associated with implementing the scheme. The method considers:

- Mode shift
- Changes to health
- Changes to journey quality

3.8.10. DfT's Active Mode Appraisal Toolkit (AMAT), has been utilised to understand the likely impact of the scheme. The tool monetised costs and benefits for the following impacts:

- Congestion benefit
- Infrastructure
- Accidents
- Local Air Quality
- Noise
- Greenhouse Gases (GHGs)
- Reduced risk of premature death
- Absenteeism
- Journey Ambience
- Indirect Taxation

3.8.11. The active mode appraisal has been conducted over a 20-year appraisal period, in line with TAG Unit A5.1. The benefits have been discounted and reported in present values using the schedule of discount rates provided in the TAG data book (July 2020). Again, in line with TAG, the values have

included real growth in line with forecast GDP per capita. The assumptions used within the appraisal are based on scheme data, Travel-to-Work Census data and default TAG values from the AMAT.

3.8.12. A sustainable transport strategy has been developed through public and key stakeholder consultation, seeking to maximise opportunities for transferring shorter distance band trips to non-motorised modes of travel such as walking and cycling where possible. The Sustainable Transport Strategy is three-fold - it includes a Non-Motorised User Strategy, wider interventions for creating 'cycle friendly' strategic routes and a bus strategy.

3.8.13. To inform the development of Non-Motorised User interventions, a Walking, Cycling and Horse-Riding Assessment (WCHRA) has been undertaken as part of the scheme design process. This has been used to identify the routes used by pedestrians and others and the community facilities which are likely to be affected by the scheme.

3.8.14. The Non-Motorised User (NMU) Strategy element predominantly consists of Public Rights of Way diversions and extension of the PRoW network in the immediate vicinity of the NWL highway works, which also helps to mitigate severance issues caused by the road, where existing routes that cross the scheme are to be closed. The proposed NMU strategy also assists with joining up what was found through the WCHAR process to be an existing but fragmented local PRoW network with limited coverage and in some cases poor connectivity to existing settlements.

3.8.15. Eight potential sustainable transport measures across the wider area were consulted on. Following the consultation four of the eight measures were identified to be delivered as part of the NWL scheme.

3.8.16. The impacts on Physical Activity have been assessed with DfT's AMAT for three of the four shortlisted options. Based on the AMAT results, the NWL is forecast to have a beneficial impact of £8.9 million.

Noise

3.8.17. A noise appraisal has been undertaken following the methodology presented in TAG Unit A3, Environmental Impact Appraisal, dated May 2019.

3.8.18. A 3-dimensional digital acoustic model has been generated based on the guidance contained within Calculation of Road Traffic Noise and the DMRB LA 111.

3.8.19. The affected population has been estimated and the monetary valuation of changes in noise impact has been determined using the TAG Unit A3 Noise Appraisal Workbook.

3.8.20. The overall appraisal indicates that the operation of the NWL, without mitigation, is likely to generate a beneficial noise impact, and the 'net present value of change in noise' is calculated to be £38,490. Whilst this indicates a positive scheme from a noise perspective, it should be noted that large adverse impacts are predicted at a number of receptors within the study area, although these receptors have ambient low levels and will still have low levels with the scheme (which in turn means they have less influence on the overall monetised value of the NWL on noise impacts).

Air Quality

3.8.21. The appraisal has been undertaken following TAG Unit A3 on Air Quality Impacts.

3.8.22. With the NWL there are modest improvements in local air quality in terms of NO_2 and $PM_{2.5}$ at locations with relevant human exposure. The overall monetary valuation takes into account

ecosystem damage costs. No Air Quality Management Areas are included in the air quality study area. The NWL links map onto Pollution Climate Mapping links which are all compliant with the NO_2 limit value both with and without the scheme. No exceedances of air quality standards are predicted.

NO_2

3.8.23. In 2025 there are there are 7,860 properties with improvement, 35 properties with no change, and 2,180 properties with deterioration. In 2040 there are 7,733 properties with improvement, 32 properties with no change, and 2,310 properties with deterioration.

3.8.24. The Net Present Value (NPV) of change for NO_2 over the 60-year appraisal period (2025-2084 inclusive) is a benefit of £9,803.

$PM_{2.5}$

3.8.25. In 2025 there are 8,002 properties with improvement, 6 properties with no change, and 2,067 properties with deterioration. In 2040 there are 7,747 properties with improvement, 282 properties with no change, and 2,046 properties with deterioration.

3.8.26. The NPV of change for $PM_{2.5}$ over the 60-year appraisal period (2025-2084 inclusive) is a benefit of £62,165.

Greenhouse Gases

3.8.27. The greenhouse gases appraisal for road transport emissions has been undertaken in accordance with TAG Unit A3 Greenhouse Gases. The calculations are based on the traffic forecasts for the Do Minimum and Do Something model scenarios for 2025 (opening year) and 2040 (design year), as generated by the NATS 2019 traffic model for the OBC. Non-traded CO_2e emissions (petrol and diesel vehicles) and CO_2e traded emissions (electric vehicles) have been calculated in accordance with DMRB LA 114 'Climate' methodology.

3.8.28. The NWL scheme gives rise to lower CO_2e emissions compared to the Do Minimum situation, with savings (benefits) over the 60-year appraisal period (2025 - 2084 inclusive) of 443,429 tonnes in non-traded carbon associated with conventional (petrol and diesel) vehicles, and 13,005 tonnes from traded carbon associated with electric vehicles (i.e. electrical power generation sources).

3.8.29. The differences are generally associated with lower values of total annual vehicle kilometres in each year that are predicted due to the NWL scheme. For 2025, the distance travelled over the simulated road network is predicted to be approximately 4,136 million vehicle kilometres in the Do Minimum scenario compared to 4,087 million vehicle kilometres in the Do Something scenario - a reduction of approximately 49 million vehicle kilometres. For 2040, the distance travelled over the simulated road network is predicted to be approximately 4,904 million vehicle kilometres in the Do Minimum scenario compared to 4,767 million vehicle kilometres in the Do Something scenario - a reduction of approximately 137 million vehicle kilometres.

3.8.30. Over the 60-year appraisal period, the monetised benefit in terms of carbon savings from the operation of vehicles in the road transport sector due to the NWL Scheme is estimated at £19,474,620.

3.9 INITIAL BENEFIT COST RATIO (BCR)

3.9.1. The BCR considers the impact to the economy, society, the environment and the public accounts. It offers an estimate of the value of benefit generated for every £1 of public expenditure. Therefore, any BCR above one shows value for money for every £1 of invested cost. The Value for Money (VfM) category is defined by the BCR, these are:

- BCR <0.0 Very Poor
- BCR between 0.0 and 1.0 Poor
- BCR between 1.0 and 1.5 Low
- BCR between 1.5 and 2.0 Medium
- BCR between 2.0 and 4.0 High
- BCR > 4.0 Very High

3.9.2. The initial BCR includes the monetised impacts associated with Economy for business users and providers, Environment for Greenhouse Gases, Air Quality and Noise, Social for non-business users, physical activity and safety, and Public Accounts for the cost to the broad transport budget and indirect tax. **Table 3-17** shows the Initial Analysis of Monetised Costs and Benefits (AMCB) results and the Initial BCR associated with the scheme.

Table 3-17 – Analysis of Monetised Costs and Benefits – Initial £(000s)

	Scenarios			
	Core Growth	Low Growth	High Growth	Economic Uncertainty
Noise	38	0	0	0
Air Quality	72	0	0	0
Greenhouse Gases (Environmental assessment)	19,475	17,445	0	0
Physical Activity	8,876	8,876	8,876	8,876
Accidents/Safety	18,582	12,793	12,778	11,496
Economic Efficiency: Consumer Users (Commuting)	58,488	52,234	84,319	43,158
Economic Efficiency: Consumer Users (Other)	167,804	142,272	208,363	140,112
Economic Efficiency: Business Users and Providers	88,569	70,836	116,071	69,491
Wider Public Finances (Indirect Taxes)	-53,272	-46,916	-59,742	-39,398
Initial Present Value of Benefits (PVB)	**308,632**	**257,540**	**370,665**	**233,735**
Present Value of Costs (PVC)	**127,129**	**127,129**	**127,129**	**127,129**
Net Present Value (NPV)	181,503	130,411	243,536	106,606
Benefit Cost Ratio (BCR)	**2.43**	**2.03**	**2.92**	**1.84**

£000s 2010 prices, discounted to 2010

This is not a direct comparison as only the Core Growth scenario includes impacts for Noise, Air Quality and Greenhouse Gases, the Low Growth scenario includes Greenhouse Gases impacts

3.9.3. Therefore, based on the scheme impacts and costs the scheme has an initial VfM Category of High for the core growth scenario. Considering the other scenario tests the initial VfM Category is in the range of Medium to high. The monetised benefits for the scheme range from £233.735 million for the Economic Uncertainty growth scenario to £370.665 million for the High growth scenario. Three of the four scenarios sit within the high VfM category, with one in the medium category.

3.9.4. The Economic Uncertainty scenario returns the lowest monetised benefits of any of the scenarios, followed by the low growth and core growth scenarios. The highest monetised benefits are returned by the high growth scenario.

3.9.5. With the current present value of costs only one of the growth tests assessed will sit in a lower category. For the scheme outputs to sit in a different category the costs of the scheme would need to change.

3.9.6. Looking at the core growth scenario, and assuming no change to the monetised benefits, the scheme costs would need to increase by £27.962m (2.00%) for the BCR of the scheme to sit in the next category down.

3.10 LEVEL 2 IMPACTS

Reliability impacts

3.10.1. Travel time variability (TTV), is defined as variation in journey times that travellers are unable to predict. Journey times vary due to a large number of factors including the time of day, the location of the origin and destination, the distance and the roads along the route.

3.10.2. The standard deviation of travel time (for private travel) has been used as the method to measure travel time variability. The travel distance, time and number of vehicles making the journey have been extracted from the traffic model for each time period for the Do Minimum and Do Something scenario to allow the standard deviation to be calculated for each journey and time period.

3.10.3. Reliability has been assessed in line with TAG Unit A1.3, Section 6.3 (Reliability – urban roads) using the relationships shown in Figure 3-2, based on the calculation of the standard deviation of journey times from journey time and distance for each O-D (origin-destination) pair.

Reliability benefit $= -\sum \Delta\sigma_{ij} \left(\frac{T_{ij2}+T_{ij1}}{2} \right) \times 0.4 \times VOT$

Where: $\Delta = 0.0018 \left((t_{ij2})^{2.02} - (t_{ij1})^{2.02} \right) d_{ij}^{-1.41}$

VOT = value of time (£/sec)

t_{ij1} and t_{ij2} = the journey times, before and after the change, from i to j (seconds)

d_{ij} = the journey distance from i to j (km)

Figure 3-2 - Reliability impacts

3.10.4. The reliability impacts for the Norwich Western Link over the 60-year appraisal period have been calculated as £26.29 million (2010 prices discounted to 2010).

Wider Economic Impacts

3.10.5. As set out in the Economic Narrative, Level 2 wider economic impacts associated with enhanced connectivity due to the NWL scheme have been assessed.

3.10.6. WSP's Wider Impacts in Transport Appraisal (WITA) tool has been used. The tool has been approved by the DfT and has been used in the analysis of other projects, including the Trans-Pennine scheme. The tool estimates the following impacts: agglomeration, labour supply and output change in imperfectly competitive markets as described in TAG units A2.1 to unit A2.4:

- Agglomeration - the concentration of economic activity in an area can be improved by transport schemes as accessibility between businesses and workers is improved by reduced journey times, thus generating productivity benefits from the 'closer' proximity
- Changes to tax revenues arising from labour supply impacts - changes in transport costs can incentivise individuals to work, the number choosing to work and thus the amount of labour supplied in the economy. The changes in tax revenues associated with these impacts are not captured within commuter user benefits (but are included within the WITA tool) and
- Output change in imperfectly competitive markets - a reduction in transport costs (for business and freight) allows businesses to profitably increase their output (goods and services) that require the use of transport in their production

3.10.7. Agglomeration impacts arise from improving accessibility to an area for businesses and workers as they can cluster together and benefit from improved productivity. The NWL scheme will improve connectivity between different areas within Greater Norwich and Norwich, the latter a key economic hub for employment and services in East Anglia. The Western Link will bring firms closer together and generate a total increase in GDP, as existing workers become more productive due to connectivity improvements.

3.10.8. With the scheme in place, impacts will also be felt by those making commuting journeys as well as currently unemployed people looking to enter the labour market. If commuting costs fall, then the net returns from working increase. This could influence the trade-off decisions people need to make; whether or not they choose to work or how much they choose to work. The private benefits to these people are captured in transport user benefits. The value of time used for travel time savings does not include exchequer benefits that accrue when people make different decisions about employment as a result of a transport scheme.

3.10.9. Companies will benefit from time savings due to the scheme, which is effectively a reduction in production costs, incentivising firms to increase their output whilst maintaining an attractive profit margin. Firms can pass on these cost savings to consumers, reflecting a net benefit to consumers which is in addition to the transport cost change.

3.10.10. As there is more certainty surrounding these types of wider economic impacts compared to the high-level impacts covered under Level 3, they will be included in the Adjusted BCR for the NWL scheme and are thus a key part of the overall economic case for the scheme.

3.10.11. Agglomeration improvements are in scope for the NWL scheme as:

- It is located within one of DfT's Functional Urban Regions (FURs) and
- The scale of journey time improvements (and other improvements generating a significant decrease in drivers' generalised costs) will mean that agglomeration impacts are likely to be significant.

Results

Agglomeration with Other Modes adjustment

3.10.12. The agglomeration impacts are calculated across the four sectors of the economy within the appraisal guidance. **Table 3-18** presents the agglomeration impacts across the Construction, Consumer Services, Manufacturing and Producer Services sectors.

3.10.13. To represent travel by all modes within the average cost calculations, an allowance has been made to account for the impact of the other modes. To account for public transport, walking and cycling,

the proportion of car driver trips for each Local Authority District (LAD) examined in the WITA analysis was extracted from the TEMPRO database. Adjustment factors were calculated for each WITA zone based on the proportion of car trips compared to total trips. These factors were applied to the WITA agglomeration and labour supply impacts. This is based on data for the year 2020 from the TEMPRO database

Table 3-18 - Agglomeration Benefits

Agglomeration Sector	Original Benefits (£000s, 2010 prices and values)	Adjusted for other modes (£000s, 2010 prices and values)
Manufacturing	18,039	8,784
Construction	16,208	7,929
Consumer Services	51,394	24,616
Producer Services	99,102	47,928
Sub-Total	**184,744**	**89,257**

3.10.14. The agglomeration impacts form the majority of total wider impacts with Producer Services accounting for the largest proportion of agglomeration benefits at 54% of the adjusted total. This is where the scheme will have the largest impacts in terms of reductions in Generalised Travel Costs. This is closely followed by Consumer Services with Construction capturing the fewest benefits. A breakdown of the agglomeration benefits by Local Authority District is provided in **Table 3-19**.

Table 3-19 - Agglomeration Benefits by Local Authority District

Local Authority	Original Agglomeration Benefits (£000s, 2010 prices and values)	Adjusted for other modes (£000s, 2010 prices and values)
Breckland	48,562	23,878
Broadland	41,413	21,640
Norwich	27,678	11,133
South Norfolk	11,345	5,986
Great Yarmouth	13,391	5,972
King's Lynn and West Norfolk	27,666	13,579
North Norfolk	14,689	7,070
Total	**184,744**	**89,257**

3.10.15. The greatest agglomeration benefits are in Broadland and Breckland (51% of the adjusted total) as this is where the scheme is located18 and will have the largest impact in terms of improving accessibility. As stated above, the WITA analysis is only looking at benefits attributed to Zones within the study area (Norfolk only).

3.10.16. The results above are impacted by the fact the Western Link would be located in one of DfT's core Functional Urban Regions (FURs) and has a substantial economic hinterland surrounding Norwich. This means that a significant new infrastructure investment such as the Western Link will generate agglomeration improvements in this relatively urbanised area via the substantial improvements in journey times. Of particular note is the fact that Norwich is the only FUR in the East of England, thus reinforcing the point that the city is a major regional generator of economic activity and will benefit further from the scale of transport connectivity associated with a scheme such as the Western Link.

Output change in imperfectly competitive markets

3.10.17. The total additional benefits arising due to output change in imperfectly competitive markets is approximately £7.9 million and assumes that benefits would be incurred across all time periods. This shows the extent to which business users benefit from improved accessibility in Norwich as well as the subsequent reductions in congestion brought about by the scheme.

Labour supply impacts

3.10.18. The total benefits arising due to labour supply impacts over the 60-year appraisal period are approximately £0.4 million. These impacts are considered to be very minor as the analysis only considers the increased tax revenues associated with changes in the labour supply to be additional at UK level. Calculations for this element are based on the link between the cost of commuting and the increase in labour supply.

Summary

3.10.19. A summary of the wider economic impacts is presented in **Table 3-20**.

Table 3-20 - Summary of Results

Summary of Wider Economic Impact	Benefits (£000s, 2010 prices and values)
WI1: Agglomeration impacts	89,257
WI2: Output change in imperfectly competitive markets impacts	7,881
WI3: Tax revenues arising from labour market impacts	330

[18] The scheme is mostly within Broadland and is on the boundaries with both Breckland and South Norfolk

Summary of Wider Economic Impact	Benefits (£000s, 2010 prices and values)
Total Wider Impact Benefits	**97,468**

3.10.20. The WITA analysis shows that the scheme is expected to deliver approximately £97.5 million of wider economic impacts. The highest contributions come from agglomeration impacts and output change in imperfectly competitive markets impacts. This suggests that businesses will benefit greatly from the enhanced connectivity and consequent congestion reductions brought about by the scheme.

3.10.21. With respect to the scale of these likely agglomeration impacts, it is worth noting that although TAG guidance suggests that these can range between 10% and 30% of user benefits, the agglomeration impacts can be above this threshold. For the NWL the agglomeration impacts represent 29% of user benefits. As discussed earlier, agglomeration improvements are expected to be significant for the NWL, driven by:

1) it is located within the Norwich FUR; and
2) the scale of generalised travel cost savings generated by the scheme.

3.11 ADJUSTED BCR

3.11.1. For the study the additional impacts which have been monetised are:

- Reliability;
- Output change in imperfectly competitive markets impacts
- Agglomeration; and
- Labour supply impacts.

3.11.2. **Table 3-21** shows the adjusted AMCB results and the adjusted BCR associated with the scheme.

Table 3-21 – Analysis of Monetised Costs and Benefits – Adjusted

	Core Growth
Initial Present Value of Benefits (PVB)	308,632
Reliability	26,291
Output Change	7,881
Agglomeration	89,257
Labour Supply	330
Adjusted Present Value of Benefits (PVB)	**432,391**
Present Value of Costs (PVC)	**127,129**
Net Present Value (NPV)	305,262
Benefit Cost Ratio (BCR)	**3.40**

3.11.3. Following the inclusion of wider economic impacts in appraisal the BCR increases to **3.40** and remains in the **High** VfM category.

3.12 LEVEL 3 IMPACTS

ENVIRONMENTAL IMPACTS

3.12.1. A qualitative assessment has been undertaken for the following impacts:

- Landscape/Townscape
- Historic Environment
- Biodiversity
- Water Environment

3.12.2. The methods used in undertaking the environmental appraisal followed the principles set out in TAG Unit A3 Environmental Impact Appraisal (December 2015).

3.12.3. The full reporting of the assessment is contained within the Environmental Impact Appraisal Report. The following paragraphs provide a summary of the appraisal and results.

Landscape

3.12.4. The landscape is predominantly gently undulating arable farmland, with plateau to the south, located between two shallow river valleys. River Tud in the south and River Wensum in the north being the larger of the valleys with noticeable difference in character of wet meadow and mosaic of lakes and drainage ditches. There is some human influence, of note is the overhead line and two wind turbines to the west, with the A47 and A1067 roads noticeable from the plateau. Settlement is sparse, mainly small farmsteads - the biggest settlement is Honingham located to the south. Land cover is predominately arable fields, contained by clipped hedgerow and infrequent mature trees, with some fields turned to pig rearing. Mixed plantation woodland is common throughout this landscape, often following field boundaries. Roads are generally small lanes, gently curved, and following the field boundaries.

3.12.5. The NWL would alter the local landscape character through the introduction of the viaduct, loss of woodland and the width of the new road (dual carriageway). There would be subdivision of fields and sections of embankment and cutting through the landscape which would affect the field pattern and tranquillity locally, however, the viaduct would have a wider impact introducing a new feature into this landscape and will have a significant impact on tranquillity in the north.

3.12.6. An Environmental Statement (ES) is being prepared by WSP, which will contain more detailed design information and a more thorough impact assessment subsequently providing more site-specific mitigation measures to attempt to reduce impacts and risks further.

Historic Environment

3.12.7. the NWL would have a **moderate adverse** effect on the setting (context) of listed buildings located beyond the site boundary. It will adversely affect the appreciation and understanding of the characteristic historic environmental resource. Impacts may be mitigated by design, such as the introduction of screening or an appropriate road lighting scheme.

3.12.8. The NWL also would result in a number of **low, moderate** or **major adverse** effects on the undesignated heritage assets recorded on the Historic Environment Records along with any previously unrecorded buried heritage assets. The impacts can be reduced where feasible and warranted, through either mitigation by design, allowing remains to be preserved in-situ, or through preservation by record (i.e. archaeological excavation).

3.12.9. Further surveys are planned in 2020 and 2021 which will complete the Archaeological baseline and will feed into the future assessment work for the NWL. The Environmental Statement (ES) is being prepared by WSP, which will contain more detailed design information and a more thorough impact assessment subsequently providing more site-specific mitigation measures to attempt to reduce impacts and risks further.

Biodiversity

3.12.10. The TAG assessment has concluded that there are Large Adverse impacts on the following features:

- Bats (all species) including barbastelle bat.

3.12.11. The NWL will require removal of habitat used by the local bat population that includes rarer species, notably the barbastelle bat. The designs are subject to refinement, and in line with the mitigation hierarchy habitat loss will be avoided where possible. A mitigation strategy is being developed that both seeks to reduce impacts of habitat fragmentation primarily through the provision of underpasses and green bridges and avoid net loss in habitat available to bats through the provision of a comprehensive landscaping and biodiversity net gain strategy.

3.12.12. Habitat creation and enhancement seeking to maintain habitat availability will be completed within the core sustenance zone for known barbastelle bat colonies near to the scheme. This approach reduces medium to long-term impacts upon the local bat population. The combination of habitat enhancement and creation is proposed to limit shorter term impacts, with enhancement contributing towards a greater area of mature woodland suitable for use by foraging and commuting bats in the shorter term while habitat creation areas become established. In combination, the mitigation strategy seeks to increase the area of habitat available to the local bat assemblage in the longer term.

3.12.13. It will be important to maintain habitat permeability and reduce the effects of habitat fragmentation that may otherwise occur. The scheme includes the following:

- a viaduct across the River Wensum and associated floodplain habitat;
- three wildlife underpasses - in The Nursery woodland in the north, along Ringland Lane (dual use) and along the stream south of the Foxburrow Plantation in the south;
- three green bridges - along the Broadway, in the Foxburrow Plantation and along the hedgerow north of Weston Road; and
- landscaping to promote the use of these features by bats and avoid direct flightlines into the traffic corridor.

3.12.14. The mitigation strategy remains under development, reflecting the design stage and ongoing nature of baseline surveys. Data gathered during 2021 will influence the strategy. As the strategy is not yet fixed a precautionary approach must be taken, and as such the magnitude of effect upon bats is assessed to be 'intermediate negative' defined as '*The key environmental resource's integrity will not be adversely affected, but the effect on the resource is likely to be significant in terms of its ecological objectives.'.* This may be updated subject to completion of baseline surveys and finalisation of the associated mitigation strategy.

3.12.15. The combination of a high value biodiversity feature and an effect of intermediate negative magnitude gives a large adverse effect. It should be noted that this assessment is precautionary and reflects the status of the mitigation strategy which is yet to be finalised as set out above.

3.12.16. The TAG assessment has concluded that there are Moderate Adverse impacts on the following features:

- Wensum Pastures at Morton Hall CWS;
- Land adjoining Foxburrow Plantation CWS;
- Broom & Spring Hills CWS;
- Primrose Grove CWS
- Fakenham Road RNR;
- Ancient/veteran trees;
- Important Hedgerows;
- Wet Woodland HPI; and
- Lowland mixed deciduous woodland HPI.

3.12.17. A Moderate Adverse impact is expected on the above CWS's due to habitat loss and/or severance which could impact the integrity of the CWS. The habitat creation strategy for the scheme will seek to compensate for this habitat loss, and an underpass will be included to ensure the stream within the Land adjoining Foxburrow Plantation will maintain flow post construction into the River Tud.

3.12.18. The Fakenham Road RNR is designated because of the presence of hoary mullein *Verbascum pulverulentum*. This site will be lost due to the construction of the NWL. A compensation strategy will be developed which will aim to recreate the habitat and lead to an increase in hoary mullein within the study area.

3.12.19. Approximately twelve ancient/veteran trees will be removed as a result of the NWL. A strategy for ancient/veteran trees is under development which will help to mitigate the impact of the loss of the trees however they are regarded as an irreplaceable habitat and will not be factored into BNG calculations.

3.12.20. It is anticipated that two hedgerows that met the criteria for 'Important' under the Hedgerow Regulation 1997 will be directly impacted by the Scheme[19]. Mitigation will involve creation, enhancement and translocation.

3.12.21. The NWL bisects areas of lowland mixed deciduous woodland and wet woodland HPI. The woodland to be lost is not ancient. As part of the compensation strategy new woodland will be planted and existing woodland will be enhanced for biodiversity benefit in the longer term.

3.12.22. The assessment for all other features ranges from slight adverse or neutral impacts based on the adoption of preliminary mitigation and compensation measures.

3.12.23. This assessment is based on the data which has been collected and analysed up to March 2021. It is a provisional impact assessment and has been undertaken before the Ecological Impact Assessment, Habitats Regulations Assessment and Water Framework Directive (WFD) assessment have been completed.

3.12.24. The overall assessment score for the NWL is a Large Adverse Impact due to the loss of woodland foraging habitat available to the local bat assemblage which includes the rarer barbastelle bat. This is a precautionary assessment and reflects the status of the mitigation strategy which is yet to be finalised as set out above. Effects upon all other biodiversity features are assessed to be moderate adverse or of lesser significance.

3.12.25. Further surveys are planned in 2021 which will complete the ecological baseline and will feed into the future assessment work for the NWL. The ES is in preparation and will contain more detailed design information and a full assessment of ecological impacts (in line with CIEEM guidelines). The ES will take into account the final design and final mitigation strategies designed to avoid and reduce impacts upon biodiversity features and where possible deliver enhancements.

Water Environment

3.12.26. The overall Summary Assessment score for the NWL is predicted to be **Moderate Adverse.** This is attributable to the high importance to the River Wensum and the **Negligible** impact on the ecological and hydromorphological quality of the River Wensum and the low risk associated with works to the new bridge crossing. A **Moderate Adverse** impact is predicted to the tributary of the River Tud; the mapped fluvial floodplain; and the underlying groundwater body (combined superficial and bedrock aquifer). Measures are being developed to further mitigate and compensate for these issues.

3.12.27. A conservative approach to the loss of floodplain has been taken until quantitative analysis of potential effects is undertaken to inform the need for compensatory storage or other mitigation.

[19] Eight hedges qualified as Important Hedgerows, but only two of the hedgerows qualified on botanical criteria. One qualified on archaeological and historical criteria, and five only qualified on the basis of protected or notable faunal records associated with them.

3.12.28. The ES is being prepared by WSP, which will contain more detailed design information and a more thorough impact assessment subsequently providing more site-specific mitigation measures to attempt to reduce impacts and risks further.

DISTRIBUTIONAL IMPACTS

3.12.29. Distributional Impacts (DIs) across the eight categories (Table 3-22) are reported in full in the Distributional Impacts Report. The appraisal has been undertaken in accordance with TAG Unit A4.2: Distributional Impact Appraisal. The appraisal process consists of 3 major steps:

- Screening Process (Step 1) - identification of likely impacts for each indicator;
- Assessment (Step 2) - identification of impact area, social groups and amenities; and
- Appraisal of impacts (Step 3) - analysis of impacts, full appraisal and input into Appraisal Summary Table (AST).

3.12.30. The results of the appraisal process are summarised in the following sections.

Screening

3.12.31. Each indicator has been assessed individually using the TAG screening proforma. The output of this assessment determines whether the intervention needs to be assessed further. Consideration has been given to:

- Whether there might be positive or negative impacts on different social groups;
- If changes to scheme design can mitigate any potential negative impacts; and
- How dispersed the impact is likely to be, to understand if the scale of the impact is disproportionate to the potential impact.

3.12.32. A summary of the screening outcomes and decision on whether to progress to the next step is included in **Table 3-22**.

Table 3-22 – Initial Screening

Impact Area	Conclusion	Next Step
User Benefits	There are likely to be beneficial impacts with respect to journey time, based on the SOBC TUBA analysis.	Proceed to Step 2
Noise	The SOBC assessment estimated minor impacts both adverse and beneficial with respect to a change in road traffic generated noise levels.	Proceed to Step 2
Air Quality	The SOBC assessment indicated adverse impacts for air quality and greenhouse gases emissions	Proceed to Step 2
Accidents	The new link is likely to attract traffic currently using low standard rural routes and congested urban routes. The new link will have reduced number of junctions and will be designed to current standards.	Proceed to Step 2
Security	There is no planned change to public transport waiting/interchange facilities with the scheme.	Do not proceed to step 2
Severance	The new link is likely to sever existing PRoWs.	Proceed to Step 2

Impact Area	Conclusion	Next Step
Accessibility	There is no planned change to public transport services routing or timings or provision with the scheme.	Do not proceed to step 2
Affordability	The scheme will have an impact on car fuel and non-fuel operating costs, only. As a result of rerouting it is expected that there will be changes to these costs. For car fuel and non-fuel operating costs, the outputs from TUBA can be used, and indicate positive benefits. The remaining areas of affordability (parking charges, road user charges, public transport fares and concession availability) are not affected by the scheme.	Proceed to Step 2

Assessment

3.12.33. The assessment stage investigated the impacts in more detail to confirm where both spatial impacts will be experienced, and where socio-economic, social and demographic characteristics needed to be considered further.

3.12.34. The area impacted by the NWL will vary for each indicator.

3.12.35. Analysis of the characteristics of people in the area likely to be affected has been undertaken by mapping social characteristics at Lower Super Output Area (LSOA) levels. **Table 3-23** shows the groups of people that need to be identified in the analysis for each indicator.

Table 3-23 – Socio-demographic analysis for DIs

Dataset/ Social Group	User Benefits	Noise	Air Quality	Accidents	Security	Severance	Accessibility	Affordability
Income Distribution	✓	✓	✓				✓	✓
Children: proportion of population aged <16		✓	✓	✓	✓	✓	✓	
Young Adults: proportion of population aged 16-25				✓			✓	
Older People: proportion of population aged 70+		✓		✓	✓	✓	✓	
Proportion of population with a disability					✓	✓	✓	
Proportion of population of Black and Minority Ethnic (BME) origin					✓		✓	
Proportion of households without access to a car						✓	✓	
Carers: proportion of households with dependent children.							✓	

Source: TAG Unit A4.2 Table 2

3.12.36. The assessment output summary is set out in **Table 3-24**.

Table 3-24 – Assessment (Step 2) Output summary

Social group and amenities indicators			User Benefits	Noise	Air Quality	Accidents	Security	Severance	Accessibility	Affordability	Local Authority	County	England
Resident population in the impact Area	Income Distribution Quintiles	0-20%	12.3	0	4.9					12.3	12.0%	12..5%	20.1%
		20%-40%	12.8	0	6.7					12.8	12.6%	14.3%	20.0%
		40%-60%	26.6	17.4	19.5					26.6	27.0%	34.2%	20.0%
		60%-80%	31.3	82.6	52.3					31.3	31.6%	26.4%	20.0%
		80%-100%	17.0	0	16.5					17.0	16.9%	12.5%	19.9%
	Children <16			17.8	18.3						16.1%	15.8%	17.6%
	Young People				11.6						12.7%	11.9%	13.2%
	Older People			9.5							13.3%	14.4%	10.9%
	People with a disability										25.7%	27.0%	25.9%
	Black Minority Ethnic										4.2%	3.5%	14.0%
	No Car Households										18.5%	18.8%	25.6%
	Households with dependent children										25.8%	25.3%	29.1%
	Indicator population in the impact area		542,961	7,182	813,552					542,961	511,661	857,888	56,075,912
Am	Schools / Nurseries			✓	✓	✓							

Social group and amenities indicators		User Benefits	Noise	Air Quality	Accidents	Security	Severance	Accessibility	Affordability	Local Authority	County	England
	Playgrounds		✓	✓	✓							
	Parks and open Spaces			✓	✓							
	Hospitals			✓	✓							
	Care homes / Day Centres		✓	✓	✓							
	Community Centre		✓	✓	✓							

Appraisal

3.12.37. This step sets out the assessment of the impact of the scheme on each indicator's social groups. This step covers the core analysis of impacts which provides an assessment score for each indicator and each of the social groups. A qualitative assessment has also been undertaken for each relevant indicator which has been summarised in the DI appraisal matrix table and the AST entries.

3.12.38. The DI appraisal is summarised in the Appraisal Matrix shown in **Table 3-25** - Distributional Impact Appraisal Matrix1 and the AST entry is summarised in **Table 3-26**.

Table 3-25 - Distributional Impact Appraisal Matrix1

	Distributional impact of income deprivation					Are the impacts distributed evenly?	Key impacts - Qualitative statements
	Quintile 1 0-20%	Quintile 2 20%-40%	Quintile 3 40%-60%	Quintile 4 60%-80%	Quintile 5 80%-100%		
User Benefits	✓	✓	✓✓✓	✓✓✓	✓✓✓	No	The distribution across the quintile areas is not even with the majority of impacts favouring those in the least deprived income quintiles. Those in income quintile 4 (second least deprived income quintile) experience a higher than expected proportion of benefits whereas those in the most deprived areas (quintile 1 and to a lesser extent quintile 2) experience a smaller than expected proportion of benefits
Noise			✓	××		No	Noise impacts are experienced by those in the middle-income quintiles. Residents living in quintile 4 experience noise disbenefits while residents in quintile 3 experience noise benefits.
Air Quality	✓	✓	✓✓	✓✓	✓	No	Air quality impacts are experienced across all quintiles. Those in quintiles 3 and 4 experience a higher proportion of air quality benefits than would be expected from an even distribution.
Affordability	✓✓✓	✓✓✓	✓	✓	✓	No	The distribution across the quintile areas is not even with the majority of impacts favouring those in the most deprived income quintiles. Those in income quintile 1 (most deprived income quintile) experience a higher than expected proportion of benefits whereas those in the least deprived areas (quintiles 4 and 5) experience a smaller than expected proportion of benefits
Accessibility						N/A	

Table 3-26 – AST Entry

Impact	Social Groups						User Groups				Qualitative statement
	Children & Young People	Older People	Carers	Women	Disabled	BME	Pedestrians	Cyclists	Motorcyclists	Young Male Drivers	
Noise	×										Children and young people experience noise disbenefits
Air Quality	✓										Children and young people experience air quality benefits
Accidents	✓	✓					✓	✓	✓	✓	All relevant social groups and user groups experience accident benefits
Security	-	-		-	-	-					
Severance	✓	✓	✓		✓						All relevant social groups and user groups experience severance benefits
Accessibility	-	-	-	-	-	-					n/a

3.13 VALUE FOR MONEY STATEMENT

3.13.1. Value for money is determined by considering the relationship between the costs and benefits of a proposal. Where a monetised assessment has been undertaken, the DfT's approach to assigning a category starts by considering the appropriate metric (Benefit Cost Ratio or Net Present Public Value).

3.13.2. The initial and adjusted BCR for the NWL scheme have been calculated as 2.43 and 3.40 respectively demonstrating a High Value for Money. The adjusted Present Value of Benefits (PVB) is £432.391 million which consists of transport user benefits and environmental benefits of £281.174 million, accidents benefit of £18.582 million, active mode benefits of £8.876 million, wider economic impacts of £97.468 million and reliability impacts of £26.291 million.

3.13.3. The Present Value of Costs (PVC) consist of £127.129 million of scheme costs. Optimism Bias of 15% has been applied, in line with TAG Unit A1.2 for a road scheme at Outline Business Case stage. **Table 3-27** shows the initial BCR and adjusted BCR.

Table 3-27 - Analysis of Monetised Costs and Benefits

£000s, 2010 prices and values	Core Growth
Noise	38
Local Air Quality	72
Greenhouse Gases	19,475
Journey Quality (AMAT)	8,876
Accidents	18,582
Economic Efficiency: Consumer Users (Commuting)	58,488
Economic Efficiency: Consumer Users (Other)	167,804
Economic Efficiency: Business Users and Providers	88,569
Wider Public Finances (Indirect Taxation Revenues)	-53,272
Present Value of Benefits (PVB)	308,632
Broad Transport Budget	127,129
Present Value of Costs (PVC)	127,129
Net Present Value (NPV)	181,503
Initial BCR	2.43
Level 2 Benefits	123,759
Adjusted PVB (Level 1 + Level 2)	432,391

£000s, 2010 prices and values	Core Growth
PVC (same as above)	127,129
Adjusted BCR	3.40

3.13.4. The overall Biodiversity assessment score for the NWL is a **Large Adverse** Impact due to the loss of woodland foraging habitat for bats including the barbastelle bat. A strategy for woodland creation and enhancement is currently being developed which will help to compensate for the habitat loss.

3.13.5. The overall summary assessment score for Water Quality for the NWL is predicted to be **Moderate Adverse.** This is attributable to the high importance to the River Wensum and the **Negligible** impact on the ecological and hydromorphological quality of the River Wensum and the low risk associated with works to the new bridge crossing. A **Moderate Adverse** impact is predicted to the tributary of the River Tud; the mapped fluvial floodplain; and the underlying groundwater body (combined superficial and bedrock aquifer). Measures are being developed to further mitigate and compensate for these issues.

3.13.6. At this stage, and as presented in this Business Case, it is anticipated that the scheme will deliver significant quantified and non-quantified benefits and provide High VfM for public sector expenditure.

3.14 SWITCHING VALUE ANALYSIS

3.14.1. Switching value analysis has been undertaken to determine how a change in costs or benefits would alter the Value for Money category.

3.14.2. **Table 3-28** provides the changes that would be required, either in scheme costs or benefits, for the scheme to shift from High VfM category (as indicated by its adjusted BCR) to the Medium or Very High categories on either side of its current position.

Table 3-28 - Changing the Adjusted BCR to Medium

Factor	Core Growth
Benefits	Benefits would need to decrease by £179.404m or 41.49%
Costs	Costs would need to increase by £9.153m or 70.91%

3.14.3. If the costs were to remain the same, benefits would need to decrease by 41.49% to lower the scheme into the medium VfM category.

3.14.4. If benefits were to stay the same, costs would need to increase by 70.91% to lower the scheme into the medium VfM category.

Table 3-29 - Changing the Adjusted BCR to Very High

Factor	Core Growth
Benefits	Benefits would need to increase by £76.125m or 17.61%
Costs	Costs would need to decrease by £19.031m or 14.97%

3.14.5. To switch the scheme into the Very High VfM category, if the costs were to remain the same, benefits would need to increase by 17.61%.

3.14.6. If benefits were to stay the same, costs would need to decrease by 14.97% to switch the scheme into the Very High VfM Category.

3.15 SENSITIVITY AND RISK PROFILE

3.15.1. There are key uncertainties which can affect the scheme costs and impacts/benefits, these include changes to the scheme cost which affect the PVC of the scheme and changes to demand and economic growth which can affect the PVB of the scheme.

3.15.2. The cost of the scheme can be influenced by a number of factors, including cost of materials, cost of labour, and delay to programme.

3.15.3. In order to understand how sensitive the benefits described above are to a range of alternative parameters, a number of tests have been performed.

- TAG Sensitivity Databook
- High and low traffic growth scenarios
- Alternative levels of Optimism Bias (different stages of the business case)
- Alternative levels of Additionality applied to dependent development impacts

3.15.4. The results of these tests are summarised as follows.

TAG SENSITIVITY DATABOOK

3.15.5. A sensitivity test has been undertaken using the TAG Sensitivity Databook (V1.14). The Databook reflects changes in economic and population parameters projects provided by the Office for Budget Responsibility (OBR).

Table 3-30 – TAG Sensitivity Databook testing (2010 prices and values)

£000s in 2010 prices and values	Values
Initial PVB	233,735
Wider Economic Impacts & reliability	90,692
Adjusted Present Value of Benefits (PVB)	**324,427**
Present Value of Costs (PVC)	**127,129**
Net Present Value (NPV)	**197,298**
Adjusted BCR	**2.55**

3.15.6. These results show that the BCR remains above 2 and within the High Value for Money category. This increases the level of certainty in the VfM associated with a reduction in Transport User Benefits and COBALT.

HIGH AND LOW TRAFFIC GROWTH SCENARIOS

3.15.7. Another key uncertainty identified regards demand growth in the vicinity of the proposed scheme. To assess the impact of this uncertainty, sensitivity tests have been devised in line with guidance in TAG Unit M4. The tests are documented in detail on the Traffic Forecasting Report and Economic Assessment Report[20]. These sensitivity tests are provided in **Table 3-31**.

Table 3-31 – High and low traffic growth scenario testing (2010 prices and values)

£000s in 2010 prices and values	Low Growth	High Growth
Initial PVB	257,540	370,665
Wider Economic Impacts & Reliability	108,767	126,742
Adjusted Present Value of Benefits (PVB)	**366,307**	**497,407**
Present Value of Costs (PVC)	**127,129**	**127,129**
Net Present Value (NPV)	**239,178**	**370,278**
Adjusted BCR	**2.88**	**3.91**

3.15.8. These results show that the BCR remains above 2 and within the High Value for Money category for the low growth scenario. This increases the level of certainty in the VfM associated with a significant reduction in Transport User Benefits. For the High growth scenario the adjusted BCR is pushed to the top of High Value for Money category.

ALTERNATIVE OPTIMISM BIAS

3.15.9. The PVC for the economic case already includes an allowance for optimism bias at 15% of scheme costs. As part of the switching value assessment the PVC will be varied up and down by % changes to ascertain what effect these cost changes will have on the scheme PVC and NPV.

3.15.10. The effect on PVC, BCR and VfM for the core scenario of changing OB to 3% and 44% is set out in **Table 3-32**.

[20] NWL Economic Appraisal Report, March 2021

Table 3-32 - Alternative optimism bias sensitivity tests (2010 prices and values)

£000s in 2010 prices and values	15% OB	3% OB	44% OB
Adjusted Present Value of Benefits (PVB)	432,391	432,391	432,391
Present Value of Costs (PVC)	127,129	113,863	159,187
Net Present Value (NPV)	305,262	318,528	273,204
Adjusted BCR	3.40	3.80	2.72
VfM Category	High	High	High

3.16 APPRAISAL SUMMARY TABLE

3.16.1. The AST presents all the evidence from the economic appraisal a single table. It records all the impacts which have been assessed and described above – economic, fiscal and environmental impacts – assessed using monetised, quantitative or qualitative information as appropriate. The AST for the scheme, in line with TAG requirements, is included in **Appendix 3D**.

3.17 SUMMARY OF THE ECONOMIC CASE

3.17.1. The Economic Case identifies and assesses all the impacts of the scheme to determine its overall Value for Money. It takes account of the costs of developing, building, operating and maintaining the scheme, and a full range of its impacts, including those impacts which can be monetised.

BENEFIT COST RATIO

3.17.2. The initial BCR is 2.43, indicating **High** Value for Money according to the DfT Value for Money Framework. The adjusted BCR is 3.40, strengthening the **High** category.

3.17.3. Once the full scheme impacts are included, the scheme still remains in the **High** Value for Money Category. The scheme would need to deliver greater than the calculated benefits to reach the Very High Value for Money category.

SENSITIVITY TESTING

3.17.4. The sensitivity tests applied to the appraisal results confirm the High Value for Money position is not sensitive to cost increases, or a reduction in benefits (as the BCR does not drop into the Medium Value for Money category). This increases the level of certainty that the scheme will deliver High Value for Money. When changes to the TAG Sensitivity Databook (V1.14) and optimism bias have been applied, the scheme delivers an adjusted BCR which still remains in the **High** Value for Money Category.

4 FINANCIAL CASE

4.1 INTRODUCTION

4.1.1. The Financial Case outlines the proposed financing of the scheme in terms of the affordability of the proposal, the source of funding, annual breakdown of provisions and outturn costs. This section considers the potential costs and associated financial case for the preferred scheme and describes:

- How much the scheme is expected to cost, and how this has been calculated
- The anticipated profile of expenditure (including whole life costs)
- Risks that could affect the cost of the scheme
- How the scheme will be paid for, and by whom

4.2 COSTS

4.2.1. Scheme costs have been developed for the preferred option in line with TAG A1.2.

4.2.2. The cost estimate is based upon a price base of 2020 Q3. The estimated cost of the scheme at out-turn prices excluding VAT is £198.39 million. The estimated cost of the scheme is shown in **Table 4-1**.

SCHEME PREPARATION AND CONSTRUCTION

4.2.3. The cost of scheme preparation and construction has been estimated based on discussions held with tenderers as part of the competitive dialogue process. NCC have undertaken an independent review of these costs, and any differences were discussed to generate a revised, robust cost base.

4.2.4. Subject to funding, construction of the NWL will start in late 2023 and the new scheme will open to traffic in late 2025.

Table 4-1 – Breakdown of Scheme Costs

Scheme element	pre 20/21	20/21	21/22	22/23	23/24	24/25	25/26	26/27	Total
Design, Investigations, Surveys, Procurement, Supervision and Client Costs	4,890,040	4,065,765	8,868,606	5,373,427	565,596	17,499			23,780,932
Statutory Undertakers Works	-			549,157		183,052			732,210
Land	1,466,232	1,068,772	326,579	128,603	8,638,319	2,888,253	-1,773,935		12,742,825
Construction Contracts	7,248	52,087	5,480	594,813	8,430,527	63,045,131	31,190,221	188,223	103,513,730
Total Cost (excluding risk)	6,363,520	5,186,624	9,200,665	6,646,000	17,634,442	66,133,936	29,416,286	188,223	140,769,697
Risk			3,094,368	4,765,253	6,315,301	17,440,652	8,310,496	7,934	39,934,004
Total Cost at 2020:Q3 Prices	6,363,520	5,186,624	12,295,033	11,411,253	23,949,743	83,574,588	37,726,783	196,157	180,703,701
Adjustment to outturn (inflation)			1,279	63,823	1,884,031	10,244,653	5,489,221		17,683,007
Scheme Cost (outturn prices)	6,363,520	5,186,624	12,296,312	11,475,076	25,833,774	93,819,241	43,216,004	196,157	198,386,708

SPEND PROFILE

4.2.5. The assumed annual profile of expenditure is shown in **Table 4-2**.

Table 4-2 – Annual Spend Profile %

Scheme Element	pre 20/21	20/21	21/22	22/23	23/24	24/25	25/26	26/27
Design, Investigations, Surveys, Procurement, Supervision and Client Costs	20.27%	17.10%	37.29%	22.60%	2.38%	0.07%		
Statutory Undertakers Works				75.00%		25.00%		
Land	11.49%	8.39%	2.56%	1.01%	67.79%	22.67%	-13.92%	
Construction Contracts		0.05%	0.01%	0.57%	8.14%	60.91%	30.13%	0.18%

RISK ALLOWANCE

Estimating uncertainty

4.2.6. The final cost of delivering the schemes will not be known until after completion of the detailed design and land purchase, and completion of the statutory process. For this reason, the scheme cost estimates include allowances to account for this uncertainty, or risk. During the project lifecycle, the risk associated with cost estimates is determined by the level of detailed knowledge at each respective stage. As the level of detail increases, the level of risk, and the risk-adjusted costs usually reduce.

4.2.7. To reflect the uncertainty associated with known risks, a Quantified Risk Assessment (QRA) has been undertaken[21]. The QRA has been developed from an understanding of each specific risk and the probable effects of that risk along with an assessment of the likelihood of occurrence and cost, based on a detailed understanding of the projects costs which is driven from the cost plan/forecast. The treatment of risk, and the calculation of quantified risk is described in the Management Case (**section 6.9**).

[21] Risk allowance is a factor applied to project costs to act as a contingency for unforeseen circumstances.

4.2.8. The current risk adjustment has been calculated as £39.93m, 28% of the total scheme costs.

OUT-TURN PRICE ADJUSTMENT

4.2.9. The cost estimates assume a price base of Q3 2020. An allowance is therefore made for expected inflation between the date of the cost estimate and the date when the expenditure is expected to occur. This is influenced by the profile of expenditure set out in Table 4-2. The uplift factors to reflect price inflation are based on 2.50% per annum for general activities (i.e. fees, utilities and land), 1.60% per annum for Stage One activities as the contract mechanism relies on CPI and 3.96% per annum for Stage Two activities as the contract mechanism relies on a set of weighted BCIS indices.

4.3 BUDGETS/FUNDING COVER

FUNDING STRATEGY

4.3.1. It is anticipated that the scheme will be funded entirely from public finances.

4.3.2. The most appropriate funding solution for the scheme is via the Large Local Majors (LLM) programme. LLM schemes should aim for the local or third-party contribution to be at least 15% of the total scheme costs.

4.3.3. The proposed funding breakdown for the scheme is detailed in **Table 4-3**. This assumes a maximum LLM funding contribution of 85%.

Table 4-3 - Funding request (£000's)

	17/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	Total
Government/ DfT funding		1,024	12,245	9,754	21,959	86,746	36,734	167	168,629
Local contribution	6,364	4,163	51	1,721	3,875	7,073	6,482	29	29,758
Total	**6,364**	**5,187**	**12,296**	**11,475**	**25,834**	**93,819**	**43,216**	**196**	**198,387**

LOCAL AUTHORITY CONTRIBUTION

4.3.4. A local contribution, underwritten by NCC, will account for 15% of the scheme costs, which totals **£29.76 million**.

4.3.5. The exact composition of the local authority contribution from 2021/22 has not yet been finalised, but is expected to come from a combination of the following:

- Funding through the New Anglia LEP
- Possible borrowing through Public Works Loan Board (PWLB)
- Consideration of borrowing via the new UK National Infrastructure Bank

4.3.6. The details of the local funding mechanism will be clarified as the scheme is developed. In view of the uncertainty about the sources of local funding, Norfolk County Council will underwrite these costs. The local contribution is confirmed in the signed declaration by Norfolk County Council's Section 151 officer, which is included in the Bid Cover Sheet. The declaration also confirms that the Council will underwrite any increase in costs above those set out in the Business Case.

4.3.7. The Council is also prepared to enter into credit arrangements under the prudential borrowing powers from the Local Government Act 2003.

4.3.8. On the basis of the above, the scheme is therefore considered to be affordable from a local perspective.

4.4 EXPECTED WHOLE LIFE COSTS

4.4.1. Although the request for funding is for a contribution towards the capital costs of delivering the scheme, the business case must also consider its whole-life costs. These include the costs of operating and maintaining the highway (including any structures) and associated infrastructure as well as the longer-term costs of infrastructure renewal. This will include the costs associated with maintaining the landscaping and the environmental mitigation measures.

Maintenance and renewals

4.4.2. Maintenance and renewals costs include:

- Highways maintenance liabilities including communication equipment, drainage clearance, road and street lighting operation, winter maintenance (i.e. application of salt and snow clearance) and infrastructural and safety inspections
- Longer term highways renewals, including re-surfacing and renewing the road pavement, care and upkeep of the verge, winter gritting and any associated works
- Structures maintenance liabilities including inspection, deck waterproof replacement, concrete repairs and VRS replacement.

4.4.3. An indicative cost of has been developed based on structures, length of highway and planned renewals programme for each aspect. This would be included as part of NCC annual maintenance programme. This will be further developed as the detailed design is produced.

4.5 ACCOUNTING IMPLICATIONS

4.5.1. The preferred option is expected to have the following implications on public accounts:

- Central government/DfT funding of £168.63m (85%) is sought to deliver the scheme, with the majority of the funds being spent during the financial years 2023-2026
- A local contribution of £29.76m (15%) of the scheme implementation costs is required
- The maintenance costs for the scheme are expected to cost £30.07m in 2020:Q3 prices over a 60 year period, the funding for which will be sourced from the annual maintenance budget.

FUNDING COVER FOR WHOLE LIFE COSTS

4.5.2. The whole life costs will also need to be met by NCC, and provision will be made for this in the Council's budgets for highways and bridge maintenance, which are funded through LTP allocations. It is considered that the NWL will form part of the MRN and would be maintained as part of that network with funding provision specific to the MRN.

4.6 SUMMARY OF THE FINANCIAL CASE

4.6.1. The base scheme costs are £140.77 million. The scheme costs include a risk allowance taken from the latest QRA.

4.6.2. The total scheme costs, including risk and inflation, are £198.39 million at out-turn costs.

4.6.0. Funding is sought via the Large Local Majors programme through the National Roads Fund. Central government/DfT funding of £168.63m (85%) is sought to deliver the scheme, with the majority of the funds being spent during the financial years 2023-2026. A local contribution of £29.76m (15%) of the scheme implementation costs is required.

4.6.1. NCC's Section 151 Officer has provided a Letter of Intent to confirm the Council's financial obligations towards the scheme.

5 COMMERCIAL CASE

5.1 INTRODUCTION

5.1.1. The Commercial Case outlines the commercial viability of the proposed scheme and the procurement strategy used to engage the market. It outlines the approach to risk allocation and transfer, contract and implementation timescales, and the approach to managing of the contract.

5.1.2. Risk allocation is based on guidance contained within the Outsourcing Playbook[22], with a clear delineation between the contractor's and client's risk ownership. Additional detail on NCC's approach to risk management can be found in **section 6.9** of the Management Case.

5.2 OUTPUT BASED SPECIFICATION

5.2.1. The Commercial Case is based on strategic outputs and outcomes, against which alternative procurement and contractual options are assessed.

5.2.2. The outcomes that the preferred procurement strategy and contract must deliver are:

- A new road is to be built in accordance with the principles of the Specification of Highways Works[23] to connect the A1270 Broadland Northway, at its junction with the A1067 Fakenham Road, via the preferred route to a new junction with the A47, being constructed by Highways England
- The NWL is planned to tie-into the A47 North Tuddenham to Easton dualling scheme at the northern section of the new Wood Lane junction via an arm on the northern roundabout
- Overpasses/underpasses needed where the NWL crosses existing roads, or those roads will need to be stopped up
- A viaduct over the River Wensum will need to be constructed, and there will be a given exclusion zone, within which no temporary or permanent works will be permitted. This is to ensure that there is no effect on River Wensum itself nor banks or aquatic vegetation on these, limit the impact of shading on River Wensum habitat / species and to avoid any impact of construction on River Wensum and on floodplain floor
- Diversions to existing Public Rights of Way (PRoW) where they are severed/affected by the new link
- There will be requirements for:
  - Landscaping
  - Drainage works
  - Green bridges/underpasses/ecological mitigation

[22] The Outsourcing Playbook, Central Government Guidance on Service Delivery, including Outsourcing, Insourcing, Mixed Economy Sourcing and Contracting, version 2.0, June 2020

[23] Standards for Highways.co.uk

- Associated works

5.3 PROCUREMENT STRATEGY

5.3.1. Norfolk County Council has extensive experience procuring complex highway and structural engineering projects. Additional detail can be found in Section 1.2 of the Management Case. These schemes have created the foundation for Norwich Western Link's preferred procurement strategy.

FORM OF CONTRACT

5.3.2. For civil engineering works in the UK, there are two main forms of contract: the Institution of Civil Engineers Conditions of Contract (ICE), which since August 2011 has been rebadged as the Infrastructure Conditions of Contract (ICC); or the New Engineering and Construction Contract NEC suite of contracts. These two options are discussed in more detail as follows.

Infrastructure Conditions of Contract (ICC)

5.3.3. The Infrastructure Conditions of Contract (ICC) suite of contracts is one of the main forms of standard contracts for UK civil engineering and infrastructure work. ICC provides a clear and standardised contract specifically tailored for civil engineering and infrastructure projects. It is endorsed by the sponsoring bodies, Association for Consultancy and Engineering and the Civil Engineering Contractors Association.

5.3.4. Separate versions of the ICC Conditions of Contract cater for a variety of types of contract strategy including measurement, target cost and design and construction. The different conditions provide options for delivery with each offering a comprehensive and clear set of conditions with clear risk allocation between Employer and Contractor. The contract is administered by an independent engineer.

5.3.5. The procedures set out in the Contract provide a cooperative form of contract that aim to prevent or reduce delays and allow control of costs at any stage of a Contract.

NEC Engineering and Construction Contract

5.3.6. The NEC Engineering and Construction Contract suite of contracts, originally known as New Engineering Contract, has been used to deliver building and engineering schemes globally since its first publication in 1993. The NEC suite uses plain language and promotes good communication and management to deliver projects.

5.3.7. The NEC offers five Conditions of Contract options for delivery of engineering projects, including priced, target cost and cost reimbursable contracts. The different conditions, based around common core clauses, seek to allocate risk management to the appropriate party and promote non-adversarial working. The Contract is administered by an appointed Project Manager.

5.3.8. The NEC suite encourages a collaborative approach to deliver schemes and promotes proactive management of risks to deliver schemes on programme and budget.

Preferred Form of Contract

5.3.9. The ICC and NEC contract suites both provide a robust contracting framework through which the NWL could be delivered. They have proven track records for the delivery of infrastructure schemes and are widely accepted within the UK civil engineering industry. The NEC is considered a less adversarial form of contract although the most recent revisions of the ICC have attempted to promote collaboration.

5.3.10. Both the ICC and NEC offer a range of Conditions of Contract that would enable NCC to select conditions that best align to the NWL procurement objectives.

5.3.11. NCC has selected the NEC Engineering and Construction Contract for the NWL. Not only is this the standard form of contract for infrastructure works in the UK, but NCC has previously adopted the NEC for tendered civil engineering, maintenance and professional services contracts. The additional flexibility and existing in-house familiarity with the NEC suite make it the preferred option for the delivery of the NWL.

Contract Strategy

5.3.12. The contract strategy considers which contractual mechanism aligns best with the procurement objectives. The NEC Engineering and Construction Contract suite offers five main conditions of contract options for scheme delivery. They all stimulate best practice management and encourage relationships between the two parties to the contract and hence the work involved in the contract.

- Option A: Priced contract with activity schedule
- Option B: Priced contract with bill of quantities
- Option C: Target cost with activity schedule;
- Option D: Target cost with bill of quantities
- Option E: Cost reimbursable

5.3.13. **Option A** is a priced contract with an activity schedule where the risk of carrying out the work at the agreed price is largely borne by the contractor. Contractors tender for an Option A contract based on lump sum prices for each activity based on their own assessment of the requirements of the activities.

5.3.14. **Option B** is a priced contract with a bill of quantities where the risk of carrying out the work at the agreed prices is largely borne by the contractor. Contractors tender for an Option B contract by completing a bill of quantities prepared by the employer. The quantities required to complete the NWL works are therefore specified by NCC, and NCC would bear the risk of the quantities being wrong.

5.3.15. **Option C** is a target cost contract with an activity schedule where the out-turn financial risks are shared between the client and the contractor in an agreed proportion. Contractors tender a target price based on a list of activities which is then adjusted through the delivery to reflect agreed changes. The contractor is then paid for completed works and a percentage of any savings made during the delivery or the amount paid is reduced by a percentage of any over-spend.

5.3.16. **Option D** is a target cost contract with a bill of quantities where the out-turn financial risks are shared between the client and the contractor in an agreed proportion. Contractors tender and are paid similarly to Option C, but based on a bill of quantities rather that an activity schedule.

5.3.17. **Option E** is a cost reimbursable type contract where the financial risk is taken largely by the client. Under Option E the contractor is paid for works completed plus a fee.

5.3.18. The Options, A to E, offer varying levels of risk exposure, incentivisation and flexibility depending on the procurement objectives and the level of design undertaken prior to tender.

5.3.19. **Figure 5-1** summarises the characteristics of the different NEC Options:

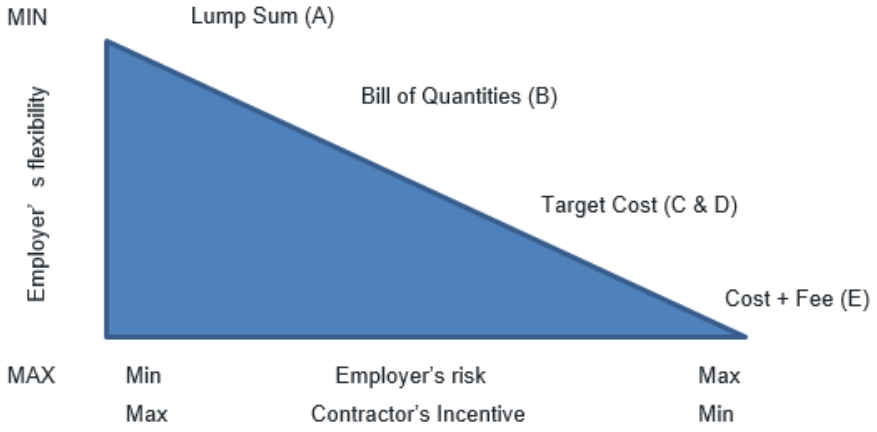


Figure 5-1 - Comparison of NEC Options

5.3.20. The fixed-price contracts offered by Options A and B require a high degree of design maturity. Option A and, to a lesser extent, Option B minimise NCC risk exposure following contract award and incentivise the contractor to deliver the NWL in the most efficient manner. This results in increased cost and programme certainty. As a high degree of design fixity is assumed at the point of tendering, scope for post-award amendment to the scheme is limited. Option B has been discounted as Option A minimises risk exposure more.

5.3.21. A target cost contract strategy, through Option C or D, provides a more balanced allocation of risk between the client and contractor, and incentivises both parties to work together to achieve an efficient delivery. In practice, target cost contracts are usually tendered with activity schedules, Option C, rather than with a bill of quantities, Options D. This is because the contract strategy looks to take programme benefit from the reduced need for design maturity, and the contractor's input into the final scheme proposals.

5.3.22. The cost reimbursable strategy offered by Option E places maximum risk with NCC and little incentive for the contractor to deliver works efficiently. A cost reimbursable contract would not generally be considered an appropriate delivery strategy for the main contract works of a large civil engineering infrastructure scheme.

Preferred Contract Strategy

5.3.23. The Contract for the NWL is split into three sections:

- Stage One Work: the development of the detailed design by the Contractor, including support to the Client during the statutory consents process, completing such surveys and investigations as are required, and the setting of the total of the Prices for Stage Two Work.
- Stage Two Work: the construction of the Norwich Western Link.
- Stage Three Work: landscape maintenance.

5.3.24. NEC4 Engineering and Construction Contract June 2017 has been chosen for the NWL with different options chosen for different stages. The main options are:

- A (in respect of the Stage One Lump Sum Work)
- E (in respect of the Stage One Cost Reimbursable Work),
- C (in respect of the Stage Two Work) and
- A (in respect of the Stage Three Work)

5.3.25. The pros and cons of Option A (lump sum) and Option C are set out in **Table 5-1**.

Table 5-1 – Option Comparison

Option	Advantages	Disadvantages
A	Somewhat greater price predictability at start of Stage Two Simpler to administer Quantity and price risks borne by Contractor	Contractor incentivised to cut corners at the expense of quality Contractor's price likely to include high contingency Adversarial relationship more likely to develop Less commercial transparency around compensation events
C	More incentive on Contractor to innovate to achieve a better outturn cost Contractor commercially rewarded for performance Contractor encouraged to identify supply chain efficiency to benefit of both contractor and client Collaborative behaviour incentivised Commercial transparency	Particularly tight project controls needed Reduced cost predictability Reliant on audit accuracy; administratively burdensome

5.3.26. NCC has concluded that the contractor would include a significant amount of contingency in their tendered price if Option A had been adopted for Stage Two, thereby making the works more expensive, and may even choose not to tender due to risk. Incentivising the contractor to innovate and identify supplier chain efficiencies is seen as very positive.

5.3.27. Option A was chosen for Stage One and Three as there is much greater definition of the scope of work required for these stages.

5.3.28. Option E was adopted for Stage One reimbursable work as we cannot accurately define the requirements for the support through the statutory processes, so an allowance has been made on the basis of cost reimbursement.

TYPE OF CONTRACT

5.3.29. A number of contract options were considered:

- Traditional
- Design and Build
- Partnering with Early Contractor Involvement

5.3.30. The advantages and disadvantages of each, and the likely contract form, are summarised as follows.

Traditional

5.3.31. The programme constraint would not impact the delivery of a Traditional contract in the same way. Under a Traditional form of procurement, NCC would deliver the scheme through planning and Public Inquiry. The main works contract would therefore be tendered later in the overall programme

when the scheme design is fully matured. Under the Traditional option, NCC would therefore retain design responsibility and have more control over the final scheme design. Whilst NCC retain more risk to the point of contract award, the risk of change post-contract award is significantly reduced. This leads to increased cost certainty under a Traditional model compared to the other forms of procurement leading to significant cost risk until the procurement process is completed.

5.3.32. A significant constraint is that Traditional contracts typically require certainty of detailed design input, which necessitates adequate time to provide the contractor with buildable design information prior to commencement the procurement process. Where the programme allows for pre-tendering activities to be undertaken in sequence this would extend the overall programme. However, the funding window available for the NWL dictates that detailed design is undertaken in parallel with planning determination. The necessity for detailed design prior to tendering is therefore not critical to the overall programme duration.

5.3.33. A traditional contract would offer the following advantages:

- Principles developed over many years and widely understood
- Client develops the specification
- Risk managed by the Client
- Client retains control and flexibility to change specification
- Award of contract on lowest price basis demonstrates Value for Money

5.3.34. The disadvantages of a traditional contract are as follows:

- Client retains risk of delivery on time and to budget
- No incentive for contractor to innovate
- No link between design and construction
- Nature of all risks are not fully realised at the point of award resulting in the potential for an increase in outturn cost and delays with completion

Design and Build

5.3.35. The advantages of a Design and Build contract include:

- Integration of design and construction leads to efficiencies in cost and time
- Single point of responsibility for the Client
- Risks clearly identified and allocated during the procurement phase
- Stimulates innovation, reducing cost
- Allows the contractor to review the buildability of the design

5.3.36. The disadvantages are as follows:

- There can be reduced competition with fewer companies interested
- Contractor takes on greater risk and prices accordingly
- Lack of flexibility to change the scope
- Quality may be overridden by cost efficiency

5.3.37. The Design and Build model requires a clearly defined brief and requirements.

5.3.38. The Design and Build model generally has a reduced design period when compared to a traditional form of procurement, as design and construction activities can overlap. To achieve the NWL programme, it has been necessary to overlap with pre-construction activities. It is intended that further design be completed in parallel with the planning determination period.

5.3.39. If engaged prior to planning, the risk is shared. If there is a need to amend the contract scope as a result of the planning process, this will need to be an instructed change by the client. If the change is required but does not change the scope, then the risk remains with the contractor.

5.3.40. Two Design and Build options therefore exist. Firstly, the contract be procured based on pre-planning requirements and the contractor's designer is able to undertake further design in parallel to the determination period. This includes the design being developed as part of the negotiation process of the competitive procedure. Secondly, the contract is tendered post-planning and the overall programme is extended to facilitate design post-planning but prior to the Public Inquiry. In both scenarios, knowledge transfer will be critical between the pre-planning designer and the contractor's team who will manage the scheme through Public Inquiry. Both scenarios would benefit from retaining the parties involved in preparing the planning application and the draft Orders through a Public Inquiry.

5.3.41. In order to pursue a Design and Build model, NCC would need to accept either the risk of change through the planning process or a delay to the programme. A delay to the overall delivery programme is not considered acceptable based on the available funding window. The Design and Build model would therefore require acceptance of the planning risk by NCC.

Partnering with Early Contractor Involvement (ECI)

5.3.42. Partnering with ECI would have the following advantages:

- Collaboration between parties
- Risks are better defined than in a more traditional contract
- Opportunities to link design and construction

5.3.43. The disadvantages of ECI include:

- Many of the disadvantages of traditional procurement remain
- Difficult to get the right people involved at an early stage in the development of the project

5.3.44. The ECI model, wherein the Design and Build team can have greatest influence over the scheme proposals, is most effective when procurement is undertaken pre-planning. To achieve the overall NWL delivery programme, however early commencement of the planning preparation is essential. The planning application is programmed for submission in late 2021 and to achieve this pre-application planning discussions have already commenced.

Preferred Contract Type

5.3.45. Although the highways elements of the project are relatively straightforward, the design and construction of the River Wensum Viaduct is complex and would benefit from the collaborative advantages of the Design and Build or ECI models.

5.3.46. With a Design and Build contract the Contractor would take on the responsibility and risk related to the detailed design and construction of complex elements. This reduces risk to the Client, whilst the integration of detailed design with construction could bring about efficiencies. Ensuring affordability and reducing the risk of cost increases are key considerations, because the funding from DfT is likely to be capped at a level which cannot be increased.

5.3.47. A partnering contract with early contractor involvement (ECI) would provide a link between design and construction, though it may not result in full integration of design and construction disciplines. It would however provide a better definition of risks than a conventional contract. It would add value by

enabling some input into construction methodology or impacts during the anticipated planning process. However, the procurement process would take longer than with a Design and Build contract if substantial contractor involvement, such as detailed design work, was required prior to planning submission, and this would lengthen the overall timescale for delivery.

5.3.48. A traditional contract would not provide an active link between design and construction. Risks would not be fully known at the point of award, resulting in the potential for increased outturn costs and delays.

5.3.49. A Design and Build form of contract has therefore been chosen as the most appropriate for this project. NCC's approach captures the benefits of D&B and ECI. The major disadvantage of the Traditional contract is that NCC would not get any contractor input to the design of the viaduct or any scope for the contractor to innovate. NCC would also not know what the approved solution would cost until the tender was received – all clear reasons why we have not selected a Traditional approach

5.3.50. NCC has established the contractors D&B team at tender stage and their design has been developed through the tender process and will be used through the planning process based on a scope provided by the NCC.

PROCUREMENT ROUTE

OJEU Competitive Tender Options

5.3.51. At the time of procurement, schemes valued above £4,733,252 are required to be advertised in the Official Journal of the European Union (OJEU)[24]. Four options within the OJEU procurement process have been considered:

- Open Tender (Regulation 27)
- Restricted Tender (Regulation 28)
- Competitive Dialogue (Regulation 30)
- Competitive with Negotiation (Regulation 29)

5.3.52. These are described as follows and illustrated in **Figure 5-2**.

[24] OJEU thresholds are reviewed annually. Level quoted applies to January 2020.

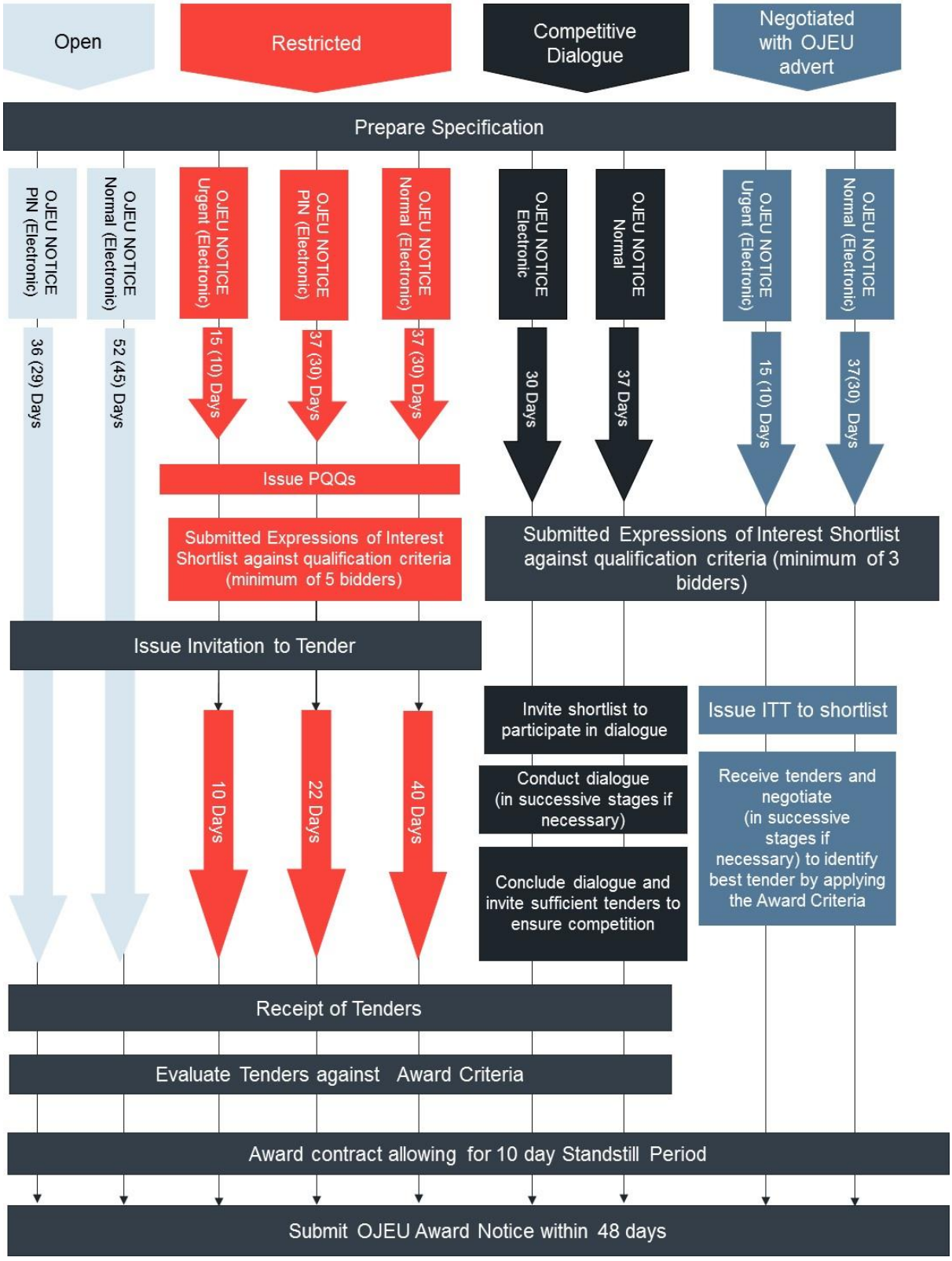


Figure 5-2 - Procurement Options

Open Procedure (Regulation 27)

5.3.53. This procedure allows an unlimited number of interested parties to tender against defined parameters. There are no restrictions (e.g. pre-qualification) on the parties who are permitted to tender, meaning that some parties may not be suitable to carry out the work. This procedure is straightforward and transparent but can attract a large number of potential bidders, consequently requiring a greater degree of assessment and associated resources.

Restricted Procedure (Regulation 28)

5.3.54. This is a two-stage procedure with a pre-qualification process. The first stage allows the contracting authority to set the minimum criteria relating to technical, economic and financial capabilities that the potential bidders have to satisfy. Following evaluation of the responses to the first stage a minimum of five bidders (unless fewer qualify) are invited to tender in the second stage. It is possible to do this over an accelerated timescale, referred to as an Accelerated Restricted Procedure.

Competitive Procedure with Negotiation (CPN, Regulation 29)

5.3.55. This procedure is intended to be used where minimum requirements are able to be specified but negotiations with bidders may be needed to improve the initial tenders. The grounds for using this procedure are as follows:

- Where needs cannot be met without adaptation of readily available solutions
- Where the contract includes design or innovative solutions
- Where the requirement is complex in nature, in its legal and financial make-up or because of its risks
- Where the technical specifications cannot be established with sufficient precision
- In the case of unacceptable/irregular tenders

5.3.56. Within this procedure, bidders initially submit tenders based on the information issued by the contracting authority. The contracting authority is then able to review the tenders it has received and negotiate with the bidders, after which the tenders will be resubmitted.

5.3.57. This procedure may therefore be useful where the requirements are well developed initially, and full tender documents can be produced but it is felt that there may be advantage in retaining the ability to negotiate if there are certain aspects which bidders raise.

Competitive Dialogue (CD, Regulation 30)

5.3.58. This procedure is appropriate for complex contracts where contracting authorities:

- Are not objectively able to define the technical means capable of satisfying their needs or objectives and/or
- Are not objectively able to specify the legal and/or financial make-up of a project

5.3.59. This is a multi-stage procedure. The first stage is a pre-qualification to select the potential bidders to participate in the dialogue. In the second stage the contracting authority enters into a dialogue with the potential bidders to identify and define the means best suited to satisfying their needs.

5.3.60. Any aspect of the contract may be discussed, including technical requirements for the works to be delivered and the commercial/contractual arrangements to be used. The dialogue may be conducted in successive phases with the remaining bidders being invited to tender. By the end of the dialogue phase the contracting authority's requirements will have been determined such that the scheme can

be tendered. In the final stage, the remaining bidders from the dialogue phase are invited to tender for the scheme.

Preferred Procurement Route

5.3.61. There are a number of credible sourcing routes for the NWL. The open procedure is not considered appropriate for a scheme of this scale and complexity. There will be a need for dialogue or negotiation during the process.

5.3.62. The Restricted Procedure is not considered suitable for a scheme of this value and complexity. It does not permit any substantive discussion with the shortlisted bidders. As a result, there is a high probability either that bidders will withdraw, because they are unwilling to accept the Council's terms, that they will price in perceived risk, increasing costs, or the optimum solution will not be delivered.

5.3.63. The procurement routes that are candidates for this tender are the Competitive Procedure with Negotiation (CPN) and the Competitive Dialogue Procedure (CDP).

5.3.64. While the characteristics of the CDP and CPN are largely similar, CDP allows for more flexibility. As noted in the Government Commercial Function's Guidance Note[25], allows:

- For all aspects of the procurement to be discussed
- For limited discussions of final tenders and negotiation on the winning tender to confirm commitments or other terms"

5.3.65. As noted in **section 5.3** and in **section 6.2** of the Management Case, NCC has extensive experience of procuring schemes with Competitive Dialogue. Given the desire for flexibility and this track record, the Norwich Western Link has been procured using the Competitive Dialogue Procedure. Dialogue has been based on the lean sourcing principles developed by the Cabinet Office and successfully implemented by the authority.

5.3.66. The Procurement Team in NCC has extensive experience of running competitive dialogue procurements using the lean principles advocated by the Cabinet Office and consider that competitive dialogue has de-risked the project, as it allows the bidders to challenge the scope, including the design, and helps the bidders have a much greater understanding of the Council's requirements and the rationale for the reference design. The pre-procurement market engagement allowed NCC to test the market's appetite for participating in a competitive dialogue procurement (8 PQQs received). NCC's legal team (nplaw) was fully briefed on the project and NCC also engaged an external lawyer (Geldards) to provide quality assurance.

[25] Government Commercial Function, Competitive Dialogue and Competitive Procedure with Negotiation Guidance Note, June 2020

PROCUREMENT PROCESS

5.3.67. A selection of the milestones listed in the programme (Section 6.5, Management Case) for the tender process are shown in **Table 5-2**. The dates shown in this table are preliminary and may be subject to further review.

Table 5-2 – Procurement Milestones

Task Name	Date
Publication of Tender Notice (Competitive Dialogue)	30 June 2020
Issue of Invitation to Participate in Dialogue to shortlisted Bidders; inform unsuccessful Bidders	21 August 2020
Close dialogue and issue ITT	22 January 2021
Final tender submission	10 February 2021
Tender review process	10 May 2021
Expected date for issuing intention to award letters and for standstill period to commence	11 May 2021
Expected date for standstill period to finish	Midnight UK time on 21 May 2021
Conclude County Council Governance for Approval	24 June 2021
Contract Award (Design Phase)	25 June 2021

5.3.68. On 30 June 2020, an OJEU Contract Notice was published (OJEU 305185-2020). The PQQ was based on PAS91:2017, with the following minimum standards set out:

- A track record of reliably delivering projects of a similar scope and nature, as evidenced by satisfactory references
- Evidence that:
  - Candidates comply with regulatory requirements relating to the filing of statutory accounts
  - Candidates' statutory accounts (if any) have received a 'clean' audit opinion or, where the audit opinion is qualified, suitable, appropriate and timely action has been taken to deal with the issues raised
  - The financial aspects of candidates' businesses (including but not limited to the payment of tax and social security authorities and of other creditors) are properly managed
  - Candidates' businesses are financially sustainable, including adequate liquidity, turnover, profitability, balance sheet strength and cash flow
- Evidence of compliance with equality legislation, health and safety management and measures, Environmental management policy and capability, and environmental management policy and capability.

5.3.69. The criteria shown in **Table 5-3** were applied to shortlist three bidders.

Table 5-3 – Shortlisting Criteria

Subject area	Weighting
Bridge and highways design and construction experience	40%
Efficiencies and savings through innovation and early contractor involvement (ECI)	15%
Supply chain management capability	10%
Stakeholder management capability	15%
Experience in dealing with environmental constraints and statutory bodies	20%
Total	100%

5.3.70. **Table 5-4** shows the technical and commercial award criteria, and their corresponding weightings.

Table 5-4 – Award Criteria

Award Criteria Subject area	Weighting
Construction methodology, such as ▪ Organisation, experience and qualifications of key construction personnel ▪ Environmental management – relevant parts of Construction Environmental Management Plan ▪ Approach to viaduct installation, working in flood plain and protecting the flood plain and the SAC ▪ Logistics ▪ Traffic management ▪ Working with others, including the A47 dualling contractor	25
Engineering design, such as ▪ Organisation, experience and qualifications of key engineering design personnel ▪ Ease and safety of maintenance and minimisation of whole-life maintenance costs ▪ Achievement of environmental objectives for the operational phase	20
Architectural design, such as ▪ Experience and qualifications of key architectural design personnel ▪ Evidence of robust design decision-making to inform Design and Access Statement ▪ Aesthetic quality of proposed viaduct design	13
Programme, such as ▪ Sequencing ▪ Robustness and realism of proposed programme	12
Supply chain, such as ▪ Experience and qualifications of contractor's commercial personnel ▪ Robustness of arrangements with key package suppliers	7

Award Criteria Subject area	Weighting
▪ Approach to tendering packages ▪ Arrangements to encourage bidding by local suppliers	
Health and Safety management approach	Pass/Fail
Landscape Maintenance	Pass/Fail
Total for technical criteria	77
Commercial Aspects including: a) Price composed of: ▪ Price for Stage One (Phase One) Lump Sum Work (preparation for the planning process) ▪ Price for notional basket for Stage One (Phase Two) Cost Reimbursable Work (response to the planning process) ▪ Price for Stage One (Phase Three) Lump Sum Work (detailed design and costing) ▪ Including priced Contractor's risks ▪ Including price of a notional compensation event of 10% ▪ Price for Stage Two Work ▪ Including priced Contractor's risks ▪ Including price of a notional compensation event of 10% b) Robustness of price: ▪ Detail and realism of Contractor's priced risks ▪ Detail of sub-contractor quotations for key packages and alignment with commercial terms in contract	23
Total for commercial criteria	23
Total	100

5.3.71. Eight responses were received to the PQQ, which have been shortlisted down to three, and competitive dialogue was undertaken to determine the preferred delivery partner for the scheme.

5.4 SOURCING OPTIONS

5.4.1. NCC has existing frameworks and contracts in place. The main Highways contracts are with Tarmac, WSP and Norse Highways. They also have access to the Eastern Highways Alliance framework agreement, which is managed by Essex CC. They also use NPS for property matters.

5.4.2. As described above, the scheme has been sourced through advertisement in the Official Journal of the European Union (OJEU) due to its value and complexity. This allowed companies from across the EU to bid for the work.

5.5 PAYMENT MECHANISMS

5.5.1. It is anticipated that payment will be made to the contractor by monthly valuation with a BACS payment within 21 days after the due date for payment.

5.6 PRICING FRAMEWORK AND CHARGING MECHANISMS

5.6.1. The council will make payments in accordance with the form of contract selected, which are.

Table 5-5 – Payment types

Contract Stage	Element	Payment mechanism
Stage One	Design	Lump sum
Stage One	Support to planning process	Cost-reimbursable
Stage Two	Construction	Target cost
Stage Three	Landscape maintenance	Lump sum

5.6.2. Tenderers have been invited to bid on a pricing model, based on the illustrative design material available.

5.6.3. The purpose of the pricing model is to provide:

- A basis for comparison of tenders
- A basis for building up the Stage Two Prices, tied to the Contractor's tendered rates and prices.

5.6.4. The model includes all the major quantities, allowing the Client to compare the bids against each other. Greater detail will be requested on those elements of work where it is envisaged that significant design changes may occur.

5.6.5. The tenders are to be fully inclusive Volume 1 Part E and the Contract Data sets out the only reasons why the tendered budget for Stage two will be varied.

5.6.6. The Contractor would then work with the NCC project team to develop the Target Price over a number of months as the design is finalised (during Stage One).

5.6.7. The Contractor and the NCC project team will hold regular risk and opportunities workshops (possibly on a monthly basis) to develop and manage the avoidance of risk, develop mitigation strategies and review the risk pot. The Contractor will use this information, and the ongoing detailed design to produce a monthly indicative Target Price which will be reviewed by the project team.

5.6.8. Once the Client is satisfied with the Target Price the Contractor would be given the go-ahead to start construction (Stage Two). If the Client is not satisfied with the Target Price the Client has the option of cancelling the contract and going out to tender on the full design.

CONTRACTUAL CLAUSES

5.6.9. The decision has been taken to use NEC4, this will to some extent reduce the need to use ‘Z’ clauses to deal with known issues in NEC3.

5.6.10. The engineering and construction contract (ECC) is considered the most appropriate form of NEC for a contract of this complexity.

5.6.11. The NEC X22 option will be used to enable Contractor design and ECI, to avoid the complexity of integrating a separate Professional Services Contract.

5.6.12. The inevitable risks arising from losing leverage during Stage One (Design and Planning), which is non-competitive, will be mitigated by:

- Clear NEC Pricing Information, setting the ground rules for arriving at the target price from the tendered price
- The backstop position that the Council can go out to tender using the completed design at the end of Stage One if the contractor failed to achieve performance requirements, or if funding consent is not received within six months of Stage One completion, or the total cost of the Norwich Western Link exceeds a stated value.

Dispute resolution

a. As the Construction Act applies, dispute resolution option W2 will be used.

b. An additional tiered dispute resolution process will be included to encourage resolution of disputes without resort to adjudication or the courts.

Additional clauses

a. Clause Z will apply, and 'Z' clauses will cover, amongst other things:

(i) Transparency, as required by the Freedom of Information Act and the Environmental Impact Regulations

(ii) The passing of prompt payment obligations down through the supply chain, as required by the Public Contracts Regulations 2015

(iii) Bribery and corruption

(iv) Social value obligations

b. 'Z' clauses will also be used to join together the three stages of the contract – design, construction, and landscape maintenance – and to allow for the use of different main option clauses at each stage

Insurance and limits of liability

a. The Council will take an approach to insurance and limits of liability based on market norms, as advised by our professional advisers and subject to testing in dialogue.

Environmental law

b. Additional clauses have been added to the contract to ensure that "there is no breach of Environmental law and no harm is caused to the environment".

Table 5-6 – Additional commercial considerations

Issue	Approach	Rationale
Specification	Based on the DfT Specification for Highway Works. Because this is a Design and Build contract, the Contractor's designer will be responsible for completion of aspects of the works specification in accordance	The DfT specification is the industry standard and is an integrated system including the standards for the works and the approach to testing.

Issue	Approach	Rationale
	with its design. It will do so in conformance to the performance specification developed by the Council and its advisers.	
Landscape maintenance period	Bidder to do landscape maintenance for the first 3 years.	Experience suggests (and our advisers confirm) that most attrition to the planting occurs within the first 3 years. It is logical for the maintenance period to correspond with this period during which the Contractor must replace any dead plants and trees.
Delay damages	Delay damages will be required to cover the cost of keeping the Client project team mobilised for any delay period.	A delay in completing the project does not have a direct monetary impact on the Council, other than the cost of its project team.
Performance bond	NCC have reserved the right to request a performance bond.	The premium for a performance bond is significant and would be passed on to the authority. In practice performance bonds are heavily caveated and hard to claim against.
Retention	There will be no retention of any part of the price.	Retentions have a significant impact on cash flow and as such are usually limited such that they are of limited effect. This means that the administrative burden outweighs their effectiveness.

5.7 RISK ALLOCATION AND TRANSFER

5.7.1. The general principle of risk allocation is that risks should be passed to the party best able to manage them, subject to value for money. As discussed in **section 5.3**, the use of Option C will share the risk more between the Client and Contractor when compared to Options A and B. This incentivises both parties to work together to achieve an efficient delivery.

5.7.2. **Table 5-7** provides an assessment of how the associated risks might be apportioned between the Council and the Contractor.

Table 5-7 – Potential Risk Allocation

Risk Category	Potential allocation	
	Council	Contractor
Design risk		The Contractor will have single-point design responsibility
Construction and development risk	The starting point will be the standard risk allocation in the NEC4 ECC contract. This will be tailored to reflect the specifics of the scheme. See further discussion below.	

Risk Category	Potential allocation	
	Council	Contractor
Transition and implementation risk	Risks associated with vehicle traffic flow will be borne by the Client	Successful commissioning will be a Contractor risk
Availability and performance risk	The contract will contain a performance specification; failure to meet this would be a defect. As this will be a target cost contract, the cost of rectification would be shared.	
Operating risk	Not applicable	
Variability of revenue risks	Not applicable	
Termination risks	The contract will enable the Council to terminate in Stage One in the event that funding is not made available or if the final target price exceeds a set limit (subject to indexation). Otherwise, the standard ECC termination position applies, with additional grounds for termination if the Contractor: ▪ is convicted or has been convicted of a criminal offence relating to the conduct of its business or profession; or ▪ commits or is found to have committed an act of grave misconduct in the course of its business or profession; or ▪ fails or has failed to comply with any obligations relating to the payment of any taxes or social security contributions; or ▪ has made any serious misrepresentations in the tendering process for any project or matter in which the public sector has or had a significant participation; or ▪ fails to obtain any necessary licences or to obtain or maintain membership of any relevant body; or ▪ demerges into two or more firms, merges with another firm, incorporates or otherwise changes its legal form or there is a change of control as defined by section 416 of the Income and Corporation Taxes Act and, in any such change of control, there are reasonable grounds relating to the financial standing of the new entity that is proposed to Provide the Works for the Client to withhold its consent.	
Technology and obsolescence risks	Not applicable.	
Residual value risks	Residual value risk is retained by the Council	
Financing risks	Financing risk is retained by the public sector	

Risk Category	Potential allocation	
	Council	Contractor
Legislative risks	A post-contract change in customs tariffs as a result of Brexit will be a compensation event.	NEC option X2 will not be used

Construction Risk

5.7.3. The standard NEC position will be tailored as follows.

Table 5-8 - Construction risk assumptions

Risk	Position
COVID 19	Dealt with differently between the three stage. In Stage One the occurrence of a Coronavirus Event is the Contractor's liability, i.e. a contractor risk, in Stage Two and Stage Three the occurrence of a Coronavirus Event is a Client liability, i.e. a client risk
Physical conditions – flood	The Contractor bears the risk of normal flooding in the flood plain, but NCC bears the risk of exceptional events.
Utilities	The consequences of delay caused by utilities issues will be a compensation event unless the Contractor contributed to the reason for the delay. The contractor and NCC will work together to minimise utility related issues.

5.7.4. Extensive ground investigation (GI) has been undertaken (including in the flood plain) to enable the standard NEC position on physical conditions (Clause 60.1 (12)) to be tightened. The Contractor will be undertaking further GI during Stage One, which could lead to a budget event, but the risk of ground conditions in Stage Two is the Contractor's.

5.7.5. As part of the dialogue process the risk that COVID and other potential pandemics could present to the construction of the scheme was discussed.

5.7.6. Based on the current scheme costs the quantified risk as set out in the Financial Case is allocated in the following proportions: Client risk 83.63%; Contractor risk 16.37%.

5.7.7. The scheme risks will be managed in line with the risk management strategy set out in the Management Case of the OBC.

5.8 CONTRACT LENGTH

5.8.1. From contract signature, it is envisaged that the support to the planning process, the development of the detailed design, appointment of any sub-contractors not forming part of the original consortium, enabling works and mobilisation will together take up to 30 months.

5.8.2. Construction is expected to commence by October 2023 and commissioning is expected to be complete by October 2025.

5.8.3. It is envisaged that the contractor will be contracted to do the landscape maintenance for a period of 3 years after the scheme is open.

5.9 HUMAN RESOURCE ISSUES

5.9.1. No significant human resources issues have been identified that could affect the deliverability of the scheme. No TUPE issues are expected. The Council will provide personnel to perform the role of Project Manager and create a small site supervision team.

5.9.2. More information on the governance and management of the project, including details of the people involved, is set out in the Management Case.

5.10 CONTRACT MANAGEMENT

5.10.1. NCC's highway team will manage the project after award of contract, it is likely that they will be externally resourced to do this.

5.10.2. The form of contract selected provides NCC with a suitable contract at construction to minimise risk, but with increased ability to bring forward the detailed design process in the programme.

5.10.3. Design, procurement, and construction supervision will be managed by NCC and if necessary supported by NCC's Consultants WSP. Both the Council and the consultant has experience in delivering major schemes including the Norwich Northern Distributor Road (NDR), A47/A1042 Postwick Hub Junction Improvement, the A12/A143 Link Road and the Great Yarmouth 3rd River Crossing (currently under construction).

5.10.4. The Project Manager is named within Contract Data as the individual who will administer the contract on behalf of the Employer. The Project Manager will have the designated authority to issue all instructions, notifications and other communications required under the contract. As well as providing general management support and advice to the Project Manager, NCC will undertake the role of Supervisor under the contract with responsibility to check for compliance to the Works Information. Under the contract the responsibilities of the Project Manager or the Supervisor may be delegated but this is not anticipated at this stage.

5.10.5. The Procurement Lead is Joan Murray (Head of Sourcing) MBA MCIPS FCMI FBCS and procurement follows PCR2015 and Cabinet Office guidance including Procurement Policy Notes.

5.10.6. After each major procurement project, there will be a post-procurement 'lessons learnt' review. Each procurement is of course different and has its own unique challenges, but the Broadland Northway (aka NDR) and Great Yarmouth 3rd River Crossing (GYTRC) are both comparable projects, which provided NCC with lessons learnt that have been useful for the NWL project from design through to contract award and beyond. A lesson's learnt report was published in 2019 for Broadland Northway[26]:

5.10.7. The key lessons learnt relating to procurement discussed in the above-mentioned report are summarised as follows:

[26] https://www.norfolk.gov.uk/roads-and-transport/major-projects-and-improvement-plans/norwich/broadland-northway/post-construction-reports

- Early project investment and resourcing of the Infrastructure Delivery team to ensure the Council is better positioned to meet the needs and demands of these major projects.
- Early development of robust contract documents and specifications to reduce the potential for change and the resultant cost of revision and disruption resulting in more efficient delivery and greater predictability of outturn.
- Use of a construction contracts such as Design and Build that gives the contractor the ownership and responsibility for the fully integrated design where there was the need for specialist engineering skills such as for bridge design. This captures the contractors innovation and expertise but also transfers the risk to the contractor.
- Use of a price ceiling 'break point' in the contract at target cost stage. This means if costs increase significantly before the build begins then the contract can be ended.
- Use of experienced commercial specialists to support the contract development and procurement process to provide a firm base for project objectives, reduce the potential for contractual ambiguity and provided the necessary commercial controls to ensure contractor delivery compliance.
- The use of competitive dialogue within the procurement process with bidders to help ensure that the project objectives are understood and draw out potential issues for early resolution.

5.10.8. The outcomes from the NWL post-procurement review can be shared once this has been completed. From a procurement challenge perspective, the Council has a robust process, which has been developed and enhanced to take account of new case law. The feedback provided to bidders contains the detailed rationale for the scoring. There is a full audit trail of evaluation process. The evaluators are subject matter experts, who make their own assessments before meeting as a group to agree the scores."

5.10.9. More detail on contract management will be provided in the Full Business Case.

Commercial Viability

5.10.10. The information above provides evidence that the scheme is commercially viable, with a robust contracting and procurement strategy. The Council has confidence that the contractual and commercial arrangements are appropriate and workable. Specifically:

- The OJEU "competitive dialogue" procurement strategy has been successfully used by the Council on a number of large-scale works and other schemes. The proposed approach is in full accordance with the Council's procurement systems and processes.
- The procurement route includes risk management as a core principle, using strategies of risk allocation and transfer to the contractor. It includes the use of disincentives, such as penalties for programme overruns or missing key milestones, in order to achieve delivery on time and to the required quality.
- There has been considerable interest in the project. Eight responses were received to the PQQ, which included joint ventures between different companies. The three bidders shortlisted demonstrated a wealth of experience on similar projects.

5.11 SUMMARY OF THE COMMERCIAL CASE

5.11.1. The scheme will use the OJEU 'competitive dialogue procedure' procurement route. This is appropriate for a large-scale infrastructure project as it provides for the pre-qualification of suppliers based on their financial standing and technical or professional capability and for dialogue on cost and risk.

5.11.2. A Design and Build form of contract is considered to be the most appropriate for this project. It will involve the Contractor at an early stage to develop the design and help ensure that a buildable and affordable scheme is available.

5.11.3. The contract also includes an initial landscape maintenance period of 3 years.

5.11.4. The Contract for the NWL is split into three sections:

- Stage One Work: the development of the detailed design by the Contractor, including support to the Client during the statutory consents process, completing such surveys and investigations as are required, and the setting of the total of the Prices for Stage Two Work.
- Stage Two Work: the construction of the Norwich Western Link.
- Stage Three Work: landscape maintenance.

5.11.5. NEC4 Engineering and Construction Contract June 2017 has been chosen for the NWL with different options chosen for different stages. The main options are:

- A (in respect of the Stage One Lump Sum Work)
- E (in respect of the Stage One Cost Reimbursable Work),
- C (in respect of the Stage Two Work) and
- A (in respect of the Stage Three Work)

5.11.6. The Commercial Case demonstrates that the scheme is commercially viable, with a robust contracting and procurement strategy.

6 MANAGEMENT CASE

6.1 INTRODUCTION

6.1.1. The Management Case sets out the processes and controls in place to manage the implementation of the scheme, and track and realise future benefits. It demonstrates the way in which the scheme will be delivered in accordance with best practice, project planning, governance structure, risk management, communications and stakeholder management, benefits realisation and assurance.

6.1.2. Specifically, this chapter sets out:

- Evidence of similar, large-scale projects that have been successfully delivered
- Programme and project dependencies and interfaces
- Governance arrangements that have been put in place to oversee delivery
- The stakeholder management process
- The strategy for identifying and managing project risks
- The programme for delivery
- How the intended benefits of the scheme will be realised
- How the performance of the scheme will be monitored.

6.2 EVIDENCE OF SIMILAR PROJECTS

6.2.1. NCC has successfully procured and delivered large-scale infrastructure projects since 1999, using the NEC Engineering and Construction Contract. Projects vary in size and complexity and include:

- Broome Ellingham Bypass
- King's Lynn Household Waste Recycling Centre
- Nar Ouse Regeneration Scheme
- Sprowston, Harford and Thickthorn park and ride sites
- Cringleford Cluster (including new development link road)
- A140 refurbishment at Scole
- King's Lynn South Lynn Transport Major
- King's Lynn Major Developments (including new development link road)
- King's Lynn Transport Interchange
- A47/A1042 Postwick Hub Junction
- A12/A143 Link Road
- Norwich Northern Distributor Road (NNDR)

6.2.2. Three of the most recent successful NCC schemes are listed in **Table 6-1**, which sets out the scope of the works, costs, timescales for implementation, and the procurement strategy employed.

Table 6-1 – Experience of Similar Recent Projects

Scheme name	Description	Contract	Form of contract	Approximate total project value	Construction date
A47/A1042 Postwick Hub Junction Improvement	Construction of a new bridge over the A47 and the construction of associated link roads, slip roads, roundabout junctions, a signal-controlled junction and new access arrangements to the existing Park and Ride site	NEC3 Engineering and Construction Contract	Option C, with a Target Price developed from first principles and an incentivised approach, which aimed to deliver the construction works below the target figure	£28m	Construction commenced in May 2014 and opened to traffic in December 2015
A12/A143 Link Road	Construction of a new link between the A12 trunk road and the A143	NCC Term Service Contract - NEC3 Engineering and Construction Contract	Option C, with a Target Price developed from first principles and an incentivised approach, which aimed to deliver the construction works below the target figure	£8m	Construction commenced in September 2014 and opened to traffic in December 2015
Norwich Northern Distributor Road	Construction of 20km dual carriageway, including eight bridges (one over a railway), a grade separated junction, and associated link roads and roundabout junctions	NEC3 Engineering and Construction Contract	Option C, with a Target Price developed from first principles and an incentivised approach, which aimed to deliver the construction works below the target figure	£177m	Construction commenced December 2015 and fully opened to traffic April 2018

6.2.3. The schemes were developed by NCC, and tendered either directly by NCC, or by using the Council's Strategic Partnership Contract or the Highways Term Service Contract. All three used an Option C Target Cost Contract. NCC has fulfilled the role of Project Manager.

6.2.4. Construction started on the Great Yarmouth 3rd River Crossing in January 2021, it is funded by DfT and has been approved. The river crossing scheme is using the NEC4 Engineering and Construction Contract Option C.

6.2.5. The proposed form of Contract for the construction of the NWL scheme is the NEC4 Engineering and Construction Contract Option C.

6.2.6. Wherever possible, the delivery process for NWL will be improved by acting on the lessons learned on previous schemes. This includes:

- Using knowledge and experience gained during the Town and Country Planning Act (TCPA) process to assist with the development of the **TCPA application** submission, preparation for and attendance at Public Inquiry.
- **Resourcing** – Early project investment, and therefore resource, is essential in delivering the project. In recognition of this lesson learnt the NWL delivery team is resourced to ensure that it is better positioned to meet the needs and demands of the project.
- **Contract Strategy** – The NWL contract is a 'design and build' performance arrangement, reflecting the need for specialist bridge engineering input. This form of contract also gives the contractor ownership and responsibility for the design and delivery of the works and reduces NCC's exposure to the cost risks inherent in a project of this nature.
- **Commercial** – There is benefit in investing in the preparation of carefully considered contract documents. For the NWL, NCC has engaged industry specialists to support the contract development and procurement processes. In addition, the NCC project team includes a dedicated specialist commercial manager to ensure adherence to the contract.
- **Design and Specification** – Design change can result in design, supervision and/or administration costs in addition to those related to construction or delay. For the NWL a 'design and build' approach has been adopted that requires the contractor to provide an output solution. This reduces NCC's exposure to design liability and buildability risks.
- **Third Parties** – Utility companies and transport network operator related works can be sources of considerable cost increase and delay. The NWL project team has engaged with both at an early stage in an effort to build third parties into the planning of the scheme and mitigate against unforeseen challenges.
- **Early Contractor Involvement** - Having a collaborative, open and honest relationship with the contractor enables both parties to work together to achieve the target completion date and to identify efficiencies in the programme through value engineering. Early Contractor Involvement allows the contractor to provide construction advice earlier in the process, helping to reduce costs. For the NWL a 'design and build' approach has been adopted, with the contractor developing their design proposals during the procurement process and then being part of the project team from appointment.
- Carrying out as much of the **utility diversion works** as possible prior to the main start of works.
- Carrying out necessary and significant **archaeological excavation** prior to the main start of works wherever possible.

CONSULTANT EXPERIENCE

6.2.7. NCC is being advised by WSP Ltd, the Council's consultant, and a major provider of highway consultancy services to local authorities.

6.2.8. WSP has experience and expertise in developing business cases, securing funding, planning applications and detailed design for major infrastructure projects for central and local government clients. Recent projects include the Shrewsbury North Western Relief Road, the Lowestoft Lake Lothing Third Crossing for Suffolk County Council, Long Stratton Bypass and the Great Yarmouth 3rd River Crossing. WSP is also one of the UK's leading providers of support services to the statutory procedures required to plan, deliver and maintain infrastructure projects, providing land referencing, stakeholder engagement and consultation services, and order management.

CONTRACTOR EXPERIENCE

6.2.9. The contractor selection process used a competitive tender process. The bidders were asked to provide experience of "bridge and highway design and construction experience", and "experience of dealing with environmental constraints and statutory bodies". The bidders were asked to provide credible evidence that their experience and their capabilities are a close match to the specific subject matter of the contract and the specific circumstances and constraints within which it is to be delivered.

6.2.10. The selection and procurement of the contractor is summarised in the Commercial Case.

6.3 PROGRAMME / PROJECT DEPENDENCIES

6.3.1. The NWL is a stand-alone scheme in principle, which could be delivered independently of any other scheme or development. Similarly, no other future schemes or developments are dependent upon it. However, in its present form it has an interaction with the A47 North Tuddenham to East improvement scheme being delivered by Highways England and this is discussed further below.

A47 North Tuddenham to Easton Improvement Scheme

6.3.2. Highways England is currently progressing plans to dual the section of the A47 between North Tuddenham and Easton as part of the Government's Road Investment Strategy for 2021 – 2025. The scheme has a planned construction date of 2022/2023 to 2024/2025. A statutory consultation ran between 26 February and 30 April 2020. A Development Consent Order (DCO) submission was made in March 2021 and accepted for examination by the Planning Inspectorate in April 2021. The NWL intersects with this via a proposed grade separated junction at Wood Lane / Berry's Lane in Honingham. **Figure 6-1** shows the location of the interface of the NWL with the dualling scheme. Should the DCO be unsuccessful or the scheme not brought forward for delivery this would have an effect on the NWL in its present form as Highways England have included for the improvements to the Wood Lane junction and the NWL connection. Both Highways England and NCC are taking advantage of the concurrent delivery of both schemes to collaborate on the junction design.

6.3.3. The construction of the NWL and the A47 North Tuddenham and Easton dualling scheme will be across the same time period with construction of the NWL due to commence in late 2023 with completion due in 2025. The impact of construction of the two schemes being delivered concurrently will be set out in the Environmental Statement and mitigation will be set out in the Construction Environmental Management Plan (CEMP).

6.3.4. The A47 scheme includes improvements to walking and cycling facilities including a new footbridge across the A47, which will tie-in to existing walking and cycling facilities in the area. There is also an underpass at Honingham (linked to PROW improvements near the Wood Lane junction), an underpass at Honingham Church, and an underbridge south of Hockering (linking towards Mattishall and East Tuddenham).

6.3.5. NCC are working with Highways England and their design and build contractor team (Galliford Try / SWECO) to manage the interface the NWL with the A47 dualling scheme. Since July 2019, there have been monthly calls with the Highways England design team, aiming to align the A47 junction works. The agenda for the monthly meetings includes (amongst others) discussion of junction design, transport modelling, constructability, strategic utilities, Non-Motorised User strategy, surveys and data collection, ecology and environmental mitigation.

6.3.6. Sharing of drawings commenced between the two teams in September 2019, seeking to minimise duplication and maximise integration opportunities. Highways England has also provided input to NWL Project Board meetings and provided updates to the Local Liaison Group meetings.

Figure 6-1 - Highways England Wood Lane Junction Northern Roundabout Interface for NWL

Source: Highways England DCO Report

Transforming Cities Fund (TCF)

6.3.7. Following successful applications Norfolk Councy Council is delivering Tranche 1 and 2 of TCF which is an ambitious programme of works that aims to make significant improvements to the level of public transport services available within the Greater Norwich area and also included a significant private-sector contribution for new and refurbished buses, reflecting confidence and support for the proposals from the area's largest bus operator. In additional to this, a series of walking and cycling improvements across the area is proposed. In combination these improvements aim to reduce

reliance on private cars to access areas on employment and education. Part of the plan to improve the way people travel is to provide improved transport infrastructure so that trips that don't need to be routed through the city have viable alternatives, such as the outer ring road, associated radial routes and Broadland Northway.

6.3.8. The NWL scheme and associated sustainable transport measures are not dependent on these schemes but will be complementary. The NWL scheme will improve walking and cycling infrastructure in the vicinity of the programme and will include tie-ins/connections to existing infrastructure. The Dereham Road improvements include widening of the off-carriageway path for use by cyclists and introduction of new bus lanes on the approaches to a key junction (due to be completed by July 2021), upgrading an existing crossing with a shared path facility (due to be completed December 2021) and provision of a bus gate and mobility hub for Costessey and Bowthorpe (due for completion April 2022). All these schemes are due to be implemented prior to the construction of the NWL.

Sustainable Transport Strategy

6.3.9. An NWL Sustainable Transport Strategy has been developed through public and key stakeholder consultation, seeking to maximise opportunities for transferring shorter distance band trips to non-motorised modes of travel such as walking and cycling where possible.

6.3.10. The Sustainable Transport Strategy also seeks to improve links between existing and growing communities, and helping to alleviate congestion in the inner routes close to Norwich. It is three-fold - it includes a Non-Motorised User Strategy, wider interventions for creating 'cycle friendly' strategic routes and a bus strategy.

6.3.11. To inform the development of Non-Motorised User interventions, a Walking, Cycling & Horse Riding Assessment and Review was undertaken in accordance with DMRB GG142. This guidance is prepared in line with Highways England's Strategic Business Plan and Road Investment Strategy, as well as the Infrastructure Act 2015. This identified opportunities for improving the network of routes available to Non-Motorised Users within a 5km study area around the NWL.

6.3.12. Working with local transport stakeholders and the established Local Liaison Group to help generate ideas, initial options for enhancing Non-Motorised User provision were discussed and developed via a series of workshops. Key themes emerging from the workshops highlighted a desire to avoid closing existing PROWs, but it was recognised that some localised diversions would be necessary and this may also be helpful in joining up the scheme with existing PROWs and responding to the NWL highway design.

6.3.13. Connecting nearby rural communities such as Ringland, Weston Longville and Attlebridge which share local facilities was also a key focus, as well as improving access to the Marriott's Way which is a major well-used NMU route (on the line of a former railway), offering a segregated and direct route from the west of the study area, north of A1067 to central Norwich.

6.3.14. Consideration was given to improve non-car access to schools, medical facilities and enhance sustainable links with key workplaces on the western fringe of Norwich (such as Norfolk and Norwich University Hospital and Norwich Research Park), as well as supporting future growth of the Food Enterprise Zone.

6.4 GOVERNANCE, ORGANISATIONAL STRUCTURE AND ROLES

6.4.1. The governance structure for the delivery of the NWL builds on a tried and tested structure utilised by NCC for the successful delivery of previous schemes.

6.4.2. To ensure successful delivery of the scheme, NCC has established and will continue to resource the following bodies:

- Project Board
- Project Delivery Team
- Member Group
- Stakeholder Groups

6.4.3. The organisational and governance structure is illustrated in **Figure 6-2,** which shows the essential lines of accountability and responsibility. At the heart of project governance is the Project Board, which is accountable through the Project Sponsor to NCC, and responsible for reviewing the scheme and taking key decisions. The Senior Responsible Officer is accountable to the Project Board and is responsible for the work of the Delivery Team. The diagram also shows how the Local Enterprise Partnership and stakeholders relate to project governance.

PROJECT SPONSOR

6.4.4. The Project Sponsor is NCC, represented by Tom McCabe, the Council's Executive Director of Community and Environmental Services, and who is also the Head of Paid Service. As Chair of the Project Board, the Project Sponsor is responsible for reviewing the scheme and taking key decisions.

SENIOR RESPONSIBLE OFFICER

6.4.5. The Senior Responsible Officer is David Allfrey, Infrastructure Delivery Manager, Highways and Waste, Communities and Environmental Services at NCC. He is responsible for the successful delivery of the project, ensuring that it meets its objectives and delivers its intended benefits.

6.4.6. David Allfrey is a Chartered Civil Engineer and a Member of the Institution of Civil Engineers (ICE). He has over 30 years' experience working in the construction industry. For the last 25 years he has worked for NCC specialising in highways design and maintenance, and supervising and delivering a wide range of highway maintenance and major improvement schemes, including:

- The Nar Ouse Regeneration Route in King's Lynn
- A47/A1042 Postwick Hub Junction
- Norwich Northern Distributor Road
- Great Yarmouth 3rd River Crossing

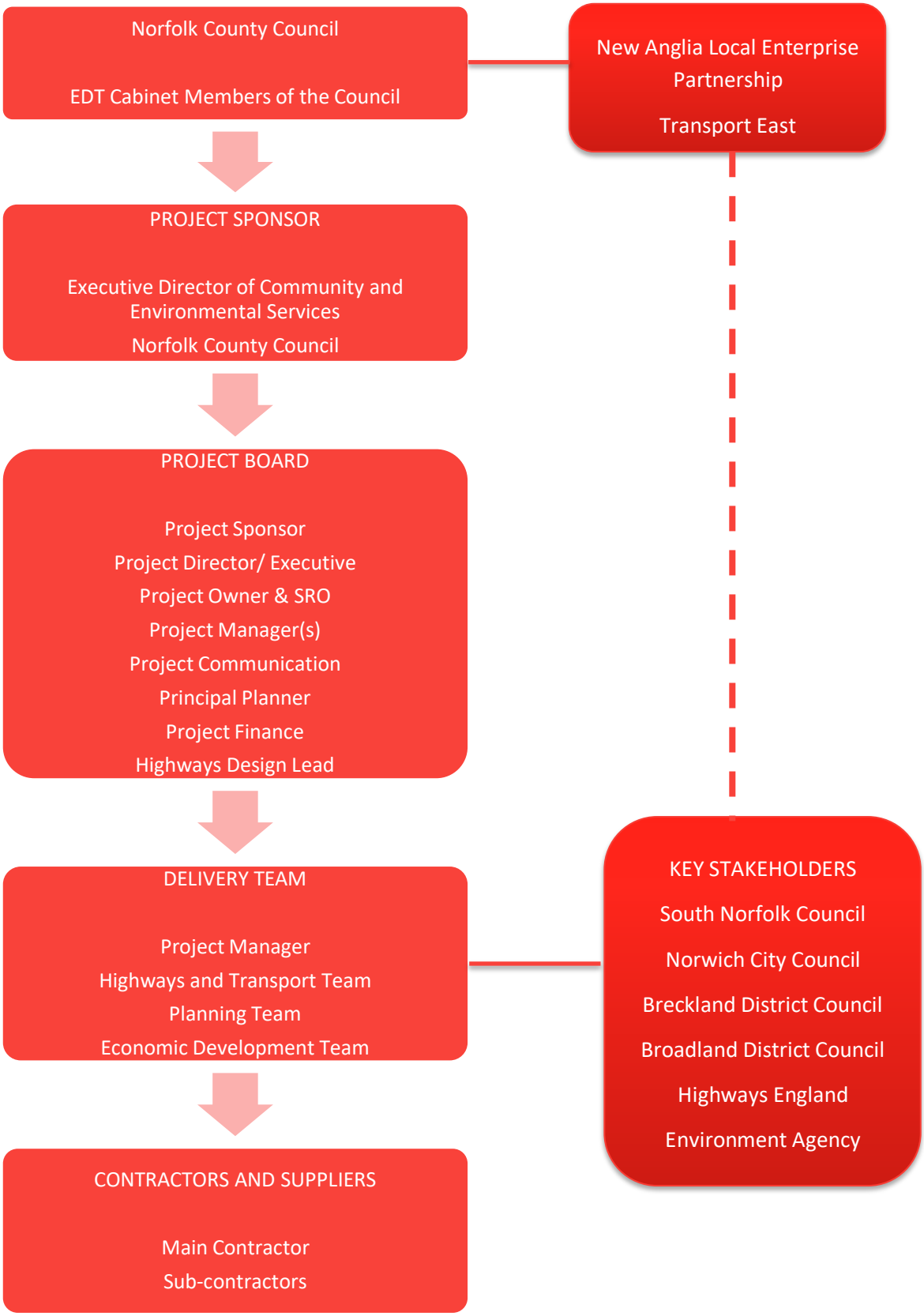


Figure 6-2: - Project Governance Diagram

PROJECT BOARD

6.4.7. NCC has established a Project Board for the scheme. In line with best practice, the board includes representatives of NCC, district councils and Highways England. The main roles of the board are decision making and review. The board enables stakeholders the ability to feed information into the decision-making process and produce a more holistic approach to the management of the project.

6.4.8. The Project Board meets monthly and will continue to do so until the project has been completed. It will subsequently make arrangements for ongoing oversight and the reporting of monitoring and evaluation.

6.4.9. The current Project Board is shown in **Table 6-2**, as follows.

Table 6-2 – Project Board

Role	Responsibilities	Name	Position
Project Sponsor	Chair of Project Board	Tom McCabe	Executive Director of Community and Environmental Services (NCC)
Project Director/Executive	Oversee the development and coordination of the case for the project and ensure it remains in line with the wider county council and LEP priorities	Grahame Bygrave	Assistant Director Highways & Waste (NCC)
Project Owner and Senior Responsible Owner (SRO)	Responsible for the successful delivery of the project, ensuring that it meets its objectives and delivers its intended benefits	David Allfrey	Infrastructure Delivery Manager (NCC)
Principal Planner	Responsible for Economic Development including transport policy	Stephen Faulkner	Principal Planner (NCC)
Project Finance	Review budget and costs to ensure funding is available	Andrew Skiggs	Finance lead and CES Business Partner (NCC)
Project Stakeholder and Engagement Manager	Responsible for communication planning and management	Susie Lockwood	Project communication lead officer (NCC)
Project Manager – NWL Project	Managing the project to ensure that it delivers the required products within the agreed constraints. Coordinating the work of the delivery team	Chris Fernandez	Project Manager (NCC)

Role	Responsibilities	Name	Position
Director of Procurement	Responsible for the procurement delivery	Al Collier	Director of Procurement (NCC)
Transport East and Local Transport Plan Lead	Provides a link with Transport East and Local Transport Plan	David Cumming	Strategic Transport Team Manager
Land Access and acquisition Lead (NPS)	Norfolk Property Services (NPS) representative to provide an update on land access for surveys and land purchases like blight notices	Grant Brewer	Associate – Valuation & Estates Management
Technical & Stakeholder Manager (WSP)	Responsible for communicating with external stakeholders to ensure successful delivery of the project	Paula Cuthbertson	Stakeholder Manager (WSP)
Project Manager (WSP)	Managing the project to ensure that WSP delivers the required product within the agreed constraints	Shay Goane	Project Manager (WSP)
New Anglia LEP Representative	Represents the interests of the LEP	Ellen Goodwin	Infrastructure Manager (NA LEP)
Broadland District Council & South Norfolk District Council Representative	Represents the interest of Broadland District Council & South Norfolk District Council	Phil Courtier	Head of Planning (Broadland & SNDC)
Breckland Council Representative	Represents the interest of Breckland Council	Matthew Hogan	Executive Manager for Growth (Breckland Council)
Norwich City Council Representative	Represents the interest of Norwich City Council	Graham Nelson	Director of Place (Norwich City Council)
Highways England Representative	Highways England representative, feeding in to the A47 project	Glen Owen	Project Leader A47 Schemes (Highways England)

DELIVERY TEAM

6.4.10. NCC's Delivery Team is led by Chris Fernandez as the NWL Project Manager. It includes representatives of the disciplines and work streams involved in delivering the project to completion. The delivery team meets monthly, or as required. The NWL Project Manager is responsible for determining which disciplines or work streams need to be represented at any particular meeting.

6.4.11. The Delivery Team approach runs from 'cradle to grave', right through the design and construction stages. Each work stream has an individual, detailed, programme to meet the target milestones for the coming year and beyond. These are established by the work stream leads together with the NWL Project Manager at the beginning of the work stream, and these are regularly reviewed and are updated as and when required.

6.4.12. Highlight reports are produced by each work stream to update on programme and progress. These are issued to the WSP Project Manager and fed back to NCC via the NWL Project Manager to ensure coordination of activities and prompt action on any arising challenges. The NWL Project Manager also liaises directly with the Project Owner/SRO on any emerging issues, and they also agree the scope of the reporting to the Project Board.

6.4.13. A monthly delivery team meeting provides an additional forum for discussing challenges as they arise.

6.4.14. The main responsibilities of the delivery team are to:

- Coordinate the different activities that make up the project
- Provide direction to the technical delivery of the project
- Undertake monthly reviews of progress against targets and programme, feeding into the Project Board via the WSP and NWL Project Managers
- Undertake monthly review of the risk register, and initiate corrective action where appropriate to feed into the Project Board via the WSP and NWL Project Managers
- Provide as a minimum quarterly progress reports for the Project Board. The Board will consider any matters of a strategic nature and advise accordingly.

6.4.15. Costs are monitored on a monthly basis. The Commercial Manager maintains the system and takes account of any known committed costs in updating the forecast outturn.

6.4.16. The Project Manager, Commercial Manager and Finance Business Partner review the actual and forecast expenditure against profile and budget and this is reported by exception to the Project Board.

6.4.17. The current Delivery Team is shown in **Table 6.3**.

Table 6.3 – Delivery Team members and roles

Role	Responsibility	Name
Senior Responsible Officer/ Project Owner (NCC)	Provides reports to Project Board	David Allfrey (Infrastructure Delivery Manager)
NWL Project Manager (NCC)	Project delivery lead, coordinating work streams and key activities	Chris Fernandez (Project Manager)
NWL Commercial Manager (NCC)	Maintains the costs system and takes account of any known committed costs	Brett Rivett

Project Manager NEC (NCC)	Manages the Design & Build Contractor	Mark Kemp
Stakeholder & Communications Lead (NCC)	Develop communications plan Consultation Stakeholder management Press liaison	Susie Lockwood (Project communications lead officer)
Finance Team (NCC)	Financial monitoring and reporting	Andrew Skiggs (Finance Business Partner)
Legal Team (NCC)	Specialist legal advice	NPLaw
Highways and Transport Team (NCC)	Supporting project delivery	Rob Holl (Design Lead) Marcin Kurek (Procurement Lead) John Wetton (Planning Lead) Rebecca Howard (Project Delivery Coordinator) Lydia Deih (Engineer) Kris Pye (Technician) Grahame Johnson (Technician) Ben Levin (Technician)
Programme Team (NPS)	Programme Management	Tony Fletton (Programme Manager, Survey Access) Sophie Taylor (Assistant Programme Officer)
Project Director (WSP)	WSP Project Owner	Luke Wooller (Project Director)
Technical & Stakeholder Manager (WSP)	Reporting on the technical delivery Communicating with external stakeholders	Paula Cuthbertson (Technical & Stakeholder Manager)
WSP Project Manager (WSP)	Develop Full Business Case Coordinate design and delivery Monitoring and evaluation	Shay Goane (Project Manager)
Assistant Project Manager (WSP)	Support the WSP Project Manager to deliver the project	Hayley Brewer (Assistant Project Manager)

Specialist Teams (WSP)	Technical delivery	
Project Support (NCC)	Support to project manager and delivery team	

6.5 PROJECT PLAN/PROGRAMME

6.5.1. A programme has been developed, setting out key project tasks and their duration, the interdependencies between each of the tasks, and key milestones and gateways.

6.5.2. The programme is a live document, with progress against planned task completion monitored against actual progress on a weekly basis by the NWL and WSP Project Managers. The NWL Project Manager reports progress against plan to the Project Board.

6.5.3. Construction is programmed to commence in late 2023 and be completed in late 2025. A detailed project programme is located in **Appendix 6A**. The key milestones are included in **Table 6-4**.

Table 6-4 – Key Delivery Milestones

Milestone	Current estimate
Large Local Majors (LLM) approval to progress to the next stage of development	May 2020
OJEU notice (start of procurement process)	June 2020
Outline Business Case (OBC) submission	June 2021
Design and Build Contractor appointment	June 2021
Formal Pre-application Public Consultation	September 2021
Planning Application submission	February 2022
Completion of design stage of Design and Build Contract	September 2023
Confirmation of all statutory orders and consents	June 2023
Full Business Case (FBC) submission	June 2023
Start of construction work	Late 2023
Road open	Late 2025

6.6 ASSURANCE & APPROVALS PLAN

APPROVALS

6.6.1. The scheme will follow applicable assurance and approval processes at both a national and local level. As the scheme has a value of over £20 million, the business case has been developed in line with the required TAG processes. The business case will need to be signed off to the satisfaction of the NCC Section 151 Officer in their role as the Chief Financial Officer.

6.6.2. The business case will be approved by NCC Cabinet at a local level and follow the relevant Large Local Majors (LLM) funding approval processes. The scheme is fully supported by Transport East (the sub-national transport body) and they have provided a letter of support.

6.6.3. The DfT will assess the technical content of the business case in order to confirm that the scheme meets the relevant criteria across all five cases. After confirming that the scheme meets the criteria, the DfT will then advise Transport Ministers to approve (or decline) the Business Case.

6.6.4. The local funding contribution is discussed within **section 4.3.4** of the Financial Case. The NCC Section 151 Officer has underwritten the local contribution and will approve the release of local funding, when satisfied and appropriate to do so.

ASSURANCE - GATEWAY REVIEWS

6.6.5. It is essential that large, complex and long-running projects are monitored effectively. All major transport schemes must demonstrate that a system for monitoring progress is part of the management structure and plan. The Gateway Review process is a formal assessment of the progress of a project at key stages in its development.

6.6.6. Gateway Reviews will be undertaken in line with the principles set out in the Project Control Handbook[27]. A Gateway review is a 'peer review' in which independent project managers from outside the project use their experience and expertise to examine the progress and likelihood of successful delivery of the project. In the case of the NWL these peer reviews have been undertaken by Local Partnerships.

6.6.7. A Gateway Review provides assurance and support to the SRO that:

- Suitable skills and experience are deployed on the project
- All stakeholders understand the project status and issues
- There is assurance that the project can progress to the next phase
- Time and cost targets have a realistic basis
- Lessons are learned
- The project team are gaining input from appropriate stakeholders.

[27] Highways Agency, April 2013

6.6.8. Gateway Reviews are a mandated assurance process for all publicly funded major projects, although not all reviews will apply to all projects. The SRO and NWL Project Manager will engage early with the relevant parties to agree which gateways are required and when. Throughout the process, guidance and advice will be sought from relevant centres of expertise (e.g. finance, procurement, economists).

6.6.9. The Gateway Reviews will assess the project's viability, the value for money to be achieved, and the proposed approach for achieving delivery of the project's objectives. This approach will allow the review to assure the Project Board that the selected delivery approach is appropriate.

6.6.10. The following are the normal stages for Gateway Reviews, as part of the process of managing stage boundaries:

Gateway Major project phase/stage

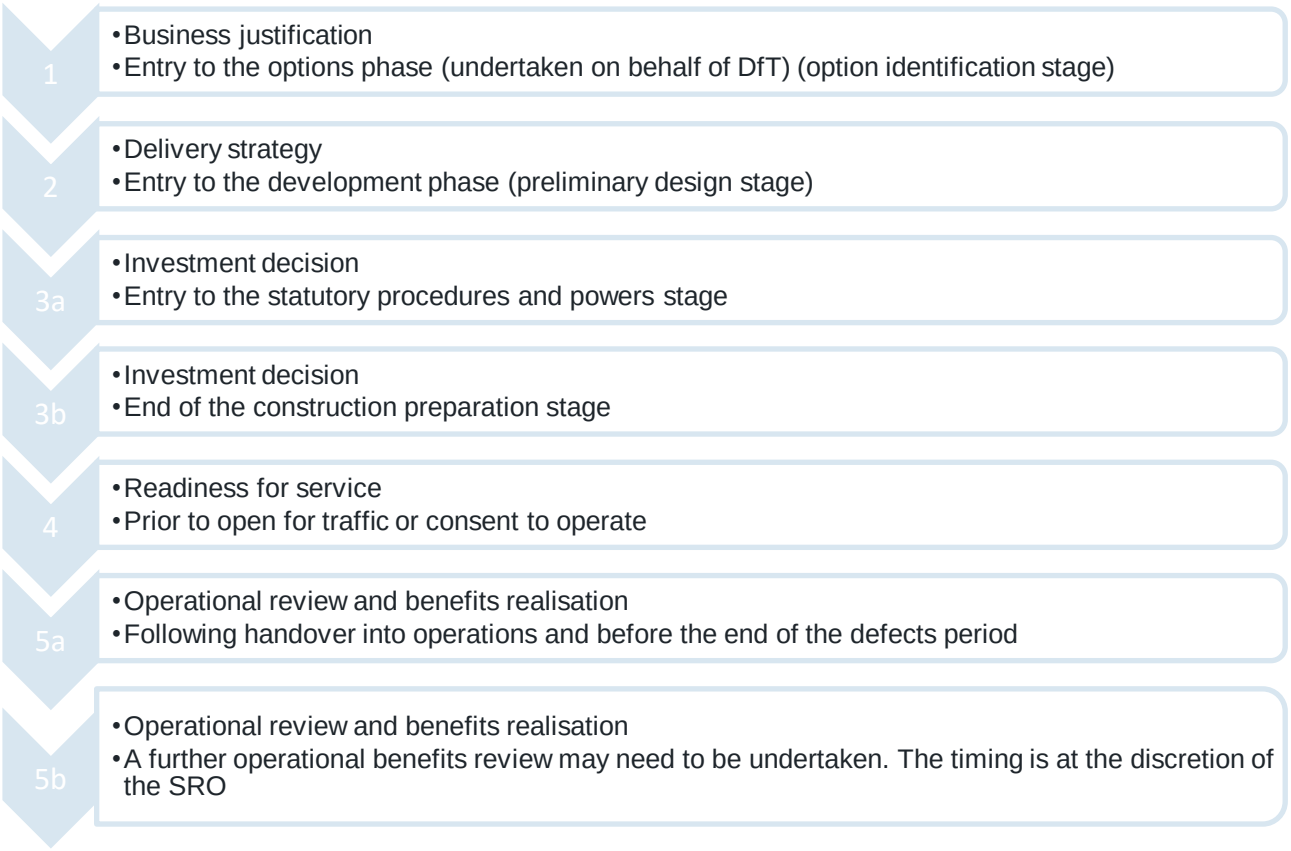


Figure 6-3 - Gateway Review Stages

6.6.11. A Gateway Review covering stages 1 and 2 (option identification and selection) was conducted in November 2019. As part of this review an Action Plan was developed. The following tasks were reviewed as part of the action plan.

- The project team should develop the procurement competitive dialogue phase details as a matter of urgency, alongside the approvals required for the evaluation criteria. This will include, scoping roles, responsibilities and objectives, as well as the careful structuring of each dialogue day, intervals between days, plenary sessions and workstream sessions.

- The project team should ensure that, to avoid a funding shortfall, robust resource management, project cost control and effective change control measures across the project team and advisors are in place and maintained.
- The Review Team recommend that the risk register is reviewed, particularly in light of the controversial nature of project and those risks highlighted above should be reconsidered. Risks should also have an owner and manager.
- The governance structure should be reviewed and membership of both Project Board and project management group rationalised to make sure the focus is on decision making and deliverables.

6.6.12. As of Q2 2021, the NWL is at the Stage 3a Investment decision stage. The assurance and approvals milestones are set out in **Table 6-5**.

Table 6-5 – Assurance and Approvals Milestones

Milestone	Current estimate
NCC Cabinet approval to submit Outline Business Case	June 2021
DfT OBC Approval (anticipated)	September 2021
NCC Cabinet authority to conduct Pre-Application Consultation	June 2021
NCC Cabinet approval to appoint Design and Build Contractor	June 2021
NCC Cabinet authority to submit Planning Application	January 2022
NCC approval to submit Full Business Case	June 2023
DfT Full Business Case decision (anticipated)	September 2023

6.6.13. A gateway review was carried out for the project by Local Partnerships in January 2021, as part of this review an Action Plan was developed. The following review tasks were included in the action plan and are regularly reviewed by the project team. The latest action plan review is attached as Appendix 6B.

- Undertake a review of the current communications and stakeholder engagement strategy ahead of the next phase. Ensure that these strategies are cognisant of the project risk log and the communications function is regularly informed of any project issues and problems as they occur.
- NCC should develop and maintain a programme level financial model, to ensure risks and obligations around local contribution funding are fully understood across the various projects as well as undertaking sensitivity [sic] and scenario tests on the financial and economic case.
- NCC to develop the strongest possible strategic case for the project to support the planning and inquiry processes and ensure its strategic significance is fully reflected. Also consider producing a strategic vision document to assist this.

- NCC should undertake further risk analysis and establish financial contingencies for possible cost growth. Close monitoring of cost and changes during Stage 1 of the contract will be essential and should be regularly reviewed by the Project Board.
- NCC invests in building the commercial skills, knowledge and expertise within the project team as part of the wider creation of an NCC internal resilience plan.
- NCC should consider formalising their lessons learned approach such that a more permanent record of key learning is maintained.

6.7 COMMUNICATIONS AND STAKEHOLDER MANAGEMENT

6.7.1. Susie Lockwood is identified as the Stakeholder and Engagement Manager. Her responsibilities include:

- The delivery of the communications strategy
- Creating and reviewing key communications
- Managing relationships with key stakeholders
- Media relations
- Providing regular updates to the Project Board
- Supporting the project team in planning for events/consultations
- Providing direct support for Members (particularly the Cabinet Member) and senior officers
- Being a key point of contact with the NCC communications team and communications leads at partner organisations.

COMMUNICATION STRATEGY

A communication strategy has been developedThe objectives of the communication strategy are to:

- Clearly and effectively communicate the benefits of and need for the Norwich Western Link, using evidence and independent advocacy to make the case
- Provide reassurance and counter misinformation regarding the ecological and environmental impacts of the project
- Ensure local residents, elected representatives, businesses and affected landowners are kept informed and given opportunities to ask questions and comment on the proposals (including but not limited to public consultations)
- Help raise the profile of, and obtain funding for, the project by securing and evidencing support from key stakeholders and providing compelling information to decision makers
- Reduce or remove negative reputational impacts by anticipating likely criticisms, concerns and controversies and take mitigating action
- Advise the project team around public perception and engagement approaches relating to the technical development of the project.
- Ensure there is clear connectivity with appropriate messaging and engagement relating to Transport for Norwich and Transforming Cities.

6.7.2. The strategy sets out the communication methods to be used and how enquiries from members of the public should be dealt with. It is a live document, which will be regularly updated to reflect changes to the programme and emerging details. It covers the database of stakeholders with whom information and updates are shared. This includes media, landowners and other interested parties.

6.7.3. The local media and community newsletters are informed at key points throughout the project via briefings, press releases and targeted content such as copy, photos, maps and artist's impressions. The NCC website has a dedicated NWL section, which is updated regularly and features a frequently asked questions page[28].

STAKEHOLDERS

6.7.4. Stakeholders have a crucial role in the successful delivery of the scheme. Engagement and consultation give all stakeholder groups a voice that is heard. It allows concerns to be addressed at an early stage to ensure a successful outcome.

6.7.5. NCC has engaged with local stakeholders as part of the preparation of the Outline Business Case.

6.7.6. NCC will build upon the extensive stakeholder engagement already undertaken, and on the relationships developed with businesses, residents and all other interested parties. Stakeholders will continue to be involved throughout the development of the Full Business Case, and the delivery phase. A Stakeholder Management Plan has been developed as part of the wider Communication and Engagement strategy for the scheme.

6.7.7. A stakeholder database is maintained by the NWL project team. Information and updates on the project are shared with them as appropriate in order to keep people with an interest in the project informed. This database comprises:

- Norfolk county councillors, including the Leader and Deputy Leader, cabinet members, the Norwich Western Link member group and local members
- The Norwich Western Link Project Board
- The Norwich Western Link Local Liaison Group (made up of local parish council representatives)
- Parish council clerks
- Local MPs
- Relevant district councils, including chief executives and councillors
- Natural England and the Environment Agency
- The Norwich Western Link Ecology Liaison Group (made up of groups with an interest and expertise in wildlife and habitats and their preservation and management)
- Norfolk Chamber of Commerce
- New Anglia Local Enterprise Partnership
- Highways England
- Department for Transport
- Businesses in the area to the west of Norwich
- Norwich Airport
- Norfolk and Norwich University Hospital

[28] https://www.norfolk.gov.uk/roads-and-transport/major-projects-and-improvement-plans/norwich/norwich-western-link/your-questions-answered

- Norfolk Police
- Norfolk Fire and Rescue Service
- East of England Ambulance Service
- Norwich Research Park
- Easton and Otley College
- Road Haulage Association
- Regional haulage companies
- Public transport providers
- Anglia Farmers
- Walking and cycling groups
- Local Access Forum
- Campaign groups

6.7.8. Members of the local and regional media are communicated with via press releases, briefings and reactive enquiries and in accordance with NCC's media protocols.

6.7.9. NCC has engaged NPS Property Consultants to be the primary liaison with affected landowners. NPS are experts in this field and advise on the County Council's legal obligations, as well as the implications of the scheme on landowners and their rights.

COMMUNICATION METHODS

6.7.10. The main communications methods used are:

- Website – the Norwich Western Link webpages on the Norfolk County Council website (www.norfolk.gov.uk/nwl) will remain the core information resource, serving both as a comprehensive reference library for background information and a source of the latest updates, utilising maps, visualisations, photos and videos. A frequently asked questions section is maintained. All other communications will direct people to the webpages to find out more about the project. The webpages are reviewed monthly and updated regularly to ensure up-to-date information is provided, with substantial updates planned to coincide with significant project milestones.
- Email – Updates about the project are sent to a database of stakeholders and those registered to receive updates through the consultation websites. A project email address has been set up and this will be promoted as the primary means to get in touch with the project team.
- Social media – updates are posted on Norfolk County Council's Facebook and Twitter accounts, which are well-established and have strong followings.
- Briefings – meetings are offered and arranged with key stakeholders as appropriate ahead of announcements and project milestones, and in response to any concerns being raised. In many instances, these briefings will also serve the purpose of encouraging the stakeholders to share the information via their own channels and advocate for the project. As the Coronavirus pandemic and associated restrictions continue, it is likely that these will need to be carried out remotely, via phone or internet calls. This will be reviewed as and when restrictions are relaxed.
- Local media – good relationships have been built and will be maintained with local editors and reporters. Regular information and multimedia content are provided to them via press releases, interview and photo opportunities, media briefings and site visits.
- Events and meetings – opportunities to attend relevant groups, events and council committees that grant access to multiple key stakeholders are sought out, with the intention of providing updates and answering questions. As the Coronavirus pandemic and associated restrictions

continue, alternatives to face-to-face events and meetings will be sought where appropriate, for example making use of video calling and presenting and providing written updates where this isn't possible (for example, due to digital exclusion). This will be reviewed as and when restrictions are relaxed

- **E-newsletter** – As the project progresses and more detail is confirmed, an e-newsletter will be established to provide a trusted and regular source of information and project updates. This will commence when the contractor has been appointed and people will be encouraged to sign up to receive the newsletter by signing up via the county council website. As the e-newsletter becomes established, it is likely that the stakeholder database will be refined and fewer updates may be sent to this list to avoid information overload and duplication of work.

LIAISON GROUPS

6.7.11. Proactive and regular engagement has been established via four liaison groups:

- Member Group - a cross-party group of county councillors chaired by Cllr Stuart Clancy that meets bi-monthly to receive updates on the project and provides advice and insight to the project team.
- Local Liaison Group - a group comprised of parish council representatives from a wide area to the west of Norwich. The group is chaired by Cllr Martin Wilby, the County Council's Cabinet Member for Highways and Infrastructure and meets bi-monthly to receive updates on the project, provide advice and insight to the project team. The intention is that representatives can then share information with their fellow parish councillors and the wider community.
- Ecology Liaison Group - a group comprising representatives from wildlife groups and organisations with an interest in the Norwich Western Link area. The group is chaired by Ian Ellis, the lead ecologist on the project, and meets every two to three months to receive updates on the project (with an emphasis on the ecological elements) and provide advice and support to the project team, most specifically in relation to mitigation measures and biodiversity net gain approaches.
- **Sustainable transport stakeholder group** – a group comprising representatives from organisations and groups with an interest in measures to support more sustainable forms of transport, including walking, cycling and public transport. The group is chaired by Paula Cuthbertson, who leads on the project's sustainable transport strategy. The group meets to provide input and receive updates on the project's sustainable transport measures. These meetings coincide with relevant project timings rather than being held at regular intervals.

6.7.12. As well as providing a means to keep these key stakeholders updated, it is intended that these groups will limit time and resource demands on the project team by reducing reactive enquiries and one-on-one briefings. Meetings with individual stakeholders and organisations will still be arranged as appropriate.

6.7.13. During the Coronavirus pandemic, meetings with these groups have been carried out remotely via Microsoft Teams. While this presents some challenges, it has generally been an effective means of continuing engagement with groups which otherwise, according to current restrictions, we would not be able to meet all together. In some instances, meetings with individuals, both remotely and in person, have been arranged due to the limitations of the Teams platform e.g. due to technical issues or a hearing disability.

PUBLIC CONSULTATION

6.7.14. Three public consultations have been carried out to date:

- May to July 2018 - Initial consultation on traffic issues to the west of Norwich
- November 2018 to January 2019 - Consultation on shortlist of options
- July to September 2020 - Local Access Consultation on how the council could best support people to walk, cycle and use public transport in the area to the west of Norwich, and for opinions on proposals for local roads that cross the planned Norwich Western Link, as well as for Public Rights of Way in the vicinity of the new road.

Public consultation on transport issues (May to July 2018)

6.7.15. This consultation had two elements - a text-based 'Initial Views' questionnaire and a complementary map on which people could highlight transport issues in specific locations.

6.7.16. The Initial View consultation received more than 1,700 responses, with more than 750 comments from just over 530 contributors 'pinned' to the consultation map.

6.7.17. The results show that the majority of people (64%) who took part in the consultation believe a new road linking the A47 to Broadland Northway (previously the Northern Distributor Road) would help tackle transport issues in the area. This option was selected more than three times as much as the next most popular option, 'Improving existing roads'.

Public consultation on shortlisted options (November 2018 to January 2019)

6.7.18. More than 1,900 people responded to the options consultation, with 1,825 responding via the consultation survey available on the consultation website and 104 sending their responses by letter or email. The consultation website was viewed by 3,475 people and a total of 1,245 people came to 17 consultation events staffed by members of the Norwich Western Link project team.

6.7.19. There was strong support for creating the link road and 77% of respondents either agreed or mostly agreed when asked to what extent they agreed there was a need for a Norwich Western Link. Further details of the public consultation is provided in the Strategic case.

Local Access Consultation (July to September 2020)

6.7.20. The third public consultation; the Local Access Consultation, ran for eight weeks between Monday 27 July and Sunday 20 September 2020. The consultation asked for people's views on how the council could best support people to walk, cycle and use public transport in the area to the west of Norwich, and for opinions on proposals for local roads that cross the planned Norwich Western Link, as well as for Public Rights of Way in the vicinity of the new road. Further details of the public consultation is provided in the Strategic case.

KEY COMMUNICATIONS ACTIVITY SCHEDULE

6.7.21. With construction due to start in late 2023, the communications activity schedule provides high-level milestones for later stages of the project. As the project proceeds and more detail is known, the schedule will be updated.

6.7.22. This schedule is based on the project programme, which assumes statutory processes are completed as anticipated.

Dates	Project activity	Communications activity	Audience
Summer 2021	Cabinet report to seek permission to submit OBC and appoint contractor	Press release, briefings, email and news update, website and social media updates, reactive statements and Q&As prepared	Everyone
Summer 2021	Contractor appointed	Press release, briefings, email and news update, website and social media updates	Everyone
Summer 2021	Outline Business Case submission	Press release, briefings, email and news update, website and social media update	Everyone
Summer 2021	n/a	Provide advice and information as appropriate on Norwich Western Link-related aspects of Transport for Norwich Strategy public consultation and prepare relevant Q&As	Everyone
Summer/autumn 2021	Lobbying work to support Outline Business Case submission and maintain/gain support	Briefings, events and meetings, supported by targeted material (e.g. briefing notes and brochures	Key stakeholders and decision makers
Summer/autumn 2021	n/a	Launch e-newsletter	Everyone
Autumn 2021	Pre-planning application public consultation	Pre-publicity, briefings, design work (brochure, leaflets, exhibition boards), press releases and media briefings, email and news updates, website and social media updates	Everyone
Autumn 2021	DfT OBC approval	Press release, briefings, email and news update, website and social media update	Everyone
Early 2022	Cabinet report seeking approval for planning application	Press release, email and news update, website and social media updates, briefings and meeting	Everyone
Early 2022	Planning application submission	Email to key stakeholders, website update (	Everyone

Dates	Project activity	Communications activity	Audience
Mid 2022	Determination of planning decision (if not called in)	Press release, briefings, email and news update, website and social media update.	Everyone
Late 2022	Public Inquiry (if occurs)	TBC	
June 2023	Full Business Case (FBC) submitted to DfT	TBC	
Late 2023	Start of works on site	Photo call with key stakeholders. Press release, email and news update. Update website and social media	Everyone
Late 2025	Norwich Western Link open to the public	Official opening event and announcement. Press release, email and news update, update website and social media	Everyone

6.8 PROJECT REPORTING

6.8.1. Project reporting is a live process throughout the life cycle of the project, addressing the reporting of progress, risks and change. This involves the following regular actions, as well as additional reporting as and when required:

- The NWL Project Manager reports to the Project Board at each Project Board meeting
- The WSP Delivery Team leads report to the WSP Project Manager monthly in advance of Project Board meetings and hold bi-weekly calls to discuss progress. The WSP Project Manager then reports to the NWL Project Manager, who also raises any key issues with the Project Owner/SRO.

6.8.2. Progress is reported by the project team to the NCC's Cabinet, which has executive powers. Intervening reports are prepared where decisions by the Cabinet are needed. The Senior Responsible Officer provides updates to the responsible Cabinet Member. This ensures appropriate involvement of the elected members in this important project.

6.8.3. In specific circumstances, Cabinet can give powers to either the Project Board or the Chair of the Project Board (Executive Director of Community and Environmental Services) to make specific decisions on projects.

6.8.4. The Senior Responsible Officer reviews the actual and forecast expenditure against profile and budget and reports by exception to the Project Board.

6.9 RISK MANAGEMENT STRATEGY

6.9.1. In line with project reporting, the risk management strategy will be updated on an ongoing basis to capture the progress of the scheme and assist with programme management.

6.9.2. Annex 5 of the HM Treasury Green Book states that “effective risk management helps the achievement of wider aims, such as effective change management, the efficient use of resources, better project management, minimising waste and fraud, and supporting innovation”.

6.9.3. A four-stage risk management process has been followed, as illustrated in **Figure 6-4**:

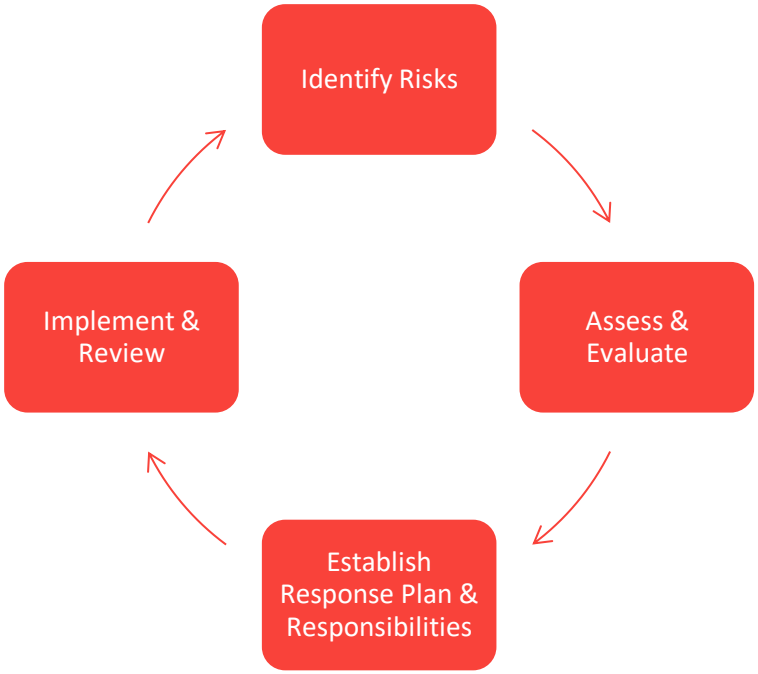


Figure 6-4 - The 4-stage risk management process

IDENTIFYING RISKS

6.9.4. A Risk Register was initially developed in June 2018 to consider risks associated with the options and preferred scheme, and to provide up-to-date input to the above process. Risks were identified by specialists in highways and structural engineering, geotechnics, transport planning, quantity surveying and the environmental disciplines and entered into the Risk Register. This risk register is a live document, which is a continuous process and new risks are identified by specialists as the scheme progresses. The risk register is updated monthly by the project team and reported to Project Board for challenge / review

6.9.5. Some of the early risks identified included:

- Environmental challenge for the River Wensum Special Area of Conservation (SAC)
- River Wensum SAC prevents crossing of River Wensum (Natura 2000 site)
- Poor surface water drainage design - inadequate pollution control designed into scheme
- Funding for continued scheme development.

6.9.6. Following submission of the OBC and when the Contractor is appointed, quarterly risk workshops are planned with attendees from WSP, NCC and the D&B Contractor

6.9.7. Risks are categorised as strategic or operational and are further classified as:

- Funding/Third Parties
- Programme/Contract
- Scope Change

- Weather
- Design Risk
- Environmental
- Statutory undertakers' services
- Existing structures
- Approvals
- Planning
- Procurement
- Site conditions
- Construction

6.9.8. These are catalogued in the Risk Register. This is a live document, which is continually updated as the project progresses adding new risks and updating progress on existing risks, as well as marking some as closed when appropriate. The current highest scoring risks are summarised in **Table 6-6**.

Table 6-6 – Top Risks from Current risk register (May 2021)

Risk Description (lack of, failure to…)	Impact of Risk	Risk Score	Mitigation	Score Post Mitigation
Objectors disrupt environmental surveys	1. Incomplete surveys and hence assessments may not be suitable for submission to the determining authority 2. Delay to programme while surveys are rescheduled 3. Increase in survey costs 4. Impact on staff physical and mental wellbeing	16	Monitor social media and assess whether disruption to surveys is likley. If disruption is likley, take additional measures such as increasing staff numbers, informing the police and other security measures	3
Award of contract delayed from 01/04/2021 to 25/06/2021.	1. Programme delay resulting in additional costs.	15	Programme review to consider mitigation to minimise or eliminate the effects on Stage Two. Carry out activities at risk.	15
The programme for adoption of the GNLP and LTP are delayed	1. The NWL programme does not align with the plan making process 2. Reference to these policies would need to consider their stage in development	12	Engagement with the GNLP, LTP team and Counsel to understand the programme for inclusion of the NWL.	1
There may be a variation between actual site conditions and assumptions used in design, such as the GI and topographical survey.	1. Ground works costs increase 2. Land take may increase, 3. The drainage design may need revision	12	Intrusive ground investigation surveys to be undertaken sufficiently soon in programme (including ground water monitoring and infiltration testing). Ensure surveys are robust to minimise unknown changes in conditions	6
Sufficiency of the Contractor's Budget for Stage Two Work	1. Increases the total of the Prices for Stage Two. 2. Programme effects, works not included in the Accepted Programme.	12	1. Further work with the preferred bidder to confirm robustness of price and suitable risk allowances	12

Risk Description (lack of, failure to…)	Impact of Risk	Risk Score	Mitigation	Score Post Mitigation
The project red line boundary may increase due to ecology mitigation or the release of further requirements for constructability.	1. Programme delays to reach agreement with landowns/CPO additional land 2. Cost and programme implications of increasing the project red line.	12	Confirm 'potential' compound areas in procurement process. Ensure the worst case scenario is captured and Ecology and other teams have input	2
The planning application takes longer than 24 weeks to determine.	1. Programme delay	12	Early engagement with LPA ensure sufficient resource available for determination.	2
The planning application is viewed by NCC (acting as the Local Planning Authority) as being 'contrary to the development plan'.	This would make getting planning permission more difficult. The Scheme would have to be justified based on 'material considerations', which is a higher bar than getting planning permission for a scheme that is in accordance with the development plan. Also increase the risk that the Secretaty of State calls the application in.	12	Early engagement with the LPA. Ultimately accordance with the development plan is a mattter of judgement, and the planning statement be used to seek NCC's feedback on the approach that has been taken to the issue.	9
Ecology and environment survey data becoming 'out of date' in relation to the planning application date. This is dependant upon the type of flora/fauna and associated habitat.	1. Cost implications of repeating surveys 2. Delay to planning application 3. Design changes as a result of further information	12	Plan re-surveying in case of programme slippage.	2
Late receipt of data or feedback from stakeholders relating to EIA/ES.	1. Delay to submission of the planning application 2. Costs associated with updating assessments and planning documents 3. Challenge to submission based on new evidence	12	Bring forward surveys as much as possible. Ensure comprehensive early engagement with stakeholdrs and the public to minimise unexpected late changes.	2

Risk Description (lack of, failure to…)	Impact of Risk	Risk Score	Mitigation	Score Post Mitigation
The traffic modelling could show the scheme does not have sufficient benefits for a business case resulting from the updated traffic model, HE changes on the A47 or alternative developments emerge as part of the Local Plan 2036.	1. Insufficient BCR to progress scheme. Project costs (including mitigation) may outweigh benefits 2. Model forecasts change	12	1. Update traffic modelling and undertake scenario testing. 2. Consider mitigation costs. 3. Regular engagement with Local Plan team. 4. Engagement with HE as schemes develop so they are coordinated.	1
Design change required to maintain connectivity for walking and cycling. The A47 scheme includes a new walking and cycling route towards Hockering which passes to the north of the Wood Lane junction, across the proposed NWL.	Additional crossing or other design changes to accommodate the re-routing of the new route leading to 1. Additional costs 2. Objection to proposals from stakeholders	10	1. Discussions with HE to consider design solution. 2. Consider alternative routing of NMU's on the NWL	4

6.9.9. While not included in the highest risk items in the May risk register, risks due to COVID are being tracked, including delays to ecological surveys incurred due to the first lockdown.

Quantified risk

6.9.10. *TAG Unit A1.2* requires that all project related risks that may impact on the scheme costs should be identified and quantified in a Quantified Risk Assessment (QRA), in order to produce a risk-adjusted cost estimate.

6.9.11. Risks have been quantified in order to produce a risk-adjusted cost estimate. The range of possible costs associated with each risk has been estimated and each risk assigned a high, medium or low value. The likelihood of each risk occurring was then estimated, and assigned a high, medium, or low value, both before and, where appropriate, after mitigation. For each risk, the cost multiplied by its likelihood gives an expected value. Further detail is provided in the Financial Case Section 4.2.

MANAGING RISKS

6.9.12. NCC managers are encouraged and supported to be innovative whilst understanding the risk and implications so they might make informed decisions. By being risk aware, reviewing its risk appetite and tolerance, NCC is better placed to both take advantage of opportunities and manage threats.

6.9.13. Risk management is a continual process involving the identification and assessment of risks, prioritisation of them and the implementation of actions to mitigate the likelihood of them occurring and potential impact. The Project Board's approach to risk management is proportionate to the decision being made or the impact of the risk, to enable NCC to manage risks in a consistent manner, at all levels.

6.9.14. Each risk receives a description and impact of risk, with each entry assigned a likelihood, impact and risk score. Risk mitigation measures are identified, and progress is recorded against each item. An assessment is made against every item recording the opening risk level, the current risk level and the mitigated risk level.

6.9.15. Having identified scheme risks and undertaken an initial assessment, responsibilities for the management of individual risks are allocated to the most appropriate party with one of four possible strategies adopted:

- **Accept or tolerate consequences** in the event that the risk occurs – In the event that a) the cost of taking any action exceeds the potential benefit gained; or b) there are no alternative courses of action available
- **Treating the risk** – Continuing with the activity that caused the risk by employing four different types of control including preventative, corrective, directive and detective controls
- **Transferring the risk** – Risks could be transferred to a third party e.g. insurer or contractor
- **Terminating the activity** that gives rise to the risk.

6.9.16. The effectiveness of the mitigation will depend on the proper implementation and review of the residual risk, including any secondary risk associated with implementation, at key decision points in the life of the scheme.

6.9.17. To achieve this, scheme risk assessments and their associated mitigation will be regularly reviewed and reported to the Project Board throughout the detailed design and construction stages.

6.9.18. Development of the mitigation to manage risks has been undertaken and will be taken where the likelihood of occurrence and impact can be cost effectively managed.

Transfer of risk to the contractor

6.9.19. The Commercial Case describes how the contract and procurement strategy will seek to place risk with the party best placed to manage or mitigate that risk or manage the consequences should they transpire. Early involvement with the contractor will include an assessment of the appropriate balance of risk. Design risk could be retained by the Council or transferred to the contractor. Delivery and programme risk will substantially rest with the contractor.

6.9.20. The contractor will be required to produce a priced risk register. This will be reviewed as part of the process of target setting and decisions made on the mechanism for sharing risk between the contractor and NCC, ensuring that the proposed allocation provides the best value for money for the project. The risks on which NCC will need to take a view are noted within the Commercial Case **section 5.7**.

6.10 BENEFITS MANAGEMENT AND EVALUATION

BENEFIT REALISATION

6.10.1. This section outlines the approach that will be taken to the preparation of a Benefits Realisation Plan. This enables the benefits and disbenefits that are expected to derive from the project to be planned, tracked, managed, and realised. It helps to demonstrate whether the scheme objectives identified in the Strategic Case are being achieved in terms of the desired "measures for success".

6.10.2. The desired outputs are those tangible effects that are funded and produced directly as a result of the scheme. The desired outcomes are the final impacts brought about by the scheme in the short, medium and long term. The strategic objectives, together with the desired outputs and outcomes are summarised in **Table 6-7** in consideration of the strategic objectives**.**

Table 6-7 – Strategic Objectives (High Level), outputs and outcomes

Strategic objectives	Desired outputs	Desired outcomes
H1 Support sustainable economic growth	A scheme encourages growth locally and regionally, giving easy access to housing and economic drivers while minimising the impact on the environment	Sustain growth Journey time improvements Improved: ▪ connection to airport ▪ connection to new or existing housing ▪ connection to Norwich Research Park ▪ connection to Norfolk Broads – Tourism significant to local economy ▪ connection to Food Enterprise Zone Environmental assets protected, and adverse impacts minimised or mitigated. Improved access to potential housing and business
H2 Improve the quality of life for local communities	Improve access to local facilities while reducing severance	Improve accessibility to local amenities Reduce severance Reduce injury and or death

Strategic objectives	Desired outputs	Desired outcomes
H3 Promote an improved environment	A scheme which helps reduce traffic in environmentally sensitive areas, and which will aim to minimise its total emissions of greenhouse gases and pollutants where possible, particularly in areas with lower air quality. A scheme which has been designed to minimise its own impact on the local built and natural environment	Contribution towards carbon reduction targets wherever possible. Improved health and well-being. Impacts on environmental assets and adverse impacts minimised or mitigated wherever possible The route should avoid or minimise harm to above ground heritage assets and valued landscape resulting from changes to setting
H4 Improve strategic connectivity with the national road network	A scheme which provides a direct road link between the A1067/A1270 and A47 and which reduces journey time for people moving between the respective destinations	Reduced journey time and distance between the A1067/A1270 and the A47. Improved access to the strategic road network Easier, quicker, access between employment, education, social and recreational destinations

6.10.3. The scheme objectives, together with the desired outputs and outcomes are summarised in **Table 6-8** in consideration of the scheme objectives.

Table 6-8 - Scheme Objectives, outputs and outcomes

Scheme specific objectives	Desired outputs	Desired outcomes
S1 Improve connectivity and journey times on the key routes within the Greater Norwich area	A scheme which reduces traffic on existing routes including the those between A1067 and the A47 and the A1067 and A47 themselves	Improved journey time and journey reliability on routes through the area west of Norwich Reduce congestion and delay through the area west of Norwich Reassignment of traffic away from existing routes reducing delay and congestion improving existing accessibility. Reduce emergency response times Improve network resilience
S2 Reduce the impacts of traffic on people and places within the Western area of Greater Norwich	A scheme which reduces traffic on existing routes including the those between A1067 and the A47 and the A1067 and A47 themselves	Reassignment of trips onto appropriate routes Reduce noise in local communities overall in the western area of Greater Norwich Reduce net emissions of CO2 and other greenhouse gases in local communities overall in the area west of Norwich Improve NMU connectivity

Scheme specific objectives	Desired outputs	Desired outcomes
		Improve air quality, especially in the built-up areas of West Norwich Minimise traffic impacts on local residents during construction
S3 Encourage and support walking, cycling and public transport use	Improved/new walking, cycling facilities and PT facilities	Increase in number of trips taken by walking, cycling and public transport Increased access to public transport, walking and cycling facilities
S4 Improve safety on and near the road network, especially for pedestrians and cyclists	Reduced traffic on existing highway network, improved/new walking and cycling facilities	Reduced overall network accident rate Reduce the number of people killed or seriously injured on roads in the area west of Norwich Minimise highway safety impacts and severance during construction.
S5 Protect the natural and built environment, including the integrity of the River Wensum SAC	Greenbridges, onsite and offsite provision of compensatory habitat	Biodiversity Net Gain Minimised impact on landscape Minimised impact on heritage Not affect the integrity of the River Wensum SAC Minimise impact of scheme on climate change Minimise adverse environmental impacts arising from construction
S6 Improve accessibility to key sites in Greater Norwich	New/improved facilities for all modes of transport.	Improved accessibility to Norwich Airport, Norfolk and Norwich University Hospital, Food Enterprise Zone, other key employment sites and education sites Improved accessibility to green areas Improved access to the cycle and Public Rights of Way network

6.10.4. The Benefits Realisation Plan will be linked to the Monitoring and Evaluation Plan described below and will be owned by the NWL Project Manager.

6.11 MONITORING AND EVALUATION PLAN

6.11.1. Monitoring and evaluation are important elements of any major project. They help to determine the extent to which it is meeting its objectives and delivering the expected benefits, helping to improve future decision making. They are defined in HM Treasury's 'Magenta Book' as follows:

- **Monitoring** seeks to check progress against planned targets. It can be defined as the formal reporting and evidencing that spend and outputs are successfully delivered, and milestones met.
- **Evaluation** is the assessment of the initiative's effectiveness and efficiency during and after implementation. It seeks to measure the causal effect of the scheme on planned outcomes and impacts and assessing whether the anticipated benefits have been realised, how this was achieved, or if not, why not.

6.11.2. DfT guidance sets out three levels of monitoring and evaluation as part of the document 'Monitoring and Evaluation for Local Authority Major Schemes':

- Standard monitoring
- Enhanced monitoring
- Fuller evaluation

6.11.3. All schemes are required to conduct the 'Standard' approach; schemes costing more than £50m are expected to follow the 'Enhanced' guidance. Only selected schemes identified by the DfT are expected to conduct 'Fuller' evaluation.

6.11.4. The monitoring process will be undertaken in three stages:

- Pre-construction and during construction (monitoring)
- One year after (monitoring and evaluation)
- Five years after (monitoring and evaluation)

6.11.5. The 'One Year After' report will be published within two years of scheme opening, focusing on the scheme's outcomes. The final 'Five Years After' report will be published within six years of scheme opening, based on analysis of relevant data, including an assessment of the wider impacts of the scheme.

6.11.6. The following measures will be monitored to meet DfT requirements for fuller evaluation:

- Scheme build
- Scheme costs
- Delivered scheme
- Scheme objectives
- Travel demand
- Travel times and reliability
- Impact on the economy
- Carbon
- Noise
- Local air quality
- Accidents

6.11.7. In addition, an assessment will be undertaken to determine the extent to which the scheme has delivered the Value for Money (VfM) that was anticipated in the appraisal set out in the FBC Economic Case. This will be done by re-calculating the benefit-cost ratio (BCR) in both the 'One Year After' and 'Five Years After' reports and comparing it to the BCR calculated in the FBC.

6.11.8. The Monitoring and Evaluation Plan will set out how data will be collected to monitor the scheme's performance in each of these areas.

6.11.9. A logic model is shown in **Figure 6-5**. It provides an illustrative overview of the inputs and activities of the scheme and refers to its outcome measures of performance.

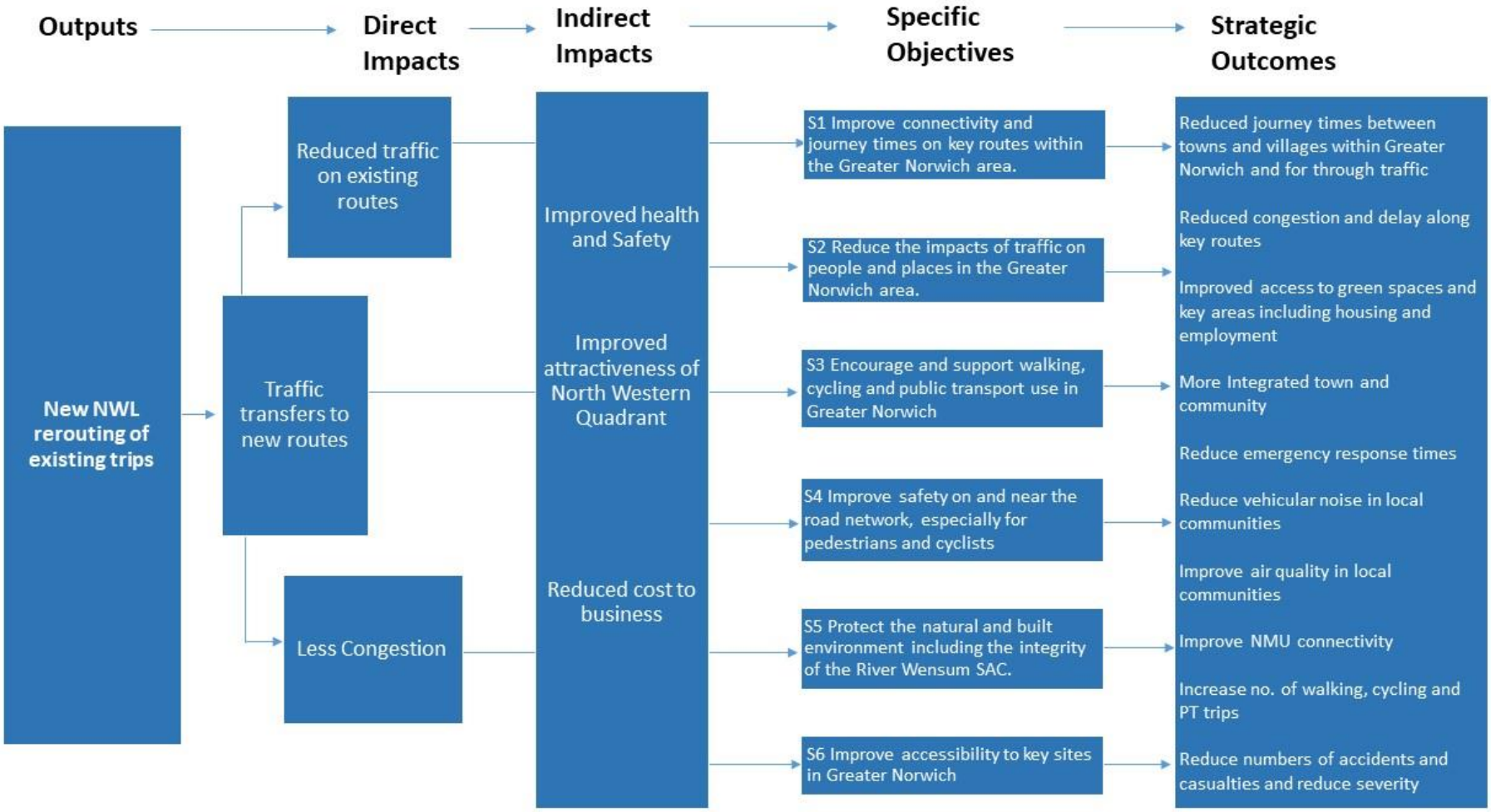


Figure 6-5 - Logic Model

6.11.10. The scheme will be subject to an outcome evaluation. This will compare the existing situation (before construction of the NWL) against the situation with the scheme in place. Any observed changes in the measurements outlined below are assumed to be attributable to the scheme.

Data requirements

6.11.11. The proposed measurements, data required, and frequency of data collection are set out in **Table 6-9:**

Table 6-9 - Data requirements (outline)

Metric	Frequency	Data
INPUTS		
Expenditure	Post Opening	Financial monitoring of project
Funding Breakdown	Post Opening	Financial monitoring of project
In kind resources provided	During delivery	Monitoring of resources delivering the project (use of project diary)
OUTPUTS		
Delivered scheme	Post Opening	Full description of implemented scheme outputs including design changes post funding approval with reasons for such changes, post scheme as built drawings of works completed
OUTCOMES		
Air quality	Pre- and post-construction, Annual up to 5 years post opening	Data from Broadland Council review and assessment of Local Air Quality (statutory duty)
Average daily traffic and by peak / non-peak periods	Pre- and post-construction, Years 1 and 5 post opening	Annual ATCs and turning counts, collected at junctions where interventions made and at wider ATCs across the network
Average AM and PM peak journey time on key routes (journey time measurement)	Pre- and post-construction, Years 1 and 5 post opening	Journey time surveys and DfT Congestion Statistics on Local Authority class 'A' Roads
Cycling and walking usage	Pre- and post-construction, Years 1 and 5 post opening	Cyclist and pedestrian counts on existing routes.
Accident and casualty rates	Pre- and post-construction, Years 1 and 5 post opening	Annual monitoring of collisions (STATS 19)
Average annual CO_2 emissions	Pre- and post-construction, Years 1 and 5 post opening	DfT's Local Authority Carbon Toolkit

6.11.12. The Monitoring and Evaluation Plan will be developed further and included within the Full Business Case.

6.11.13. Following completion of the scheme, environmental monitoring will need to be undertaken. This will be contained within an Operational Environmental Management Plan (OEMP). The OEMP will be produced by the Operational Maintenance Contractor and will be informed by the findings and future monitoring outlined in the Environmental Statement (ES).

Data sources

6.11.14. The monitoring and evaluation for the NWL project will be undertaken by NCC. The following surveys will be undertaken:

- Journey times
- Automatic Traffic Counts
- Turning counts

6.11.15. Manual traffic count data will be collected by NCC on an annual basis, including accidents (STATS19), financial and planning data (e.g. Annual Monitoring Report).

6.11.16. The survey costs will be calculated at Full Business Case stage and will be funded through the County Council's monitoring budget.

6.11.17. The COVID pandemic may have impacts on the data collected. As data is normally collected remotely through CCTV, tubes and digital sources (Bluetooth and satellite navigation), the way that data is collected, however, should not be impacted. It is currently unknown what the long-term impacts of the pandemic on traffic will be, however by the time the baseline traffic is surveyed in 2022/2023 prior to construction starting, the impacts are expected to have levelled out and longer-term impacts will become clearer.

Timescale for evaluation

6.11.18. Prior to starting on site, any gaps in the required baseline evidence will be collected. A baseline evidence report will be completed prior to construction of the scheme. Quarterly reports on progress against programme, costs and risks will be provided to the Project Board during construction of the scheme, and an annual monitoring summary will be produced. Principles of monitoring and evaluation will be in line with Highways England Post Opening Project Evaluation (POPE) requirements.

6.11.19. Monitoring and evaluation will be conducted in line with the main funding bodies' criteria. It is considered that it is likely to adhere to the following methodology:

6.11.20. Data will be collected one year and five years after opening and will be compared against the baseline data. Evaluation reports will be developed at these stages, containing an analysis of all scheme evaluations carried out to date, highlighting any interesting and emerging trends. It is, however, anticipated that wider economic benefits may take longer time frames to manifest. This would invariably have a bearing on the timing of surveys and subsequent reporting.

Setting targets

6.11.21. The Council recognises the importance of setting specific indicators and targets. These will be set at the Full Business Case stage and included in the Monitoring and Evaluation Plan.

Summary of analysis

6.11.22. The monitoring and evaluation will be used to answer the following key questions:

- Have the anticipated outcomes and impacts been achieved?
- To what extent are the observed changes additional to what would have happened in the absence of the intervention?
- Were there any unanticipated impacts / displacement effects?
- Which elements of the scheme were particularly influential in achieving the overall goals?
- What lessons can be learnt for future scheme / policy development?
- What is the contribution of the policy to the LEP's strategic goals?
- To what extent did the anticipated costs and benefits match the actual outcome?
- Has the scheme been successful? If not, why not?

6.11.23. The evaluation of the scheme will:

- Measure the level of traffic congestion on the existing network
- Measure the level of traffic congestion on the improved network
- Measure the levels of accidents on the existing and improved network

6.11.24. The initial one-year impact assessment will be used to understand the impact mainly on journey times and travel patterns. There may be some evidence at this stage of the scheme impact in terms of developments and jobs. The five-year assessment will look at longer term benefits including accidents, travel patterns and jobs / additional investment.

6.12 OPTIONS

6.12.1. The NWL scheme has been identified only after consideration of a wide range of options. An initial long list of potential solutions was drawn up, and these have been, sifted, refined and evaluated to ensure that the NWL scheme is the best possible option.

6.12.2. The process of generating, refining and appraising options is detailed in the 2019 Options Assessment Report (OAR). The OAR was submitted with the application for scheme development costs, and describes the assessments undertaken. The OAR identified a preferred corridor for the scheme.

6.12.3. A summary of the option assessment process is given in the Section 2.12 of the Strategic Case.

6.12.4. The Economic Case describes the most recent assessment of the proposed scheme using models and analytical tools developed subsequent to the OAR.

6.13 SUMMARY OF MANAGEMENT CASE

6.13.1. The Management Case demonstrates that the NWL scheme is capable of being delivered successfully in line with recognised best practice. It describes the processes that are being put in place to ensure that the project is effectively delivered, and properly evaluated.

6.13.2. NCC has extensive recent experience in delivery major infrastructure projects.

6.13.3. The NWL is in principle "stand-alone" scheme, which could be delivered independently of any other scheme or development. Similarly, no other future schemes or developments are dependent upon it.

6.13.4. NCC will continue to liaise very closely with Highways England as the NWL scheme is taken forward and will actively co-operate with any further appraisal or design work that HE may decide to undertake in relation to improvements to the A47 trunk road.

6.13.5. NCC has established and will continue to resource the following bodies:

- Project Board
- Project Delivery Team
- Stakeholder Groups
- Member Group

6.13.6. The Management Case describes the membership, responsibilities and accountability of these groups including the relationship between them.

6.13.7. The NWL scheme continues to be programmed to open to traffic in 2025. The detailed project programme is included in Appendix 6A.

6.13.8. The Management Case details how stakeholders have been involved in the development of the NWL scheme and how they will continue to be involved as the scheme moves into the construction phase.

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