

Further Representation from Bryan Robinson (IP ID 20027997)

Junction Design

I am still confused with the conflicting interpretations of design requirements between the two National Highway schemes on the A47 between North Tuddenham and Easton (A47NTE) and between Blofield and North Burlingham (A47BNB).

The two schemes adopt differing policies for the use of compact grade separated junctions within the design. The A47 upgrades are publicised as completion of dualling between East Dereham and Acle and I contend that in the interests of safety, a common approach to junction design should be incorporated.

The DS mainline traffic flows in 2040 for the schemes are stated in the submissions at the Norwich Road junction (A47NTE) and the B1140 junction (A47BNB) as:

	AADT Mainline 2040	Side Road North 2040	Side Road South 2040	Underpass 2040	
A47NTE	46,000			4,700	Fig 4.18 Doc. APP-140
A47BNB	49,000	3,800	4,300		

One would therefore assume that the junction designs would follow the same principles.

The explanations for the determination of a dumb bell solution for A47NTE and a compact grade separated junction for A47BNB are repeated below.

NH Response for A47NTE

The design of the proposed grade separated junctions is based on the scheme design year (2040) traffic flows. The traffic flow varies according to road type, junction location, sideroad network, local traffic movements and consideration of local constraints.

The junction design takes into account local user traffic movements, future traffic growth, future developments and provides safe access to and from the Strategic Road Network for users (villages) north and south of the A47 in a form consistent with junctions on this section of the A47 corridor.

The proposed Norwich Road Junction has been designed in accordance with the 'UK DMRB, CD 122 – Geometric design of grade separated junctions' and follows the junction hierarchy presented in Appendix A, which outlines layouts based on increasing traffic flows. The design year mainline flows are in excess of 30,000 AADT with the minor road flows on the southern roundabout in excess of 3,000 vehicles AADT 2- way **, therefore a fully grade separated option was developed.*

The operational modelling assessment is described within section 4 of the Case for the Scheme (APP-140).

** – UK DMRB, CD 122, Clause 2.2.1 – “Compact grade separated junctions should not be used on dual and single carriageway roads when mainline flows are above 30,000 AADT”. Note: Compact grade separated junctions consist of left-in left-out priority junction(s), between the mainline and connector road, designed in accordance with CD 123 [Ref 2.N]*

*** – UK DMRB, CD 123, Clause 2.10.1 – “Priority junctions should not be provided on rural dual carriageway roads where the minor road flows exceed 3,000 vehicles AADT 2-way.”*

The Applicant has followed the requirements and good practice outlined in the UK DMRB.

NH Response for A47 BNB

VISSIM operational modelling has been undertaken to provide a detailed assessment of the Scheme’s performance across the A47 mainline Scheme section and the upgraded B1140 junction. To support this assessment PICADY analysis has been undertaken of the priority junction connecting the de-trunked A47 east to B1140 South Walsham Road on the northern side of the A47. (see Transport Assessment (TR010040/APP/7.3 Rev 1) Section 6.2 ‘Overview of the Operational Modelling’ and Section 7.8 ‘Impact on Junctions, Queuing and Delay’).

For the VISSIM and PICADY assessments, October 2019 traffic counts were utilised to calculate the additional seasonal growth in traffic relating to the British Sugar PLC located in Cantley. The additional British Sugar PLC demand was added to the NATS 2040 forecasts. This ensures that the VISSIM and PICADY operational assessments account for the extra demand generated from the British Sugar PLC during its seasonal period. In summary the VISSIM and PICADY analysis shows that the Scheme design is suitable even during the British Sugar PLC peak season where there is a large increase in HGV demand.

VISSIM (Section 7.8 of APP-122 from 7.8.1 to 7.8) shows minimal delay on all merges and diverges.

PICADY (Section 7.8 of the Transport Assessment (TR010040/APP/7.3 Rev 1) from 7.8.1 to 7.8.3) indicates that all arms will operate well within the available capacity and that on average minimal delays of around 6-10s will be experienced during peak periods.

The Scheme Design Report (TR010040/APP/7.6 Rev 1) sets out the justification for the junction at Yarmouth Road and details the options considered. A grade separated junction was discounted due to the low use of the existing junction arrangement in the forecast future years dominimum scenario with the strategic traffic model.

The B1140 junction is proposed to be a compact grade separated junction based on the traffic flows and existing constraints.

A47NTE uses the mainline flow constraint in UK DMRB, CD 122, Clause 2.2.1 as the overriding determinant factor negating the use of a compact grade separated junction as an option.

This is not considered in A47BNB and I suggest that clarification is required on when compact grade separated junctions are acceptable. In this connection it would be useful to understand the intended differentiation between the wording of Clause 2.2 in CD122 which states "*Compact grade separated junctions **shall not** be used on motorways*" and Clause 2.2.1 which states "*Compact grade separated junctions **should not** be used on dual and single carriageway roads when mainline flows are above 30,000 AADT*".

If both are mandatory prohibition statements, then the compact grade separation junction for A47BNB does not comply.