

Future Defence Storage and Distribution Programme - Redevelopment of MOD Bicester - TA Addendum - Junction Assessments

1. Introduction

1.1 Background

This Technical Note (TN) has been prepared to set out the junction assessment for two junctions what were not included in the MOD Bicester Transport Assessment (TA) submitted in the support of the planning application in September 2011. These junctions are:

- Palmer Avenue/B4011;
- A41/B4011.

These junctions are located to the east of the site access along the A41. The junction of A41/Ploughly Road is 1.13 km to the east of the A41/A4421 while the A41/B4011 junction is 2.07 km to the south east.

The current DfT guidelines '*Guidance on Transport Assessment*' indicates that the development traffic generation threshold for triggering assessment is 30 vehicles. The reason that the two junctions set out above were not included in the Transport Assessment (TA) as initial traffic flow calculations indicate that the additional traffic generation at these junctions is less than 30. As identified in Table 11.1 of the TA, for the junctions the following difference was calculated:

- Palmer Avenue/B4011:
 - AM Peak +8;
 - PM Peak +8.
- A41/B4011:
 - AM Peak +17;
 - PM Peak +1.

It can be seen that there is a net reduction in traffic at the A41/Ploughley Road junction because of reductions in peak hour traffic generation to/from C Site due to changes in operational activities and shift working. This is explained in greater detail in the TA.

This TA Addendum has been produced in response to comments made on the Environmental Impact Assessment (EIA). This Addendum presents junction SATURN modelling results for the following scenarios, which was the basis for the TA:

- 2031 Base; and
- 2031 + Development.

Details of how the traffic flow scenarios have been calculated are set out in further detail within the TA along with traffic flow scenarios.

1.2 Issues With the Traffic Flows at the Junctions

1.2.1 HGV Traffic Flows at A41/Ploughley Road Junction

As set out in the TA, following receipt of the Saturn traffic model data from Halcrow, AMEC made a number of checks and forwarded a list of questions and issues to Halcrow.

One of the key issues has been the distribution of HGVs on the A41 east of the Pioneer Road junction. The model data shows that 70 HGVs would be turning into and out of Ploughley Road in the AM Peak. AMEC traffic counts undertaken in 2011 indicated that these movements are more likely in the magnitude of 10. Halcrow has confirmed that east of Pioneer Road is in the “Buffer Zone” and as such the network is not validated to the same degree, which can lead to some erroneous figures being shown.

Consequently, AMEC has manually adjusted the HGV flows in this area, applying the 2011 traffic counts for HGV turning movements into/out of Ploughley Road, growthed to 2031. This has produced a more appropriate set of figures for the HGV traffic into and out of Ploughley Road and the B4011.

Changes have also been made to the mainline flow to represent the higher HGV movements that would be expected along this corridor.

1.2.2 The Bicester SATURN Model Extents

The Bicester SATURN Model does not extend to the south of the A41, i.e. the road network stemming off from Ploughley Road and the B4011. Therefore a separate approach has been undertaken for the following junctions and links:

- Ploughley Road south of Ambrosden;
- Palmer Avenue;
- B4011 south of the A41;
- Junction of Ploughley Road and Palmer Avenue;
- **Junction of Palmer Avenue and B4011; and**
- C Site Access junction.

The traffic flows in these locations above have been developed using 2011 traffic counts (assumed to be the same as the 2007 baseline) which AMEC commissioned in June 2011.

These counts have been growthed to 2031 using TEMPRO growth (local growth factors) to provide the 2031 base scenario. The C Site traffic has not been growthed in this scenario.

The 2031 + Development scenario has been calculated by applying the changes associated to the proposed C-Site development/shift pattern. The reduction in total traffic (although increase in HGVs) has been applied to the links and junctions set out above.

The routeing agreement for HGVs from C Site along Palmer Avenue and the B4011 has been maintained in the 2031 + Development scenario, whilst all light vehicles route north to the A41 via Ambrosden and Ploughley Road.

Details of the methodology of how the issues south of the A41 have been addressed are set out in the TA.

2. Junction Assessments

2.1 Palmer Avenue/B4011

Table 1 sets out the results for the Palmer Avenue/B4011 junction in 2031 in the baseline situation. Table 2 sets out the results for the junction in the 2031 + Development scenario.

Table 1 Palmer Avenue/B4011 – 2031 Base

Movement	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue	Delay (mins/veh)	RFC	Queue	Delay (mins/veh)
B – AC	0.245	0	0.26	0.191	0	0.26
C – AB	0.090	0	0.13	0.073	0	0.20
Ave Delay Per Vehicle			0.02			0.01

Arm A: B4011 (S). Arm B: Palmer Avenue. Arm C: B4011 (N).

Table 2 Palmer Avenue/B4011 – 2031 Base + Development

Movement	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue	Delay (mins/veh)	RFC	Queue	Delay (mins/veh)
B – AC	0.239	0	0.25	0.237	0	0.29
C – AB	0.129	0	0.16	0.064	0	0.19
Ave Delay Per Vehicle			0.02			0.01

Arm A: B4011 (S). Arm B: Palmer Avenue. Arm C: B4011 (N).

From the table it can be seen that there will not be a significant change to the operation of the junction in the AM and PM peak as a result of the development traffic. The junction would continue to operated at below capacity in both scenarios.

2.2 A41/B4011

Table 3 sets out the results for the A41/B4011 junction in the 2031 scenario. Table 4 sets out the results for the junction in the 2031 + Development scenario.

Table 3 A41/B4011 – 2031 Base

Movement	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue	Delay (mins/veh)	RFC	Queue	Delay (mins/veh)
B – AC	***	74	12.6	2.276	51	4.67
C – AB	0.966	11	0.69	0.348	1	0.15
Ave Delay Per Vehicle			0.60			0.42

Arm A: A41 (E). Arm B: B4011. Arm C: A41 (W). ***** - Indicates that the ARCADY model RFC figure is above the highest figure it can report.

Table 4 A41/B4011 – 2031 Base + Development

Movement	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue	Delay (mins/veh)	RFC	Queue	Delay (mins/veh)
B – AC	2.405	24	3.50	2.712	76	7.68
C – AB	0.975	12	0.73	0.388	1	0.17
Ave Delay Per Vehicle			0.25			0.70

Arm A: A41 (E). Arm B: B4011. Arm C: A41 (W). ***** - Indicates that the ARCADY model RFC figure is above the highest figure it can report.

The tables above indicate that the impact of the change in development traffic (and distribution across the junction) improves the performance of the junction in the AM peak.

In the PM peak however there is a slight worsening of the performance. Taking both peaks into account however the impact of the development traffic would balance out across the day. It is also noted that as the junction is above capacity by some way in the 2031 scenario the impact of the marginal increase (+17 and +1) is being over estimated. In essence the increase of +17 vehicles across the peak hour is one additional vehicle per 3 and a half minutes. In this context it is unlikely that junction operation would be changed as much as the software is setting out.

This issue is one limitation of the software (PICADY) in that over saturated junction performance can be hard to estimate when a small increase in development traffic is added on. For the reasons above, and the due to the very low increase in traffic at the junction as a result of the development it is considered that mitigation would not be required.

Author: Glyn Price

Glyn Price
.....

Reviewer: Bev Coupe

Bev Coupe
.....

Copyright and Non-Disclosure Notice

The contents and layout of this report are subject to copyright owned by AMEC (©AMEC Environment & Infrastructure UK Limited 2012) save to the extent that copyright has been legally assigned by us to another party or is used by AMEC under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report.

The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of AMEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.

Third Party Disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by AMEC at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. AMEC excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.