Norfolk County Council

NORWICH WESTERN LINK

Social Impact Appraisal

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Social Impact Appraisal

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CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

1.1 INTRODUCTION

1.1.1. This Social Impact Appraisal report has been developed as part of the Outline Business Case for the Norwich Western Link scheme (NWL) and has been prepared on behalf of Norfolk County Council (NCC) for consideration by the Department for Transport (DfT).

1.2 SCHEME LOCATION

1.2.1. The NWL is located to the east of Norwich and seeks to provide a link between the A47 in the south and the A1607 in the north. The scheme comprises:

- A dual carriageway road, including a viaduct over the River Wensum and associated floodplain;
- A tie-in to the 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;
- Diversion and extension of existing Public Rights of Way and field paths to create a coherent joined up network; and
- Surface water drainage - principally infiltration basins, sediment forebays and associated carrier drains/ channels.

1.2.2. The scheme also includes landscaping, planting, ancillary works, environmental mitigation work and Biodiversity Net Gain measures and a wider network of cycle-friendly route options where traffic relief from the NWL enables improved cycle priority.

Figure 1-1 - Scheme Location

1.3 OVERVIEW OF SOCIAL IMPACT APPRAISAL APPROACH

1.3.1. Social impacts (SI) cover the human experience of the transport system and its impact on social factors, not considered as part of economic or environmental impacts. There are eight social impacts, namely:

- Accidents;
- Physical Activity;
- Security;
- Severance;
- Journey Quality;
- Option and Non-Use Values;
- Accessibility;
- Personal Affordability.

1.3.2. The appraisal has been undertaken in accordance with TAG Unit A4.1: Social Impact Appraisal. All impacts have been assessed qualitatively apart from Accidents and Physical Activity where the impact has been monetised.

1.4 STRUCTURE OF THIS REPORT

1.4.1. The structure of this report covers the assessment for each of the social impacts.

- Chapter 2 covers the assessment for Accidents;
- Chapter 3 covers the assessment for Physical Activity;
- Chapter 4 covers the Security assessment;
- Chapter 5 covers the Severance assessment;
- Chapter 6 covers the Journey Quality assessment;
- Chapter 7 covers the Option and Non-Use Values assessment;
- Chapter 8 covers the Accessibility assessment;
- Chapter 9 covers the Personal Affordability assessment; and
- Chapter 10 summarises the assessment.

2 ACCIDENTS

2.1.1. The appraisal is based on the principle that the implementation of a scheme, as well as any transport intervention, may alter the risk of individuals being killed or injured as a result of collisions.

2.1.2. The social impact derived from the collisions is therefore estimated by the difference in the number of collisions and casualties between the with-scheme and without-scheme scenarios over the appraisal period.

2.1.3. COBALT (COst and Benefit to Accidents – Light Touch) 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) has been appraised for a period of 60 years from the first year of scheme opening.

2.1.4. The assessment is detailed in the Economic Appraisal Report.

3 PHYSICAL ACTIVITY

3.1.1. Physical activity is concerned with whether the intervention is likely to generate significant additional numbers of walking or cycling trips. The appraisal of physical activity reflects the health impacts based on estimating the change in premature death (mortality) resulting from a change in walking and cycling activity. An intervention which increases the number of active users is expected to reduce the relative risk of all-cause mortality.

3.1.2. 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.

3.1.3. The scheme itself is predominantly a highway scheme with some supporting sustainable transport measures. Therefore, the assessment has started with the determination of whether the scheme is likely to cause significant mode shift to/from active modes.

3.1.4. A Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) 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. The WCHAR provides the design team with the relevant background information and identifies opportunities to facilitate the inclusion of all walking, cycling and horse-riding modes in the highway scheme design process.

3.1.5. The WCHAR sets out that the scale of the scheme has been judged to qualify as a large scheme for the purposes of its assessment, therefore the following information is presented in the WCHAR report:

- Review of walking, cycling and horse-riding policies / strategies;
- Collision data;
- Description of public transport facilities;
- Key trip generators and local amenities;
- Site visit;
- Consultation with key stakeholders;
- Description / review of existing walking, cycling and horse-riding network facilities at a local and county wide (strategic) level;
- Collation and analysis of walking, cycling and horse-riding user data; and
- Evidence of consultation with local user groups and the wider public.

3.1.6. The WCHAR identifies a study area of approximately 5km radius around the scheme for the purposes of its assessment. Furthermore, the report outlines the strategic objectives and outcomes for the NWL scheme and identifies those that are relevant to physical activity in red in Table 3-1.

Table 3-1 - Norwich Western Link Objectives and Outcomes relevant to physical activity (in red)

Strategic Objective	Strategic Outcomes
Improve connectivity and journey times on key routes in Greater Norwich	i) Improved journey times and journey time reliability, on routes through the area west of Norwich ii) Reduced congestion and delay through the area west of Norwich iii) Reassignment of traffic away from existing routes reducing delay and congestion iv) Improved existing accessibility v) Reduced emergency response times vi) Improved network resilience vii) A more-suitable direct route for HGV/LGV vehicles viii) Reduced trips on local minor roads for vehicular traffic
Reduce the impacts of traffic on people and places within the western area of Greater Norwich	i) Reassignment of trips onto appropriate routes ii) Reduced noise impacts in built-up areas iii) Improved Non-Motorised User connectivity iv) Improved air quality in built-up areas v) Minimised traffic impacts on local residents during construction in the vicinity of the scheme
Encourage and support walking, cycling and public transport use.	i) Increased number of trips taken by walking, cycling and public transport ii) Increased access to public transport, walking and cycling facilities
Improve safety on and near the road network, especially for pedestrians and cyclists	i) Reduced overall network accident rate ii) Reduce the number of people killed or seriously injured on roads in the area west of Norwich iii) Minimise highway safety impacts and severance during construction
Protect the natural and built environment, including the integrity of the River Wensum SAC	i) Biodiversity Net Gain ii) Minimised impact on landscape iii) Minimised impact on heritage iv) Not affect the integrity of the River Wensum SAC v) Minimise impact of the scheme on climate change vi) Minimise adverse environmental impacts arising from construction
To improve accessibility to key sites in Greater Norwich	i) Improved accessibility to Norwich International Airport, Norfolk & Norwich University Hospital and key employment and education sites i) Improved accessibility to green areas ii) Improved access to the cycle and Public Rights of Way network

3.1.7. The WCHAR report sets out that the study area is located in the rural areas to the west of Norwich city centre, where there are a number of Public Rights of Way (PROWs) available for use. The proposed route alignment of the NWL and that of the preferred route for the North Tuddenham to Easton dualling scheme will sever some of the existing PROWs and Green Lanes:

- Honingham RB1 – The restricted byway will be severed twice, once by the NWL and again by the North Tuddenham to Easton dualling;
- Blackbreck Lane (Ringland Lane to Weston Road), Green Lane – The unsurfaced highway maintained by Norfolk County Council will be severed;
- Ringland FP1 – Will be severed near Attlebridge Hall;
- Hockering FP7 – The footpath will be severed by the North Tuddenham to Easton dualling project; and
- Dog Lane / Ringland Lane – A current pedestrian crossing on the A47 Southern Bypass will be impacted by the new dualling project.

3.1.8. The WCHAR also outlined that the study area encompasses a number of cycling routes and facilities, including those of the Norfolk Trails. There are a number of local cycling groups that will be impacted by the proposed route alignment of the NWL, who have been consulted.

3.1.9. The WCHAR undertook various walking and cycling isochrones to show the walking and cycling accessibility from different origins, key settlements, within the study area. The report sets out that walking can cover a wide area and that key settlements within the study area have strong cycling connectivity. The report summarises that the delivery of the NWL can enhance the level of pedestrian use and cycling connectivity.

3.1.10. The WCHAR identified that a number of equestrian facilities are located within the western part of the study area. The NWL programme could assist with supporting longer distance leisure trips by equestrians; this would consist of giving priority to equestrians / cyclists on quieter existing roads where parallel routes exist and looking at minor highway interventions to keep traffic speeds sufficiently low.

3.1.11. As part of the WCHAR, a nine-day Non-Motorised Users survey was undertaken in October 2019 which recorded the level of usage on the seven routes that will be severed by the NWL. The results were analysed in the WCHAR and summarised in Table 3-2.

Table 3-2 - NMU Survey Results

Route	Pedal cycle	Equestrian	Motorcycle	Car	LGV, OGV & PSV	Pedestrians – lone adult	Pedestrian – adult with dog (s)	Pedestrian – adult with child	Wheelchair / mobility scooter
Honingham RB1									
The Broadway	0	0	0	13	6	1	1	0	0
Breck Road	5	0	0	66	13	3	0	0	0
Weston Road	7	3	1	60	17	4	1	0	0
Blackbreck Lane	0	1	0	0	0	0	1	0	0
Ringland Lane	32	0	2	260	63	2	0	0	0
Ringland FP1									

Note: Honingham RB1 and Ringland FP1 have not been included, as further survey data is needed at a later date

3.1.12. The WCHAR suggested a number of user opportunities which should be considered further during the design stage, these included general, pedestrian, cyclist, equestrian and strategic opportunities. These 33 opportunities are summarised in Figure 3-1.

3.1.13. Following the WCHAR, a Sustainable Transport Strategy (STS) was also developed. The STS is an overarching document that provides a high-level framework for mitigating the transport effects of the scheme. The STS has been developed alongside the main NWL design proposals and presents a range of measures beyond the immediate vicinity of the NWL at a more strategic level to support sustainable travel objectives of the scheme.

3.1.14. The STS outlines that a Non-Motorised User (NMU) Strategy has been developed, focussing on considering the localised issues of severance of existing PROWs arising from the construction of the NWL, aiming to offer a range of solutions to mitigate the impact on pedestrians, cyclists and pedestrians. In order to mitigate severance and loss of PROWs and footpaths/cyclepaths, the NMU Strategy proposes new, retained and enhanced PROWs, footpaths and pedestrian/cycle links.

3.1.15. In order to seek guidance on additional sustainable transport measures to prioritise for packaging with the NWL scheme, a Local Access Consultation was held in summer 2020. This included eight options for wider sustainable transport improvements that could additionally be included within the scheme to improve conditions for walking and cycling to the West of Norwich. The intention of the proposals would be to offer increased opportunities for healthy and sustainable travel by non-car modes on trips within shorter distance bands.

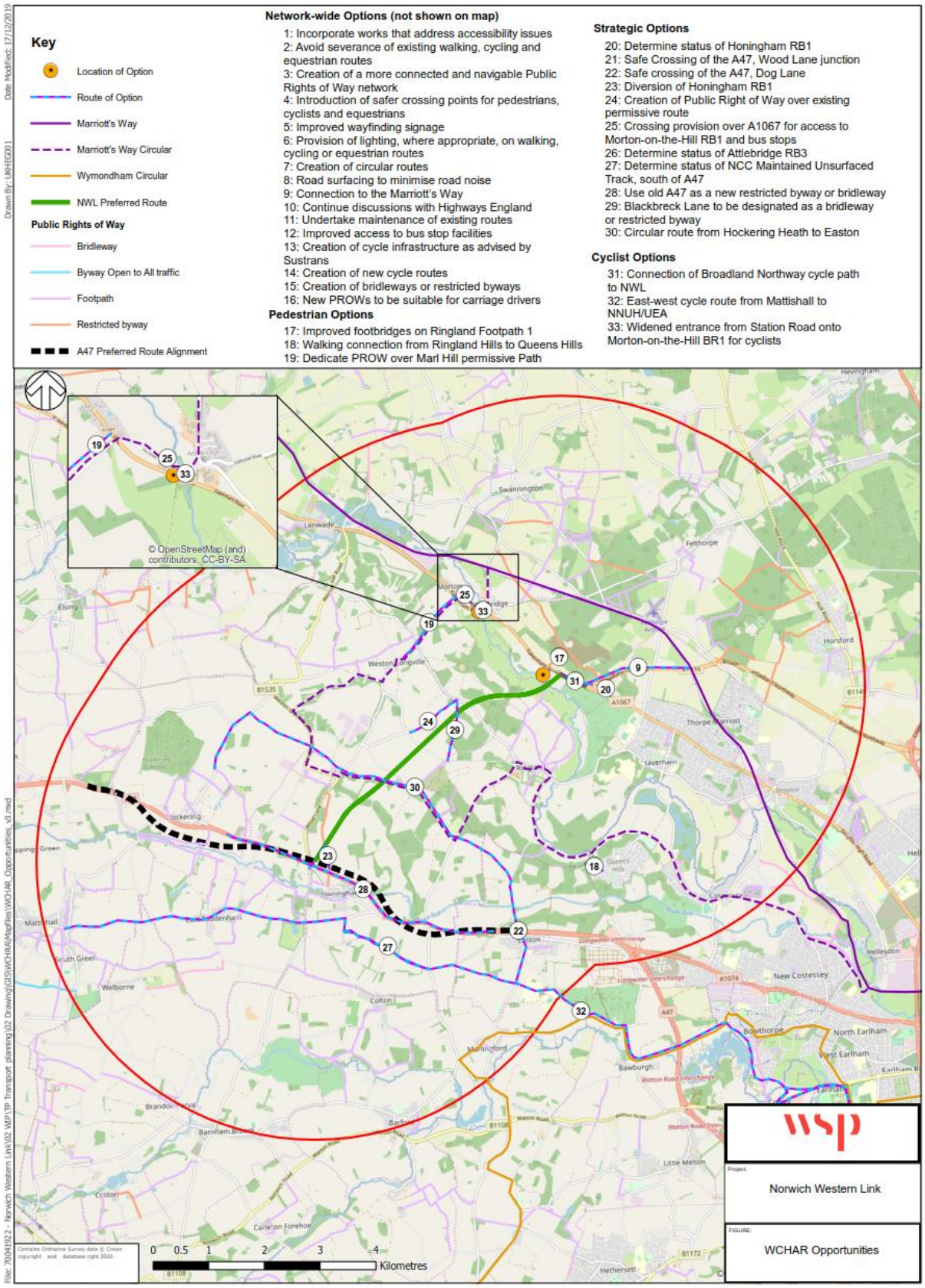


Figure 3-1 - WCHAR Opportunities

3.1.16. A multi-criteria appraisal was used to identify the best performing options for shortlisting. The textual comments from public consultation that were received in response to the July 2020 Local Access Consultation also support this and helped guide the selection of shortlisted options. Four Options were shortlisted:

- Option 3 - new pedestrian and cycle crossing of Drayton High Road to improve connectivity with the Marriott's Way;
- Option 4 - Create a cycle friendly on-road link towards central Norwich from Attlebridge and Weston Longville via Ringland and Taverham;
- Option 5 - Create a cycle friendly on-road link from Ringland to Easton; and
- Option 7E – Create a cycle friendly on-road link from Easton to the Norfolk and Norwich University Hospital and University of East Anglia.

3.1.17. The TAG Active Mode Appraisal Toolkit (AMAT) worksheet was used to assess the impact of each option apart from Option 3, a new crossing which is an intervention not covered in the AMAT. The worksheets are attached at Appendix A. The Impacts for each of the options are set out in Table 3-3.

Table 3-3 – AMAT Impacts

Impacts £000's	Option 4	Option 5	Option 7E	Total
Mode Shift	23.35	16.76	45.04	85.15
Health	1,858.72	1,333.98	3,584.67	6,777.37
Journey Quality	552.60	396.68	1,066.81	2,016.09
Indirect Taxation	-6.47	-4.64	-12.48	-23.59
PVB	2,434.18	1,747.06	4,695.57	8,876.81
Reduction in Infrastructure Maintenance	0.49	0.35	0.95	1.79

3.1.18. The implementation of the NWL will result in a benefit to physical activity, due to the wider complementary measures of the STS.

4 SECURITY

4.1.1. Transport interventions may affect the level of security (freedom from crime) for road users, public transport passengers and freight (all modes).

4.1.2. The impact of security for road users has been assessed using the security indicator list from Table 4.1 of TAG unit A4.1 and the Security Impacts Worksheet has been completed.

4.1.3. Based on the assessment undertaken, the security impacts have been assessed as moderate/large beneficial. This is due to the provision of lighting and illuminated signs on the new link, and the reduction in junctions and stop start traffic. Based on the modelling over 20,000 vehicles are estimated to use the new link on a daily basis, these vehicles have rerouted from existing routes within the road network where they would have been more likely to be traveling at slower speeds due to congestion or approaching junctions.

4.1.4. The worksheet is attached at Appendix B.

5 SEVERANCE

5.1.1. TAG defines community severance as the separation of residents from facilities and services they use within their community caused by substantial changes in transport infrastructure or by changes in traffic flows. Severance will only be an issue where either vehicle flows are significant enough to significantly impede pedestrian movement or where infrastructure presents a physical barrier to movement. Severance primarily concerns those using non-motorised modes, particularly pedestrians.

5.1.2. Severance may be classified according to the following broad levels:

- **None** – Little or no hindrance to pedestrian movement.
- **Slight** – All people wishing to make pedestrian movements will be able to do so, but there will probably be some hindrance to movement.
- **Moderate** – Pedestrian journeys will be longer or less attractive; some people are likely to be dissuaded from making some journeys on foot.
- **Severe** – People are likely to be deterred from making pedestrian journeys to an extent sufficient to induce a reorganisation of their activities. In some cases, this could lead to a change in the location of centres of activity or to a permanent loss of access to certain facilities for a particular community. Those who do make journeys on foot will experience considerable hindrance.

5.1.3. The scheme will sever existing Public Rights of Way along the new road corridor. Where routes are severed new crossing facilities will be provided, which should mitigate the impact of the new road.

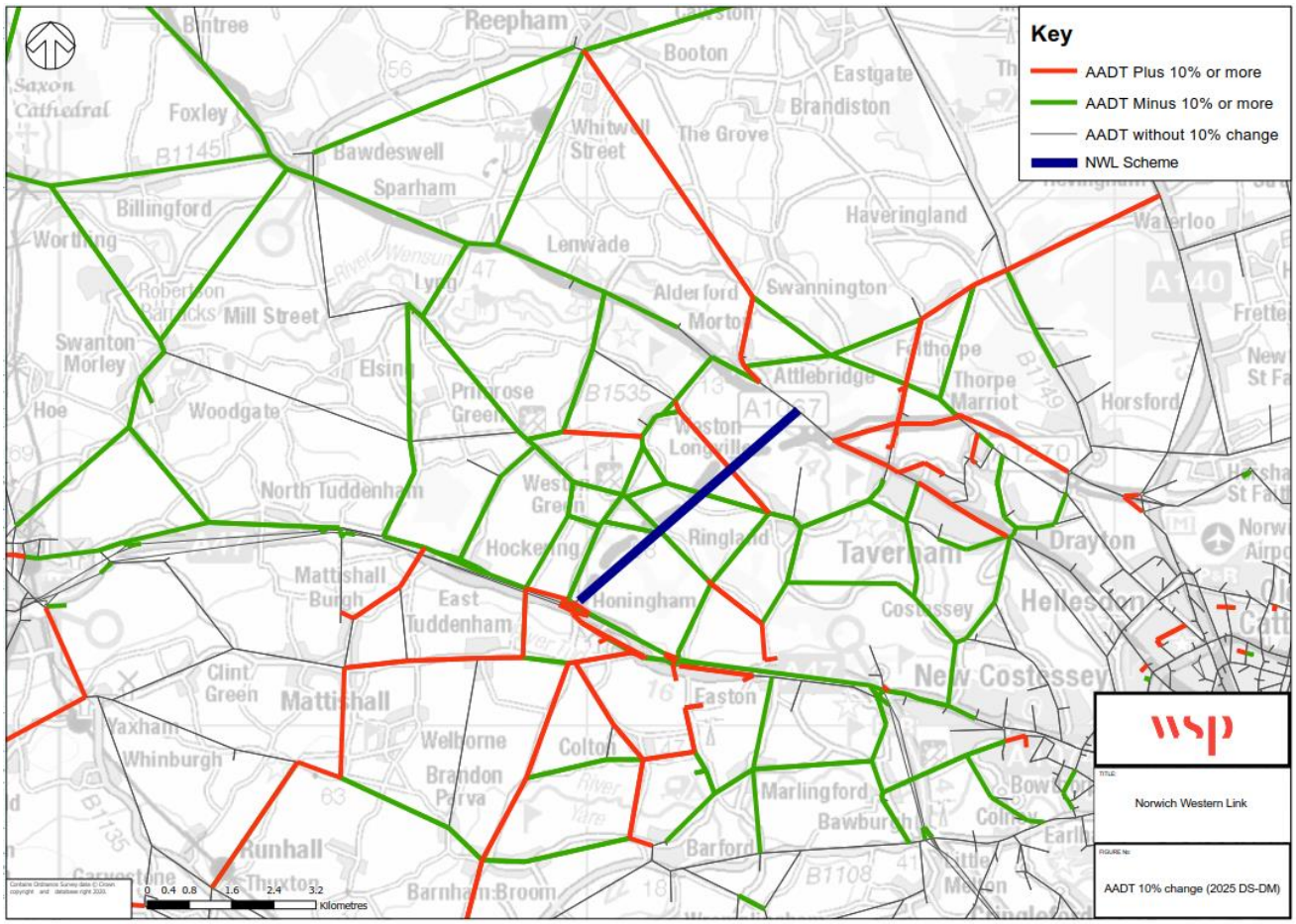
5.1.4. Severance has been assessed at a number of locations across the study area. Some locations will experience reductions in severance, while others will experience increases, this provides a wider picture of the impact of the scheme on severance within the study area. The assessment has been undertaken in line with TAG Unit A4.1 section 5 and DMRB LA 112. It covers new severance due to the new link and relief from severance on the existing rural roads due to the reduction in flow.

5.1.5. As aforementioned, a Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) has been undertaken as part of the scheme design process. This has been used to identify the routes used by pedestrians, cyclists and equestrians. The WCHAR provides the design team with the relevant background information and identifies opportunities to facilitate the inclusion of all walking, cycling and horse-riding modes in the highway scheme design process and mitigation measures.

5.1.6. The WCHAR recommended solutions with due regard for the needs of pedestrians, cyclists and equestrians, alongside any new opportunities identified as a result of developing the scheme design. This will support measures to provide for a neutral to beneficial impact for users of the local area around the scheme.

5.1.7. In regard to vehicle flow changes from the NWL scheme, Figure 5-1 demonstrates a comparison of Average Annual Daily Traffic (AADT) between the 2025 do something scenario and 2025 do minimum scenario. Changes in flows of >10% are presented, with green links demonstrating a reduction in flows by >10% and red links showing an increase in flows by >10%. Any links that do not have changes in flows by >10% are identified as black links.

Figure 5-1 - Change in AADT flows (comparison between do something and do minimum)



5.1.8. As shown in Figure 5-1, there are more links forecast to experience decreases in flow rather than increases in flow in the study area; thus, showing a beneficial impact of the scheme on traffic flow, therefore the change in vehicle flows are not anticipated to negatively impact pedestrian movement.

5.1.9. Overall, it is deemed that the scheme is likely to have a slight beneficial impact on severance.

6 JOURNEY QUALITY

6.1.1. Journey quality is a measure of physical and social environment (real and perceived) experienced when travelling. This considers traveller care, traveller views and traveller stress. Traveller care considers the impacts associated with cleanliness, facilities, information and environment. Travellers' views consider anything that may block the view and traveller stress considers the impacts associated with frustration, fear of potential accidents, and route uncertainty.

6.1.2. A qualitative approach has been undertaken as the intervention does not aim to directly influence quality factors. The assessment has been made comparing the without scheme and the with scheme cases for the sub-factors as listed in Table 6.1 of TAG unit A4.1.

6.2 TRAVELLER CARE

6.2.1. The description of the sub-factors as set out in Table 6.1 are more relatable to public transport schemes than highway schemes. Therefore, some adjustments have been made in considering the impacts.

6.2.2. For cleanliness the assessment has considered external cleanliness and the presence of graffiti. It is considered that the new link would have reduced levels of litter and graffiti than those currently experienced on the urban roads and the sub impact has been classed as moderate beneficial. Although the new link at opening year is expected to have over 20,000 vehicles a day using it, the majority of traffic is expected to transfer from the local rural roads where the levels of litter and graffiti are less than in the urban area.

6.2.3. No new facilities apart from the new link itself are being delivered, therefore the impact is neutral on the facilities sub-factor.

6.2.4. New signs will be provided as part of the new link, these will be illuminated making them visible at night, this is likely to be an improvement over the existing signage on the rural routes, therefore the information sub-factor has been assessed as moderate beneficial.

6.2.5. The new link is likely to be an improvement over the existing routes as there is unlikely to be potholes or other changes in level in the short to medium term. Therefore, the environment sub-factor has been classed as moderate beneficial.

6.2.6. Overall the traveller care impacts have been assessed as moderate beneficial.

6.3 TRAVELLER VIEWS

6.3.1. The travellers' views assessment has been undertaken for the vehicle occupants only as the impacts associated with walkers and cyclists are covered in the AMAT assessment. The assessment is qualitative and considers anything which may block views of the surrounding countryside or townscape.

6.3.2. The impact of the scheme on travellers' views is classed as neutral to beneficial as traffic is transferring off rural roads and the outer ring road to the new route. The difference in views will not be significant for those transferring from the rural routes while those transferring from the urban outer ring road will have an improved view.

6.4 TRAVELLER STRESS

6.4.1. The traveller stress assessment has been undertaken qualitatively and considers:

- Frustration;
- Fear of potential accidents; and
- Route uncertainties.

6.4.2. Frustration considers the road layout (including geometry), the condition of the road network and the ability to make good progress along a route. The existing rural routes are narrow in places with tight bends and junctions, while the outer ring road suffers from congestion and delay, both of these aspects are likely to cause frustration with road users. The new link will be built to current design standards and as such the road layout and condition of the road network will be better than the existing rural routes. Progress along a route which incorporates the new link will also be better than using the outer ring road as there will be less congestion and delay. Therefore, the impact for frustration is beneficial.

6.4.3. Fear of potential accidents considers numerous aspects including inadequate lighting, road/lane width, lane markings, and hard shoulders. The existing rural roads used currently used for north-south movements across the NWQ are narrow, mostly unlit, with limited lane markings. The NWL will provide an improved road layout and as such the impact for fear of potential accidents will be beneficial.

6.4.4. Route uncertainty covers provision of network maps and in vehicle route signs. There is adequate signage along the outer ring road, however the rural routes are not intended for long distance journeys and as such the signage that exists directs travellers to local locations. The NWL will include signage for through traffic and as such will provide better information than the rural routes do. Therefore, the impact on route uncertainty will be beneficial.

6.4.5. The overall impact for traveller stress is large beneficial as the number of affected travellers is over 10,000.

6.5 JOURNEY QUALITY SUMMARY

6.5.1. Journey Quality has been assessed for traveller care, traveller views and traveller stress. Traveller care considers the impacts associated with cleanliness, facilities, information and environment. Travellers' views consider anything that may block the view and traveller stress considers the impacts associated with frustration, fear of potential accidents, and route uncertainty.

6.5.2. A qualitative approach has been undertaken as the intervention does not aim to directly influence quality factors. The assessment has been made comparing the without scheme and the with scheme cases for the sub-factors as listed in Table 6.1 of TAG unit A4.1.

6.5.3. Traveller care impacts have been assessed as moderately beneficial. Traveller views impacts have been assessed as neutral to beneficial, and traveller stress impacts have been assessed as large beneficial.

6.5.4. Considering all aspects of journey quality and the analysis undertaken the overall Journey Quality impacts are assessed as moderate beneficial.

7 OPTION AND NON-USE VALUES

7.1.1. The appraisal of impact on option and non-user values is only likely to be of importance where an intervention will substantially change the availability of transport services within a study area.

7.1.2. Currently the scheme will not result in the provision of new public transport services. Therefore, the option values impact is assumed as neutral.

8 ACCESSIBILITY

8.1.1. The appraisal of accessibility focuses on the public transport accessibility aspect of accessing employment, services and social networks. The scheme has not been designed to address accessibility, there is no change in the routes served by the public transport system, although there may be complementary public transport measures considered separately to the NWL at a later time.

8.1.2. The accessibility impact is assumed as neutral.

9 PERSONAL AFFORDABILITY

9.1.1. The analysis of personal affordability is concerned with changes in the monetary costs of travel. The monetary costs of travel can, in some cases, be a major barrier to mobility for certain groups of people, and increases in travel costs can have particularly acute effects on their ability to access key destinations.

9.1.2. The scheme has not been designed to address the affordability of the transport system, there will be no change in fares/travel costs in users apart from those already identified through TUBA via Car Fuel and Non-Fuel operating costs. The affordability impact is assumed as neutral.

10 SUMMARY

10.1.1. This Social Impact Appraisal report has been developed as part of the Outline Business Case for the Norwich Western Link scheme and has been prepared on behalf of Norfolk County Council for consideration by the Department for Transport. The NWL is located to the east of Norwich and seeks to provide a link between the A47 in the south and the A1067 in the north.

10.1.2. The appraisal has been undertaken in accordance with TAG Unit A4.1: Social Impact Appraisal. All impacts have been assessed qualitatively apart from Accidents and Physical Activity where the impact has been monetised.

10.1.3. The impact on accidents has been assessed with COBALT. The results indicate that the scheme will result in a reduction of 515 accidents over the 60-year appraisal period, leading to a reduction of 655 casualties (2 Fatal, 54 Serious and 599 Slight) and a cost saving of £18 million.

10.1.4. The impact on Physical Activity has been assessed with DfT's AMAT. The NWL is forecast to have a beneficial impact of £8.9 million.

10.1.5. The impact on Security has been assessed using the security indicator list from Table 4.1 of TAG unit A4.1 and the Security Impacts Worksheet has been completed. Based on the assessment undertaken, the security impacts have been assessed as moderate/large beneficial.

10.1.6. The impact on Severance has been assessed undertaken in line with TAG Unit A4.1 section 5 and DMRB LA 112. The assessment covers new severance due to the new link and relief from severance on the existing rural roads due to the reduction in flow. Overall, it is deemed that the scheme is likely to have a slight beneficial impact on severance.

10.1.7. The impact on Journey Quality has been assessed considering traveller care, traveller views and traveller stress. A qualitative approach has been undertaken as the intervention does not aim to directly influence quality factors. The assessment has been made comparing the without scheme and the with scheme cases for the sub-factors as listed in Table 6.1 of TAG unit A4.1.

10.1.8. Traveller care impacts have been assessed as moderately beneficial. Traveller views impacts have been assessed as neutral to beneficial, and traveller stress impacts have been assessed as large beneficial. Considering all aspects of journey quality and the analysis undertaken the overall Journey Quality impacts are assessed as moderate beneficial.

10.1.9. The impact on Option and Non-Use Values has been assessed as neutral as the scheme will not substantially change the availability of transport services within the study area.

10.1.10. The impact on Accessibility is neutral as the scheme has not been designed to address accessibility, there is no change in the routes served by the public transport system.

10.1.11. The impact on Personal Affordability is neutral as the scheme has not been designed to address the affordability of the transport system.

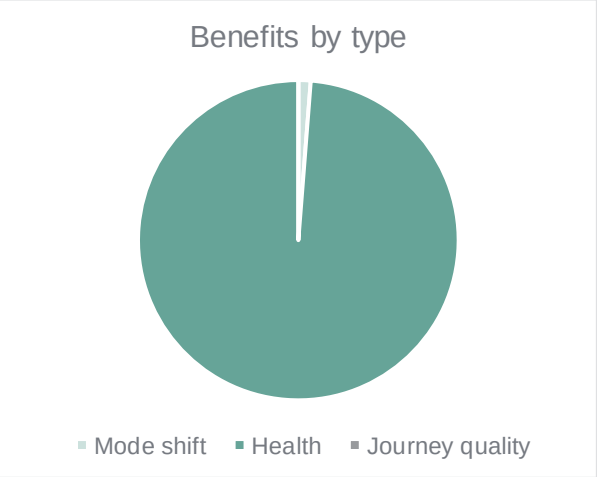
Appendix A

AMAT WORKBOOKS

Option 3

Analysis of Monetised Costs and Benefits (in £'000s)	
Congestion benefit	4.00
Infrastructure maintenance	0.09
Accident	0.62
Local air quality	0.10
Noise	0.03
Greenhouse gases	0.54
Reduced risk of premature death	297.18
Absenteeism	37.89
Journey ambience	0.00
Indirect taxation	-1.17
Government costs	0.00
Private contribution	0.00
PVB	339.20
PVC	-0.09
BCR	**-3832.94**

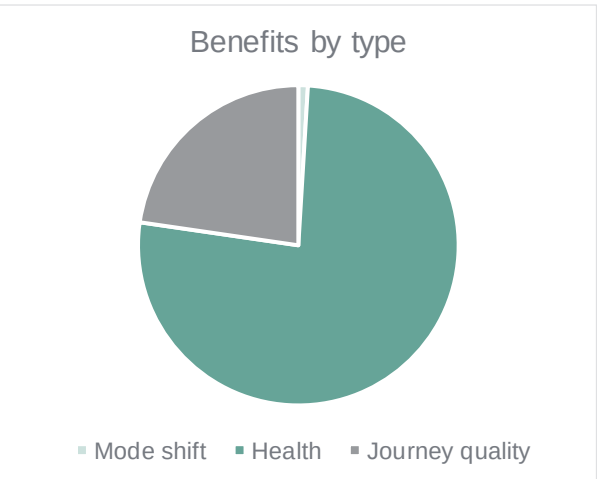
Benefits by type:		
Mode shift	4.21	1.2%
Health	335.07	98.8%
Journey quality	0.00	0.0%



Option 4

Analysis of Monetised Costs and Benefits (in £'000s)	
Congestion benefit	22.18
Infrastructure maintenance	0.49
Accident	3.44
Local air quality	0.54
Noise	0.18
Greenhouse gases	3.01
Reduced risk of premature death	1648.51
Absenteeism	210.20
Journey ambience	552.60
Indirect taxation	-6.47
Government costs	0.00
Private contribution	0.00
PVB	2434.18
PVC	-0.49
BCR	**-4958.63**

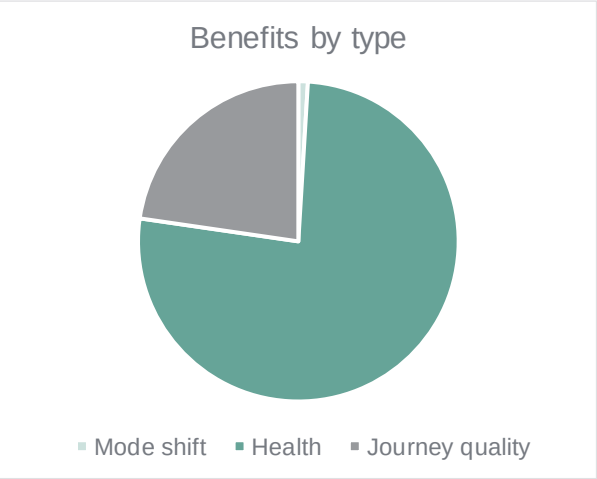
Benefits by type:		
Mode shift	23.35	1.0%
Health	1858.72	76.3%
Journey quality	552.60	22.7%



Option 5

Analysis of Monetised Costs and Benefits (in £'000s)	
Congestion benefit	15.92
Infrastructure maintenance	0.35
Accident	2.47
Local air quality	0.38
Noise	0.13
Greenhouse gases	2.16
Reduced risk of premature death	1183.12
Absenteeism	150.86
Journey ambience	396.68
Indirect taxation	-4.64
Government costs	0.00
Private contribution	0.00
PVB	1747.06
PVC	-0.35
BCR	**-4958.87**

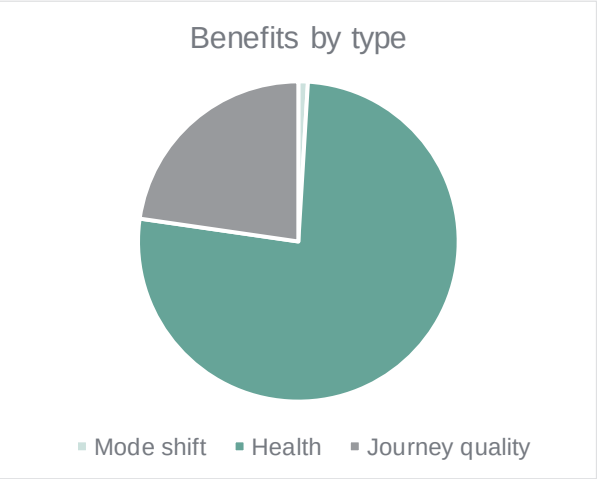
Benefits by type:		
Mode shift	16.76	1.0%
Health	1333.98	76.3%
Journey quality	396.68	22.7%



Option 7E

Analysis of Monetised Costs and Benefits (in £'000s)	
Congestion benefit	42.77
Infrastructure maintenance	0.95
Accident	6.63
Local air quality	1.03
Noise	0.34
Greenhouse gases	5.80
Reduced risk of premature death	3179.28
Absenteeism	405.39
Journey ambience	1066.81
Indirect taxation	-12.48
Government costs	0.00
Private contribution	0.00
PVB	4695.57
PVC	-0.95
BCR	**-4959.77**

Benefits by type:		
Mode shift	45.04	1.0%
Health	3584.67	76.3%
Journey quality	1066.81	22.7%



Appendix B

SECURITY WORKBOOK

TAG Security Impacts Worksheet

Security Indicator	Relative importance	Without scheme	With scheme
	(High/Medium/Low)	(Poor/Moderate/High)	(Poor/Moderate/High)
Site perimeters,	Low	Poor (rural) Moderate (urban)	High
entrances and exits	Medium	Poor (rural) Moderate (urban)	High
Formal surveillance	Low	Poor (rural) Poor (urban)	Poor
Informal surveillance	Low	Poor (rural) Moderate (urban)	Moderate
Landscaping	Medium	Poor (rural) Moderate (urban)	Moderate
Lighting and visibility	Medium	Poor (rural) Moderate (urban)	Moderate
Emergency call	Medium	Poor (rural) Poor (urban)	Poor

Approximate Number of Users Affected

Opening year (2025) circa 21,000 vehicles on new link.

Reference Source

Summary Assessment Score

Moderate/Large Beneficial

Qualitative Comments

Traffic currently uses rural lanes or congested urban routes to travel north to south in the study area. The rural lanes have no surveillance facilities and the lighting is variable. The urban routes are prone to congestion so they are likely to have frequent stop start traffic condictions.
The new link will be designed to current standards with only two junctions (with A47 and A1067), lighting and advanced signage facilties.
There is a bigger change from the rural routes than the urban routes, and the number of travellers is above 20,000.

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