

Technical note

Project:	Marley Eternit	To:	South Cambridgeshire District Council
Subject:	Transport Statement Review and additional modelling work	From:	Atkins
Date:	24 th Aug 2017	cc:	

This Technical Note presents the findings of a review of the 'AMENDED_transport_statement_Meldreth' (November 2016 v3) produced by Vectos, prepared in support of a planning application for proposals to demolish some of the unused buildings at the existing Marley Eternit factory site at Whaddon Road, Meldreth and provide a residential development consisting of up to 150 dwellings accessed off Whaddon Road and a 2,323sqm Plastics Technology Building to be located to the north of the factory complex. The Transport Statement addresses comments made by Cambridgeshire County Council (CCC) and South Cambridgeshire District Council (SCDC) on the Transport Assessment for the Proposed Development¹ in a meeting on 12th October 2016. The following summarises the comments made at the meeting:

- Removal of the separate access to the sports and social club;
- Requirement for a Road Safety Audit to be undertaken;
- Accident Data to be provided;
- Pedestrian link from the development to the junction of Whitecroft Road requires amendment with a commitment to providing an upgraded footway to the High Street in Meldreth.

Atkins were instructed by SCDC to undertake an independent review of the Transport Statement prepared by Vectos, comprising the following scope of work:

- Stage 1: Review of the amended Transport Statement (TS), the proposed site and junctions and predicted trip generation;
- Stage 2: An optional modelling task;
- Stage 3: Comment on the potential impact of development traffic on roads within Meldreth; and
- Stage 4: Provide a Technical Note/Report summarising considerations and recommendations.

The remainder of this Technical Note provides comment on the amended Transport Statement in line with the comments made by CCC and SCDC. Paragraph numbers and section headings are consistent with those in the Transport Statement.

2. Site Access

2.3 Paragraph 2.3 of the Transport Statement provides justification for the reasoning behind the provision of separate vehicular accesses for the proposed residential development and the factory site, which are summarised below:

- The existing Marley Eternit factory access benefits from a gatehouse, weighbridge and a further rising gate to control access, which cannot be shared with a residential access without further internal reorganisation within the existing factory compound. This would cause a significant financial but also an extra operational cost to cope with the transition;
- The articulated HGVs bringing goods onto the site need to wait at the gatehouse as they are processed. At these times there is a planning condition which requires that vehicles do not block back onto Whaddon Road;
- Asking residents to wait in a line of HGVs as they wait would not be acceptable operationally. Having residents' cars sharing an access with HGVs accessing former asbestos factory would make the

¹ Proposed Mixed Use Redevelopment of Marley Eternit Site, Whaddon Road – Transport Assessment (VN60622) July 2016

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development considerably less attractive to potential buyers. This in turn would have serious implications for the viability and ultimately the deliverability of the scheme; and

- It would also make the residential access less efficient with a spine road coming through the narrow section of the site.

Based on the justification provided and a review of the proposed access arrangements, it is considered that it is appropriate to retain separate vehicular accesses to the site for residential and industrial uses on safety grounds, as well as to avoid delay to vehicles accessing the residential site when articulated lorries are waiting to be processed at the gatehouse. This would also avoid any potential safety and operational issues caused by vehicles queuing back onto the public highway (Whaddon Road) while waiting to access the site.

6. Multi-Modal Trip Forecast

6.2 Table 6.1 of the Transport Statement shows the multi-modal traffic flows for the residential site of 150 dwellings. It is considered that use of TRICS is appropriate as there are no existing residential land uses on the site which could be surveyed. The TRICS outputs contained within Appendix B have been reviewed, the trip rates used appear to be reasonable and have been based on appropriate residential developments from the TRICS database. The residential trips have been based on the 85th percentile TRICS survey which is considered to provide a robust prediction of trips to and from the site. It is recommended that the modal splits derived from the TRICS outputs are checked against 2011 Census Travel for Work modal splits for the local ward in order to confirm that they are an accurate representation of existing local travel patterns.

6.5 Figure 6.1 of the Transport Statement shows the modal split percentages for the industrial aspect of the site obtained from TRICS, and Table 6.2 summarises the multi-modal trip forecasts relating to the proposed 2,323sqm Plastics Technology Building. It is recommended that, as the site is currently in use by Marley Eternit as an industrial facility producing roofing and cladding materials, it would be appropriate to survey the existing employees to obtain more accurate details of existing modal splits, as this would serve to provide a check on the modal splits derived from TRICS.

7. Journey to Work Distribution

7.1 Paragraphs 7.1 and 7.2 describe the methodology used to calculate the predicted vehicular distribution on the local highway network, i.e. utilising Journey to Work (JTW) Census data for the Meldreth/Melbourn Medium Super Output Area (MSOA) that the site lies within and Routefinder software within MapInfo. This methodology is considered appropriate to assess the predicted vehicular distribution on the local highway network for both the residential and industrial land uses.

7.4 Paragraph 7.4 makes reference to Figures 7.1 and 7.2, these cannot be found within Appendix C of the document as stated within the text therefore further clarification is required on the AM and PM distribution diagrams for trips generated by the proposed development. The distribution of development trips outlined in the subsequent paragraphs cannot therefore be verified.

Development Trip Impact/Link Capacity

7.5 Paragraph 7.5 states that “...the majority of arrivals and departures to the site for both the residential properties and the Plastics Technology Plant will come from the east of the site.” The baseline traffic data taken from the classified turning counts undertaken in May 2016 at the Whaddon Road/Site Access junction (and included within Appendix C of the Vectos TA) demonstrate the following vehicle flows eastbound along Whaddon Road towards Meldreth village:

- AM Peak Hour (0800-0900) – 187 vehicles
- PM Peak Hour (1630-1730) – 123 vehicles

The Amended TS states in Paragraph 7.7 that “The level of turning traffic at this junction is also relatively modest with the largest movements towards Kneesworth being 12 vehicles in the AM Peak...”. It is assumed that this refers to vehicle turning movements onto Kneesworth Road at the Whaddon Road/Kneesworth Road/Whitcroft Road/Fenny Lane crossroads junction, with the 12 movements representing 22% of the total AM Peak Hour development trips heading eastbound on Whaddon Road (total of 54 movements).

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With reference to the extrapolated traffic survey data for local junctions in the vicinity of the Whaddon Road/Kneesworth Road/Whitcroft Road/Fenny Lane crossroads junction, the following 2023 Without Development traffic flows (i.e. baseline flows factored from 2016 to 2023 using TEMPRO local growth factors) have been derived on Whitcroft Road eastbound heading towards Meldreth village:

- AM Peak Hour (0800-0900): 280 vehicles (4.6 vehicles per minute)
- PM Peak Hour (1630-1730): 223 vehicles (3.7 vehicles per minute)

When the proposed development traffic heading eastbound along Whitcroft Road towards Meldreth village is taken into consideration, the following vehicle flows result:

- AM Peak Hour (0800-0900): 316 vehicles (5.3 vehicles per minute)
- PM Peak Hour (1630-1730): 239 vehicles (4 vehicles per minute)

Based on the above assessment, across the AM Peak Hour the proposed development is predicted to result in an increase from 4.6 vehicles per minute to 5.3 vehicles per minute heading eastbound on Whitcroft Road towards Meldreth village. In the PM Peak Hour, the corresponding increase is predicted to be from 3.7 vehicles per minute to 4 vehicles per minute.

TA 79/99 'Traffic Capacity of Urban Roads' (DMRB Volume 5 Section 1 Part 3) states that for a UAP3 road (Urban All-Purpose with 30-40mph speed limit, carrying mixed traffic with frontage access, side roads, bus stops and at-grade pedestrian crossings) with a road width of approximately 6.1m, maximum capacity is in the region of 900 vehicles per hour (one-way hourly flows).

Based on the baseline traffic flows from the 2016 traffic counts, and taking the 'worst-case' AM Peak Hour time period into account, Whitcroft Road is currently operating at approximately 27% of its maximum capacity in the AM Peak Hour ($244/900 = 0.27$), rising to 31% of maximum capacity in 2023 without the proposed development. This is predicted to increase to 35% of maximum capacity as a result of the additional traffic from the proposed Marley Eternit development ($316/900 = 0.35$). Whitcroft Road is therefore predicted to operate well within its maximum capacity when the additional traffic from the Marley Eternit development is taken into consideration.

8. Forecast of Cycle Parking at Meldreth Station

- 8.4 The methodology used to predict the number of cycle trips to and from Meldreth Station (i.e. utilisation of 2011 Census Travel to Work data for the local area) is considered robust, and the assumption that the residential site will give rise to a population of 360 persons is considered reasonable given the proposal for a total of 150 dwellings. It is recommended that this assumption is checked against 2011 Census data for local household composition however.

Optional Modelling Task

At the request of SCDC, we have undertaken the optional task of modelling the following junctions utilising Junctions 9 software in order to undertake a high-level check on available capacity at these junctions, both current capacity in the Baseline Year and in the Future Year With and Without Development scenarios:

- Whaddon Gap/A1198 Priority Junction; and
- Whaddon Road/Fenny Lane/Whitcroft Road/Kneesworth Road crossroads.

It should be noted that neither of the above junctions were modelled by Vectos in support of the original TA for the proposed Marley Eternit development. As a result, baseline traffic count data for these junctions is not available and it has not been possible to undertake additional traffic surveys within the available timescales due to the school summer holiday period. Baseline traffic flows at the above junctions have therefore been extrapolated from recent traffic count data at local junctions within the vicinity of the site, including the Whaddon Road/Marley Eternit Site Access junction and the A1198/The Causeway/Chestnut Lane junction located approximately 2 miles to the west. This has provided a reasonable approximation of baseline turning flows at these junctions, however it is recommended that traffic counts are undertaken at the modelled junctions during a neutral month (i.e. outside the school summer holiday period) and the models rerun with this updated baseline data as a further check on available capacity.

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Assumptions

There are several assumptions that have been made to provide input data for the TRL Junctions 9 model, including the following:

- Using default amounts of HGV traffic levels (10%) as a worst-case scenario due to the absence of HGV data; and
- Traffic count data has been obtained for the Whaddon Road/Marley Eternit Site Access junction (from the TA prepared by Vectos) and traffic counts at the A1198/The Causeway/Chestnut Lane crossroads. For this reason, trips originating between these roads (including those originating within Whaddon village itself) have not been taken into account.

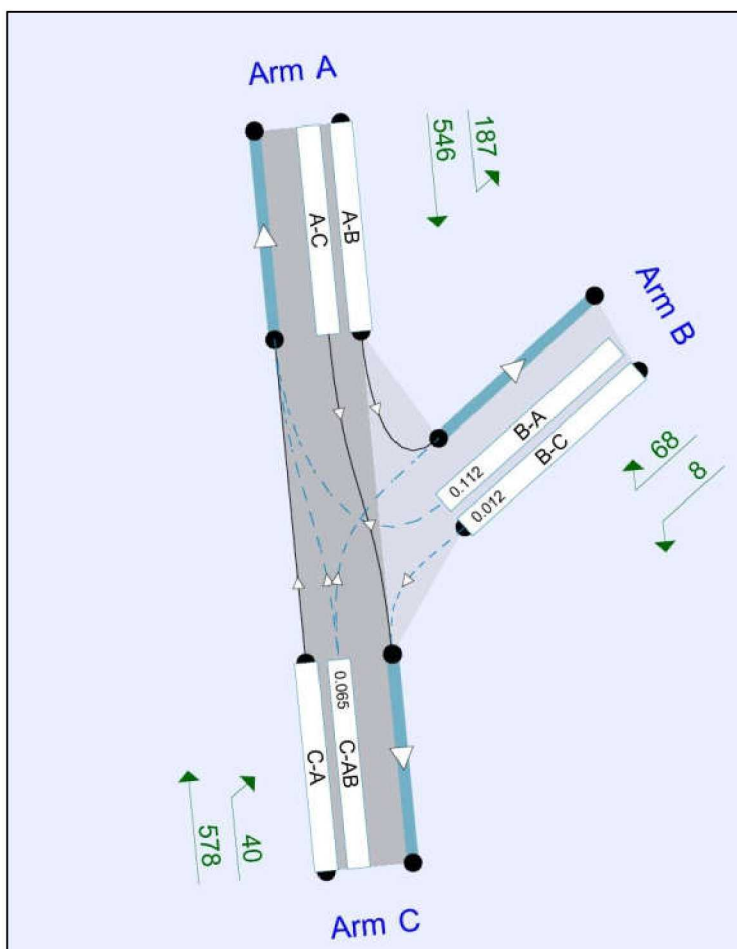
Development traffic has been applied to a 2023 'future base' scenario, with a total of 96 vehicles originating from and travelling to the Marley Eternit Site in the AM Peak hour, and 99 vehicles travelling to and originating from the site in the PM Peak hour as per the vehicular trip generation for the site stated within the Transport Statement prepared by Vectos.

Junction Assessment Results

Whaddon Gap/A1198 Priority Junction

Figure 1 below shows the junction modelled and identifies the arms stated in the below tables.

Figure 1. Whaddon Gap/A1198 Modelled Area



The junction capacity modelling results are shown in Tables 1 and 2 below for the AM and PM peak scenarios respectively.

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Table 1. Whaddon Gap/A1198 AM Peak Modelling Results

Movement	Queue (PCU)	Delay (s)	Ratio of Flow Capacity (RFC)
2016 Base Year			
Movement B-C (Whaddon Gap to A1198 South)	0	12.5	0.19
Movement B-A (Whaddon Gap to A1198 North)	0	8.5	0.02
Movement C-AB (A1198 South to Whaddon Gap)	0	4.5	0.12
2023 – No Development			
Movement B-C (Whaddon Gap to A1198 South)	0	14.5	0.24
Movement B-A (Whaddon Gap to A1198 North)	0	9.0	0.02
Movement C-AB (A1198 South to Whaddon Gap)	0	4.5	0.16
2023 – With Development			
Movement B-C (Whaddon Gap to A1198 South)	0	16.0	0.29
Movement B-A (Whaddon Gap to A1198 North)	0	9.0	0.03
Movement C-AB (A1198 South to Whaddon Gap)	0	4.0	0.16

Table 1 shows that during the 2017 and 2023 AM peak hour the junction operates well within capacity with very little queuing or delay. With the addition of the development traffic this continues to be the case with the highest RFC in the With Development scenario being 0.29 for the southbound left-turn onto the A1198 from Whaddon Gap (note that a junction is considered to be operating within capacity when RFC values are below 0.85).

Table 2. Whaddon Gap/A1198 PM Peak Modelling Results

Movement	Queue (PCU)	Delay (s)	RFC
2016 Base Year			
Movement B-C (Whaddon Gap to A1198 South)	0	16.5	0.33
Movement B-A (Whaddon Gap to A1198 North)	0	9.0	0.03
Movement C-AB (A1198 South to Whaddon Gap)	0	4.0	0.22
2023 – No Development			
Movement B-C (Whaddon Gap to A1198 South)	0	21.5	0.43
Movement B-A (Whaddon Gap to A1198 North)	0	9.5	0.04
Movement C-AB (A1198 South to Whaddon Gap)	0	4.5	0.31
2023 – With Development			

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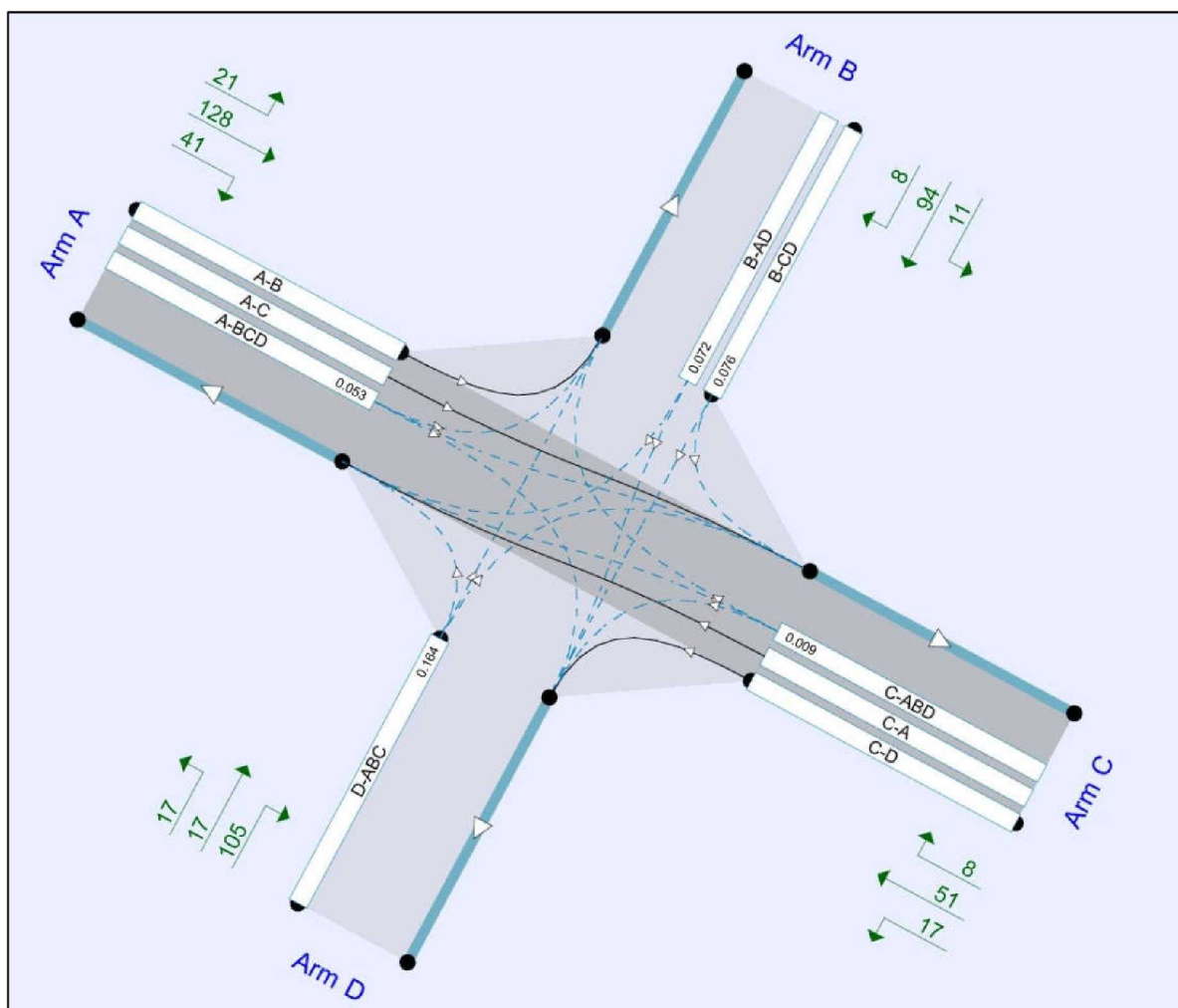
Movement	Queue (PCU)	Delay (s)	RFC
2016 Base Year			
Movement B-C (Whaddon Gap to A1198 South)	1	22.5	0.46
Movement B-A (Whaddon Gap to A1198 North)	0	9.5	0.04
Movement C-AB (A1198 South to Whaddon Gap)	1	4.5	0.31

Table 2 shows that during the 2017 and 2023 PM peak hour the junction operates well within capacity with very little queuing or delay. With the addition of the development traffic this continues to be the case with the highest RFC in the Development scenario being 0.46 for the southbound left-turn onto the A1198 from Whaddon Gap.

Whaddon Road/Fenny Lane Crossroads

Figure 2 below shows the junction modelled and identifies the arms stated in the below tables.

Figure 2. Whaddon Road/ Fenny Lane Modelled Area



The junction modelling results are shown in Tables 3 and 4 below for the AM and PM peak scenarios respectively.

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Table 3. Whaddon Road/ Fenny Lane AM Peak Modelling Results

Movement	Queue (PCU)	Delay (s)	RFC
2016 Base Year			
Movement B-CD (Fenny Lane to Whitcroft Road/Kneesworth Road)	0	8.0	0.12
Movement B-AD (Fenny Lane to Whaddon Road/Kneesworth Road)	0	8.0	0.11
Movement A-BCD (Whaddon Road to Kneesworth Road)	0	6.0	0.08
Movement D-ABC (Kneesworth Road into junction)	0	8.5	0.25
Movement C-ABD (Kneesworth Road to Fenny Lane)	0	6.0	0.10
2023 – No Development			
Movement B-CD (Fenny Lane to Whitcroft Road/Kneesworth Road)	0	8.0	0.14
Movement B-AD (Fenny Lane to Whaddon Road/Kneesworth Road)	0	8.0	0.13
Movement A-BCD (Whaddon Road to Kneesworth Road)	0	6.0	0.09
Movement D-ABC (Kneesworth Road into junction)	0	9.0	0.29
Movement C-ABD (Kneesworth Road to Fenny Lane)	0	6.0	0.02
2023 – With Development			
Movement B-CD (Fenny Lane to Whitcroft Road/Kneesworth Road)	0	8.5	0.14
Movement B-AD (Fenny Lane to Whaddon Road/Kneesworth Road)	0	8.5	0.13
Movement A-BCD (Whaddon Road to Kneesworth Road)	0	6.0	0.12
Movement D-ABC (Kneesworth Road into junction)	1	9.5	0.30
Movement C-ABD (Kneesworth Road to Fenny Lane)	0	6.0	0.02

Table 3 shows that during the 2017 and 2023 AM peak hour the junction operates well within capacity with very little queuing or delay. With the addition of the development traffic this continues to be the case with the highest RFC in the Development scenario being 0.30 for the movement from Kneesworth Road into the crossroads.

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Table 4. Whaddon Road/ Fenny Lane PM Peak Modelling Results

Movement	Queue (PCU)	Delay (s)	RFC
2016 Base Year			
Movement B-CD (Fenny Lane to Whitcroft Road/Kneesworth Road)	0	9.0	0.22
Movement B-AD (Fenny Lane to Whaddon Road/Kneesworth Road)	0	8.5	0.19
Movement A-BCD (Whaddon Road to Kneesworth Road)	0	6.5	0.05
Movement D-ABC (Kneesworth Road into junction)	0	8.0	0.23
Movement C-ABD (Kneesworth Road to Fenny Lane)	0	5.5	0.02
2023 – No Development			
Movement B-CD (Fenny Lane to Whitcroft Road/Kneesworth Road)	0	10.0	0.26
Movement B-AD (Fenny Lane to Whaddon Road/Kneesworth Road)	0	9.5	0.23
Movement A-BCD (Whaddon Road to Kneesworth Road)	0	6.0	0.03
Movement D-ABC (Kneesworth Road into junction)	0	9.0	0.28
Movement C-ABD (Kneesworth Road to Fenny Lane)	0	5.5	0.03
2023 – With Development			
Movement B-CD (Fenny Lane to Whitcroft Road/Kneesworth Road)	0	10.0	0.27
Movement B-AD (Fenny Lane to Whaddon Road/Kneesworth Road)	0	9.5	0.24
Movement A-BCD (Whaddon Road to Kneesworth Road)	0	6.0	0.07
Movement D-ABC (Kneesworth Road into junction)	1	9.5	0.30
Movement C-ABD (Kneesworth Road to Fenny Lane)	0	5.5	0.03

Table 4 shows that during the 2017 and 2023 PM peak hour the junction operates well within capacity with very little queuing or delay. With the addition of the development traffic this continues to be the case with the highest RFC in the Development scenario being 0.30 for the movement from Kneesworth Road into the crossroads.

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Modelling Summary

The results of the junction capacity modelling have shown that the Whaddon Gap/A1198 junction and the Whaddon Road/Fenny Lane crossroads are predicted to operate well within capacity with very little queuing or delay in all scenarios on all arms. It is therefore considered that the impact of the proposed Marley Eternit Site Development on the operation of these two junctions is likely to be minimal.

Conclusion

In conclusion, based on the above review of the 'AMENDED_transport_statement_Meldreth' (November 2016 v3) produced by Vectos, it is considered that the further transport assessment work undertaken by Vectos in support of the proposed Marley Eternit development is largely robust, and the proposed development is considered unlikely to have a major impact on the operation of local junctions and on the local highway network between the site and Meldreth village (i.e. Whaddon Road and Whitecroft Road). We would however make the following recommendations for further assessment work to be undertaken in support of the proposed development:

- **Multi-modal trip generation (residential development)** - It is recommended that the modal splits derived from the TRICS outputs are checked against 2011 Census Travel for Work modal splits for the local ward in order to confirm that they are an accurate representation of existing local travel patterns.
- **Multi-modal trip generation (industrial development)** - It is recommended that, as the employment aspect of the industrial site is existing, it would be appropriate to survey the existing employees to obtain more accurate details of existing modal splits, as this would serve to provide a check on the modal splits derived from TRICS.
- **Journey to Work Distribution** - Figures 7.1 and 7.2 cannot be found within Appendix C of the document as stated within the text, therefore further clarification is required on the AM and PM distribution for trips generated by the proposed development. The distribution of development trips outlined in the subsequent paragraphs cannot therefore be verified.
- **Forecast of Cycle Parking at Meldreth Station** - Clarification is required on the origin of the assumption that the residential site will give rise to a population of 360 persons (i.e. reference to 2011 Census data for local household composition).
- **Junction Capacities** - The results of the junction capacity modelling have shown that the Whaddon Gap/A1198 junction and the Whaddon Road/Fenny Lane crossroads are predicted to operate well within capacity with very little queuing or delay, therefore it is considered that the impact of the proposed Marley Eternit Site Development on the operation of these two junctions is likely to be minimal. It is recommended that traffic counts are undertaken at the modelled junctions during a neutral month and the junction models rerun with this updated baseline data as a further check on available capacity at these junctions, however it is considered that this is unlikely to have a material impact on the above conclusions.