

Environment, Development and Transport Committee

Report title:	Norwich Western Link – Options Proposal
Date of meeting:	9 November 2018
Responsible Chief Officer:	Tom McCabe – Executive Director, Community and Environmental Services.
Strategic impact The County Council, at its meeting in December 2016, agreed a motion setting out that the ‘Council recognises the vital importance of improving our transport infrastructure and that this will help to deliver the new jobs and economic growth that is needed in the years ahead.’ In addition to the motion set out that the ‘Council also recognises the importance of giving a clear message of its infrastructure priorities to the government and its agencies, and so ensure that there is universal recognition of their importance to the people of Norfolk.’ The Norwich Western Link (NWL) has been recognised as one of three priority infrastructure schemes and is included in the Norfolk Infrastructure Delivery Plan 2017-2027.	

Executive summary

The Norwich Western Link (NWL) Initial Consultation completed in July this year found there was very strong support for a new link between the end of Broadland Northway and the A47 to the west of Norwich. Following this, work has been carried out to produce a shortlist of options that meet the objectives of the NWL project and provide a compelling business case.

The proposals in this paper enable the project to proceed to an Options Consultation on a shortlist of NWL options. These options were determined from feasibility / options assessment work undertaken using Department for Transport (DfT) guidelines.

Findings from the consultation will be used in the preparation of the Strategic Outline Business Case for the project to be submitted to DfT in Spring 2019.

This paper outlines the shortlist of NWL options that are recommended for the next consultation later in November.

The shortlist of options has been determined via stakeholder liaison and an options appraisal process. This work has been summarised in an Options Appraisal Report that considers a significant number of options and is appended to this Paper.

A range of factors have been used in developing the four short-listed options, including:

- Physical constraints e.g. existing development and infrastructure
- Impact on the environment and ecology
- The proposed Highways England A47 North Tuddenham to Easton dualling scheme
- Projected growth and development in the study area
- The requirements of the DfT Business Case process
- How traffic uses the existing road network including Broadland Northway

Option A is an upgrade that broadly follows the line of an existing B-road route. Options B, C and D are new routes. Consideration of additional measures to enhance the benefits of the above options will be included in the consultation.

Recommendations:

Members are recommended to:

- 1. Approve the proposed four shortlisted options for the Norwich Western Link**
- 2. Proceed with a non-statutory public consultation on these shortlisted options.**

1. Proposal

- 1.1. It is proposed to undertake a non-statutory public consultation on a shortlist of options for the NWL. Four options have been shortlisted and are referenced Options A, B, C and D from west to east (as shown at Appendix A). Option A is an upgrade that broadly follows an existing B-road route. Options B, C and D are new road routes. Consideration of additional measures to enhance the benefits of the above options will be included in the consultation and, depending on the consultation results, will be considered further as the scheme develops.
- 1.2. The proposed non-statutory public consultation was approved in principle by Committee at the 12th October 2018 meeting. It is scheduled to take place between 26th November 2018 and 18th January 2019. During this period the suspension of consultation exhibitions/events has been included to allow for the Christmas and New Year period. The online survey platform will remain open for the duration of the consultation.
- 1.3. The Member Working Group has been consulted in the preparation of this paper.

2. Evidence

- 2.1. There is no direct, high standard transport link between the western end of the Broadland Northway and the A47 to the west of Norwich. In order to understand this further and gain knowledge on transport issues in the area, an initial consultation was undertaken in the Summer of 2018. The consultation found that there was very strong support for creating a new link, with the majority of those responding suggesting a new road was their preferred solution. Key transport issues raised by consultees included rat running and roads not being suitable for the volume and type of traffic such as HGVs.
- 2.2. Further to the Initial Consultation work has been undertaken to determine what, if anything, could be done to tackle the perceived transport issues in the area, including the provision of a link road. It was found that a range of interventions could be beneficial, and these were refined to a shortlist of options. The main list of activities undertaken to establish viable interventions and feed in to the shortlisting process is summarised below.
 - Assessment of the existing and expected conditions to establish the need for intervention.
 - Development of objectives that a potential NWL intervention could work towards; aligned to local, regional and national policy.
 - Liaison with key stakeholders within the study area and assess how any intervention may affect them.
 - Gather information on the environmental and ecological factors to be taken into consideration in the study area.
 - Assess the results of the initial consultation to understand the perceived transport issues in the study area.
 - Undertake traffic surveys to see how traffic movements across the study area have changed as a result of the opening of Broadland Northway.

- Establish a “do nothing” baseline criteria against which interventions can be assessed.
- Undertake traffic modelling scenarios to understand the future expected traffic volumes and movements with respect to a range of possible options including a “do nothing” option.
- Determine a longlist of potential options comprising road and non-road options.
- Assess how these longlist of options might improve transport issues within the study area; how they might perform in terms of DfT business case criteria; and how they might affect the environment and ecology.
- Undertake a sifting process based on the results of the above and taking into account performance against the scheme objectives and physical constraints within the study area to obtain a shortlist of options.

These activities are detailed within the Options Appraisal Report (OAR) which can be found at this [link](#). An overview of the OAR leading to the proposed shortlist of options is included in the subsequent sections along with a summary of each option.

2.3. Existing and expected conditions

This is described in detail in the OAR (please see [link](#)) and is summarised below.

For the current situation relevant transportation, economic, planning and environmental policy applicable to the study area have been assessed. Further to this the demographic profile, transport context, current travel demands and levels of services were investigated along with the environmental constraints within the study area.

The expected conditions considered the factors that will shape the study area and network operation in the future. Future growth in terms of land use, housing, employment and investment in the transport system were assessed. Based on this, modelling and forecasting has been undertaken to understand the future travel demands and levels of service.

2.4. Project objectives

A range of objectives have been developed to align with the current strategic objectives presented in national, regional, and local policy and associated guidance. It is considered that the objectives reflect the issues and opportunities identified within the previous project reports, in addition to the wider objectives of the New Anglia Local Enterprise Partnership, supporting the principal aim to deliver a modern and efficient transport system. The objectives are in two tiers, namely high-level objectives and specific objectives. These objectives have been discussed at meetings with local communities and are subject to ongoing refinement as the scheme advances.

High-level objectives:

H1 Support sustainable growth

H2 Improve the quality of life for local communities

H3 Support economic growth

H4 Promote an improved environment

H5 Improve strategic connectivity with the national road network

Specific objectives:

S1 Reduce congestion and delay, and improve journey time reliability, on routes

through the study area

S2 Improve network resilience and efficiency of the strategic and local transport network

S3 Reduce the number of Heavy Goods Vehicles using minor roads

S4 Make the transport network safer for all users (including Non-Motorised Users)

S5 Encourage modal shift to more sustainable modes of transport

S6 Provide traffic relief (and reduce noise & emissions) within residential areas

S7 Enable improved accessibility to existing and new housing and employment sites

S8 Improve emergency response times

S9 Improve access to green space

S10 Not affect the ecological integrity of the Wensum Valley SAC

S11 Contribute to the improved health and well-being of local residents

S12 Improve connectivity and accessibility to Norwich International Airport, Norwich Research Park and Norfolk & Norwich University Hospital

2.5. Liaison with key stakeholders

The work undertaken so far has included engagement with a wide range of stakeholders who would have an interest in the project. This includes parish councils, businesses, and statutory / non-statutory organisations.

The Initial Consultation held in Summer 2018 achieved a good response rate and this is summarised in the OAR ([link](#)). Many of the respondents also asked to be provided with regular updates via a mailing list.

Subject to approval of this paper, affected landowners will be engaged to discuss any items of concern and implications on the shortlisted options. Some landowners have already responded to the Summer 2018 consultation.

All stakeholders will be invited to the Options consultation events and encouraged to respond on the options shortlist and provide further information.

2.6. Environmental and Ecological Factors

There are numerous environmental and ecological considerations in the NWL study area, with designated sites including the River Wensum as a Special Area of Conservation and a Site of Special Scientific Interest, 'Ancient Woodland' and several 'County Wildlife Sites'. Where possible the shortlisted options have avoided these sites or early conversations have indicated that any impacts can potentially be mitigated.

Following discussions with Natural England and the Environment Agency in July 2017, agreement was reached that a bridge crossing of the River Wensum could be acceptable, but this would be subject to more detailed design and mitigation proposals.

An Appropriate Assessment would be required under the Habitats Directive Regulations to demonstrate that any proposed solution crossing the Wensum would not adversely affect the integrity of the River Wensum SAC.

A further meeting was held with the Environment Agency and Natural England on 18th October 2018 to discuss the latest options work in more detail. It was confirmed that their position had not changed since the last meeting. It was agreed by all parties that a collaborative approach would be used going forward.

2.7. Assess Results of Initial Consultation

The Initial Consultation took place from 8th May to 3rd July 2018 to seek views on transport issues to the west of Norwich and what options could be considered. It included 9 staffed events and an online questionnaire. Commonplace hosted the online questionnaire on behalf of NCC and separate correspondence was also received from a number of organisations.

The questionnaire gave two opportunities to comment on the consultation; firstly to add general comments on transport issues; secondly to pinpoint local transport issues on an interactive map.

The Commonplace consultation report is available on the County Council website at this [link](#). A summary of the consultation results including analysis of the pinpoint map responses and other responses received is included in the OAR ([link](#)).

The majority of people who took part in the consultation believe a new road linking the A47 to the Broadland Northway would help tackle transport issues in the area. This option was selected more than three times as much as the next most popular option, which was 'Improving existing roads'.

The top five most frequently identified transport issues in the area were:

- Roads not suitable for level of traffic;
- Rat running;
- Slow journey times;
- Rural congestion; and
- Inappropriate use by HGVs.

When respondents were asked to identify transport solutions the top five options selected were:

- New road linking Broadland Northway to A47;
- Improve existing roads;
- Improve public transport;
- Improve cycling routes; and
- New cycling routes linking the Broadland Northway to the A47.

The top five issues respondents wanted NCC to consider when planning transport improvements are:

- Reducing congestion;
- Reducing rat running;
- Shortening journey times;
- Better journey reliability; and
- Road safety.

2.8. Traffic Surveys Undertaken

Traffic counts were carried out to the north and west of Norwich in May and June 2018. This was to understand how journeys have changed since the Broadland

Northway fully opened in April 2018.

Notably these counts found:

- Significantly fewer vehicles are using Drayton High Road (A1067) at Hellesdon – 16,123 a day in 2018 compared to 19,028 in 2015.
- The level of traffic using roads in villages to the west of Norwich is generally higher than was previously recorded in 2015.

More extensive surveys are currently being carried out in the study area and more widely, as part of the necessary monitoring following the opening of the Broadland Northway. This will give a broader picture of traffic movements. The additional time since the opening of Broadland Northway should also allow for traffic movements to have “settled” to a greater extent, but significant changes when compared with the May/June data are not anticipated.

2.9. Do nothing baseline

In order to robustly assess potential interventions a “do nothing” baseline has been established. This considers a “do nothing” option and takes account of the changes expected in the study area, such as housing and employment development, traffic growth and network changes.

2.10. Traffic Modelling

Highways England updated the Norwich Area Transportation Strategy (NATS) model for use in the assessment of the Road Investment Strategy (RIS) schemes for the A47 Corridor. Specifically, in relation to the Norwich Western Link (NWL) scheme, the Highways England A47 Corridor schemes include the A47 North Tuddenham to Easton dualling and the A47 / A11 Thickthorn junction improvements.

The existing NATS model consists of a highway assignment model developed in SATURN, a public transport model developed in VISUM and a variable demand model using the DIADEM software.

The model has been subject to local re-calibration and re-validation for use on the NWL to undertake variable demand modelling and traffic forecasting. This has included processing of observed traffic surveys and updates to better reflect the local road network.

Forecasting has been undertaken based on an assumed 2025 opening year, a design year of 15 years after opening, at 2040, and a 2050 ‘horizon’ year.

At this stage a core growth scenario based on TEMPro 7.2 was used. The future housing and employment growth was evenly distributed across each district without reliance on specific additional local growth within the study area.

A number of route corridors were selected for this modelling work across the study area. This was to understand how flows may vary for a range of assumed links between the A1067 and A47.

Additionally, to obtain an indication of existing traffic origins and destinations within the study area, further analysis was undertaken using the SATURN model to understand how the potential options could impact on routes currently used by traffic.

2.11. Longlist of options

A wide range of options was compiled with consideration to the objectives in section 2.4. This exercise included a review of known historic options in addition to developing further new options. The responses from the initial consultation were also reviewed to identify further options.

This process included developing road options with bridges as necessary to

cross rivers and other features. Non road-building options were also developed and comprised numerous types of possible interventions including bus and rail, public transport, cycling and walking facilities, junction improvements, HGV management, smart technology and tolling.

Tunnelling options were not included in the longlist based on the findings of previous technical work carried out in 2017. This found that a satisfactory, sufficiently economic tunnel solution was not deemed feasible due to issues with ground water, flooding, topography of the land, environmental impacts (particularly during construction), making the desired connections with the existing road network, as well as operation and future maintenance costs.

2.12. Sifting and shortlisting

A staged process was used to reduce the longlist into a shortlist of preferred options for further consideration.

Firstly the DfT's Early Assessment and Sifting Tool (EAST) was employed with a view to taking options forward that would perform well in accordance with Transport Business Case principles. This considers 5 elements namely the Strategic, Economic, Managerial, Financial and Commercial Cases. Environment issues are usually dealt with in the Economic Case. However, due to the environmentally sensitive nature of the study area these environmental aspects were considered as a separate case to greater reflect their importance in the sifting process. This resulted in six criteria with which to assess the performance of each option against.

The performance of all longlist options was compared against a 'do nothing' option using the same criteria. Options performing less well than this were eliminated.

At this stage the options were also categorised as either 'Non-Highways', 'New Highway Link' or 'Existing Link Upgrade'.

For New Highway Link options single carriageway roads were discounted on the basis that dual carriageway options will produce the most robust assessment in consideration of potential land take, costing and environmental concerns. Additionally 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. In terms of the current issues with HGV movements the increased speed limit for HGVs on dual carriageways as opposed to single carriageways would significantly improve chances to attract HGVs and reassign them away from local rat running routes.

The remaining options in the respective categories were compared against the scheme objectives. This found that the options in the New Highways Link category and Existing Link Upgrade performed considerably better than Non Highways options. It was therefore decided that the Non Highways options were set aside but could be packaged up with the shortlisted options later to enhance them.

The Existing Link Upgrade options comprise either single or dual carriageway upgrades to the B1535 and its junction with A1067 at Lenwade back to the end of the Broadland Northway. Traffic modelling indicates that a link broadly along the B1535 would attract lower flows. It is perceived that this in combination with the cost to dual this route over its more significant length would result in a low Benefit Cost Ratio. Therefore a dual carriageway for this option was eliminated.

The remaining options were then assessed against engineering factors in the

study area such as existing development, the potential to impact the nationally strategic Bacton high pressure gas main and proposed Hornsea 3 cable route (currently being progressed through a Development Consent Order process), environmentally sensitive sites, existing traffic pressure on Longwater interchange and the proposed junction strategy for the A47 North Tuddenham to Easton dualling (based on the already published preferred route proposal).

The OAR details this work and how options were eliminated. This resulted in the shortlist of options as described in the following sections. The options below are not in any order of preference or ranking, they are provided as they appear on the map from west to east. They can also be viewed on a map in Appendix A.

For brevity the predicted Annual Average Daily Traffic (AADT) and indicative Benefit Cost Ratios / Value for Money Categories below are based on grade separated junctions with the proposed A47 North Tuddenham to Easton dualling scheme. The OAR contains further traffic modelling assumptions and scenarios / results.

The Benefit Cost Ratios / Value for Money Categories below consider travel time benefits only and do not at this stage consider potential benefits such as safety, air quality and noise. Therefore they could be considered as a low estimate. The Value for Money categories are based on DfT guidance, which sets these out as 'Low' if less than 1.5 benefit to cost ratio, 'Medium' if between 1.5 and 2.0 BCR, and 'High' if the BCR is more than 2.0.

2.13. Option A (single carriageway)

The route is from the end of the Broadland Northway / A1067 roundabout, extending along the existing alignment of the A1067 towards a new junction in Lenwade, and then links to the B1535 Wood Lane junction with the A47. It is proposed as a single carriageway upgrade of the A1067 to Lenwade and along the upgraded B1535 to the A47 Wood Lane junction. The proposals include adjustments and improvements to the A1067 and significant realignment of the B1535 to make this a higher standard route. It makes use of the existing bridge over the River Wensum at Attlebridge.

- Length of route (Broadland Northway to A47): 11.7km (7.2 miles)
- Out-turn cost estimate: £60m
- Predicted Annual Average Daily Traffic (AADT): 10,000
- DfT Value for Money category: Low

2.14. Option B (dual carriageway)

The route is from the end of the Broadland Northway / A1067 roundabout, extending along the existing alignment of the A1067 towards a new junction near Attlebridge, and then links to the B1535 Wood Lane junction with the A47.

It comprises dualling the A1067 from the Broadland Northway/ A1067 roundabout to the new junction near Attlebridge, and includes widening of the existing River Wensum bridge at Attlebridge. The dual carriageway then advances in an approximately southerly direction, east of Weston Longville, to then connect with the A47 / Wood Lane junction. Due to the impact on existing properties near the River Wensum bridge, this option also includes an alternative of a new viaduct crossing of the River Wensum to the south of Attlebridge rather than using the existing crossing location. The information below is based on the viaduct alternative as this has a higher scheme cost.

- Length of route (Broadland Northway to A47): 8.3km (5.2 miles)
- River viaduct approximate length: Wensum 660m

- Out-turn cost estimate: £155m
- Predicted Annual Average Daily Traffic (AADT): 30,000
- DfT Value for Money category: High

2.15. Option C (dual carriageway)

The route is from the end of the Broadland Northway / A1067 roundabout, extending a short distance along the A1067 towards a new junction and then links to the B1535 Wood Lane junction with the A47.

It comprises dualling of the A1067 from the Broadland Northway roundabout for around 350m before a new A1067 junction and then continues on a new dual carriageway in a south westerly direction between Weston Longville and Ringland, initially crossing the River Wensum on a viaduct, and connects with the A47/ Wood Lane junction.

- Length of route (Broadland Northway to A47): 6.2km (3.9 miles)
- River viaduct approximate length: Wensum 720m
- Out-turn cost estimate: £153m
- Predicted Annual Average Daily Traffic (AADT): 32,000
- DfT Value for Money category: High

2.16. Option D (dual carriageway)

The route is initially similar to Option C from the end of Broadland Northway / A1067 roundabout, however this option then links to the Taverham Road / Easton junction with the A47.

It comprises dualling of the A1067 from the Broadland Northway roundabout for around 400m before a new A1067 junction and then continues on a new dual carriageway in a south westerly direction between Weston Longville and Ringland, initially crossing the River Wensum on a viaduct, then turning more to the south before also crossing the River Tud and connecting with the A47 Taverham Road / Blind Lane junction.

- Length of route (Broadland Northway to A47): 5.8km (3.6 miles)
- River viaduct approximate length: Wensum 660m, Tud 120m
- Out-turn cost estimate: £161m
- Predicted Annual Average Daily Traffic (AADT): 31,000
- DfT Value for Money category: Medium / High

3. Financial Implications

3.1. The options appraisal and consultation are within scope and budget for the work to be undertaken this financial year.

Cost estimates and DfT value for money categories have been provided for each shortlist option in section 2.

3.2. A Business Rates Pool Funding application has been submitted to continue to develop this project in 2019/20 with match funding from the capital programme.

3.3. Longer term funding options for the project are being developed, and it is too early in the process to provide confirmation of the preferred funding solution. The project team are working closely with CES Finance Business Partner to look at future funding. Project costs and programme updates are provided to the Member Working Group and the Project Board.

4. Issues, risks and innovation

4.1. Robust risk management arrangements are in place for this project. Foreseeable

