

Project:	Braintree Local Development Framework (LDF)	Job No:	60049654/BX506
Subject:	Braintree & Witham LDF Core Strategy (Draft)		
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1. Introduction

- 1.1 AECOM has been commissioned to review the document 'Braintree & Witham LDF Core Strategy – Assessment of Impact of Potential Core Strategy Sites on Existing Junctions' dated January 2010 and prepared by Mouchel.
- 1.2 AECOM has previously commented on the Braintree LDF in Technical Notes 1 to 4 and on an interim document entitled 'Review of Potential LDF Sites in Witham – Forecast Traffic Flows' in Technical Note 5.
- 1.3 Within the LDF two main sites for development are considered within Braintree, they are:
- Springwood Drive/Panfield Lane: with proposed development as follows:
 1. 5 hectares of B1 land use – GFA 20,000sqm
 2. 5 hectares of B2 land use – GFA 20,000sqm
 3. 5 hectares of B8 land use – GFA 20,000sqm
 4. 500 dwellings
 5. 6,00 seat football stadium
 6. 1.500 pupil Braintree College (A-level and above)
 - Land Southwest of Great Notley: with proposed development as follows:
 1. 9.25 hectares of B1 land use – GFA 37,00sqm and
 2. 9.25 hectares of B2 land use – GFA 37,00sqm
- 1.4 Within Witham the main areas considered are:
- Land Northeast of Witham (Option 1) : where 300 residential dwelling are proposed on a site to the north of the existing railway line; and
 - Lodge Farm, Southwest Witham (Option 2): where proposals are for 600 dwellings with ancillary community support services or 900 dwellings with ancillary community support services, a doctor's surgery and a primary school.
- 1.5 Mouchel state that an initial study area was established for Braintree and Witham in order to determine where traffic flow information would be required. AECOM has reviewed the area defined by Mouchel and agree it encompasses the relevant junctions and sections of the Trunk Road Network.
- 1.6 Of the key junctions identified for Braintree the first point of access and main junction of concern to the Highways Agency is the A120/A131 Panners Junction/Roundabout; for Witham the main junctions affected are the A12 mainline junctions 21, 22 and the A12/ Oak Road junction at Rivenhall.

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2. **Conclusion from AECOM Technical Note 5**

2.1 Our conclusions from Technical Note 5 were:

'Mouchel appear to be adopting a robust approach to the assessment of potential LDF allocation sites in the Witham area. Indeed, it appears that the assessment represents a 'business-as-usual' approach. However, further work should be undertaken to consider the impact of the following factors:

- *the potential impact of congestion on peak period growth along the A12 (i.e. peak spreading, mode shift, strategic re-assignment);*
- *the potential to achieve lower vehicle trip generations through higher levels of internalisation and the deployment of sustainable transport measures.*

In the absence of such measures, the out-turn traffic flows point to significant congestion on the A12 between Hatfield Peverel and Witham, and between Witham and Kelvedon in the Future Year. However, the principle cause of this appears to be background growth, with only a small increment arising from the development sites being considered.

It is undoubtedly the case that the most sustainable locations for development in the District are likely to be the Witham and Braintree urban areas. The Highways Agency is recommended to work with Braintree District Council to support sustainable development in these areas; to drive down the generation of motor vehicle traffic; and to identify such local capacity enhancement measures as are required to accommodate the residual motor vehicle traffic that will result from development on this scale in these locations.'

2.2 To date no further work has been undertaken to address these issues by Mouchel.

3. **Traffic Flows**

3.1 Mouchel have provided the sources used to obtain traffic flow data. They are:

- Details of historical TA's used Development at Maltings Lane, Witham – Mayer Brown Ltd May 2006;
- Land at Forest Road Witham Essex – Stuart Michael Associates July 2000; and
- Land at Newland Street, Witham – WSP Development & Transportation August 2006.

3.2 Traffic flows from the above data include developments in their opening year therefore base flows range from 2004 to 2009.

3.3 Traffic Surveys were carried out at the following points in 2009:

- Along B1389 Hatfield Road;
- B1018 Cressing Road; and
- Rickstones Road & Oak Road junction.

3.4 AECOM note that some of the sources for historical data would be outside of three years as detailed within the DFT ‘Guidance on Transport Assessments’, however this data will have been largely superseded by the more recent data collected during 2009.

4. Trip Distribution

4.1 AECOM has been unable to verify the trip distribution and request that a copy of Appendix J, which contains the trip distribution, be submitted in due course for analysis. The results have therefore been taken in good faith pending further verification.

5. Impact on the Trunk Road Network

5.1 The main areas of concern to the Highways Agency on the Trunk Road Network are:

- A120/A131 Panners Junction;
- Hatfield Road/ Gershwin Boulevard;
- A12 mainline Carriageways; and
- A12 Grade separated junctions Merge-Diverge layouts.

A120/A131 Panners Junction

5.2 Mouchel’s ARCADY results indicate that the northern roundabout appears to operate within capacity with and without the LDF. The scenario with the proposed developments produces an RFC of 0.943 and a resulting queue of 12.3 vehicles or approximately 74 metres on the A131 South arm. However Mouchel state that this level of queuing is not considered a significant problem and recommend no mitigation be taken. AECOM find this reasonable.

Table 1.0: Northern Roundabout

	AM				Queue Increase	% increase in RFC
	Do Minimum		LDF			
	RFC	Q vehs	RFC	Q vehs		
B1256 North	0.66	1.9	0.833	4.7	2.8	26%
A120 EB On	0	0	0	0	0	0%
A131 South	0.749	2.9	0.943	12.3	12.3	26%
A120 EB Off	0.429	0.7	0.585	1.4	1.4	0%

5.3 For the Southern roundabout the A120 westbound off slip appears to exceed its capacity in the future year with an RFC of 0.952; Mouchel state *‘this queue is unlikely to be realised in the future scenario because traffic using this arm has the option of coming off at the previous junction where the roundabout has no capacity problems.’*

5.4 AECOM do not regard this as a ‘show stopper’ but would suggest that the performance of this junction be monitored and if necessary mitigation brought forward to keep this problem to an acceptable level.

Table 2.0: Southern Roundabout

	AM				Queue Increase	% increase in RFC
	Do Minimum		LDF			
	RFC	Q vehs	RFC	Q vehs		
A120 WB Off	0.501	1	0.952	13.7	12.7	90%
B1256 East	0.33	0.5	0.488	0.9	0.4	0%
A131 South	0.193	0.2	0.282	0.4	0.2	0%
A120 WB On	0	0	0	0	0	0%
A131 North	0.535	1.1	0.701	2.3	1.2	0%

Hatfield Road/Gershwin Boulevard Roundabout

- 5.5 The Hatfield Road/Gershwin Boulevard is the first junction encountered when entering Witham from the south; as such queues here have the potential to tail back and affect the A12.
- 5.6 ARCADY results indicate that the arms likely to impact on the A12 will operate within capacity in the future year scenario, however Mouchel has proposed mitigation measures as cases of over capacity are indicated to impact on other arms at this junction.

A12 Main Line Carriageways

- 5.7 AECOM commented extensively on the impact to the A12 junctions in our Technical Note 5. Results show that various sections of the A12 will exceed their theoretical capacity however the LDF proposals only worsen the situation between 1 – 3%.
- 5.8 In Technical Note 5 we commented that *‘Mouchel appear to be adopting a robust approach to the assessment of potential LDF allocation sites in the Witham area. Indeed, it appears that the assessment represents a ‘business-as-usual’ approach. However, further work should be undertaken to consider the impact of the following factors:*
 - *the potential impact of congestion on peak period growth along the A12 (i.e. peak spreading, mode shift, strategic re-assignment);*
 - *the potential to achieve lower vehicle trip generations through higher levels of internalisation and the deployment of sustainable transport measures.’*
- 5.9 Furthermore Mouchel state that *‘the method used to calculate background traffic growth does not take into account constraints in the network so where the network is not expanded to meet the demand the predicted level of traffic is unlikely to materialise as people will chose to travel by a different route, a different mode or at a different time.’*

A12 Grade Separated Junctions - Merge/Diverge Layouts

- 5.10 Within this draft report Mouchel has assessed the impact of the potential development to the A12 slip roads referencing volume 6 of the Design Manual for Roads and Bridges (DMRB) specifically focusing on TD22/05 Layout of Grade Separated Junctions.
- 5.11 Mouchel state that the DMRB diagrams indicate that all of the merges and diverges will fail to meet the recommended standards under the 'do minimum' scenario for at least one peak period if existing junction layouts remain. This is due mainly to increases on the A12 carriageway rather than increases in local traffic. AECOM has reviewed their results and this appears broadly correct.
- 5.12 There is only one slip road that has its recommended category altered by the addition of the LDF traffic in either scenario. The southbound merge at J21 will be a 2 lane E by 2025 which means that there will be 2 lanes upstream and the merger will be a lane gain leading to 3 lanes downstream. The predicted traffic growth means that in the 'Do Minimum' scenario 3 lanes would be required upstream along with a lane gain. The addition of the development traffic in either Option 1 or Option 2 means that the recommended merge is 3 lanes upstream with a type F merge. Type F is a two lane slip road with a single lane gain.
- 5.13 Upgrading would only be recommended if the A12 carriageway was also upgraded to 3 lanes upstream. Without increased capacity on the A12 increasing the capacity on the slip road is likely to create problems at this junction. Therefore due to constraint on the A12 Mouchel advised that the southbound merge at J21 is not upgraded.
- 5.14 AECOM has checked the merge diverge for each junction and Mouchel's conclusions appear broadly acceptable.
- 5.15 Ultimately the Highways Agency may need to allow for local widening of selected sections of A12 to dual 3 to accommodate merge-diverge and weaving flows. This is currently under way between Witham and Hatfield Peveral (J21 – J20b London-bound). This requirement could potentially extend to include the Hatfield Peveral to Witham (J20b – J21); Witham – Kelvedon (J22 to J23) and Kelvedon to Witham (J23 to J22) sections. However this appears to be attributable more to the effects of general background growth and does not appear to be a directly attributable requirement of this LDF

6. Conclusion

- 6.1 AECOM has reviewed the draft 'Braintree & Witham LDF Core Strategy – Assessment of Impact of Potential Core Strategy Sites on Existing Junctions' and concludes the following:
- AECOM have reviewed the data sources used for the base flows and finds them acceptable;
 - The trip generation and growth factors appear on the high side but AECOM finds them acceptable;

- AECOM were unable to verify the trip distribution and await a copy of Appendix J to complete this.
- The study area looked at by Mouchel appears adequate and to have encompassed all relevant junctions;

6.2 Having reviewed the appraisal of the Trunk Road Network we comment as follows:

- The performance of the A120 westbound off slip at the A120/A131 Panners junction needs to be monitored and mitigation brought forward if necessary;
- The Hatfield Road/ Gershwin Boulevard junction is unlikely to pose a problem to the A12 especially if Mouchel's suggested layout alteration is brought forward;
- The A12 mainline carriageways appear to be operating over capacity but the LDF proposals do not appear to make them appreciably worse;
- The A12 slip roads and merge-diverge tapers appear to be operating over capacity within the 'do minimum' scenario; the addition of the LDF appears to make only one of them require further upgrade. This however is unlikely to occur as it would require the A12 main line to be widened to dual 3 lane carriageways and this is not envisaged.

6.3 The Highways Agency may need to allow for local widening of selected sections of A12 to dual 3 to accommodate merge-diverge and weaving flows, specifically from:

- Hatfield Peverel to Witham;
- Witham to Kelvedon; and
- Kelvedon to Witham.

This appears to be attributable more to the effects of general background growth and does not appear to be a directly attributable requirement of this LDF.

6.4 AECOM in reviewing the LDF did not find any 'show stoppers'; Mouchel's work appears to be based on a robust application of growth actors and trip generations with no allowance made for peak spreading, mode shift, strategic reassignment and their results could be considered to be on the high side.

6.5 AECOM recommends the Highways Agency work with Braintree District Council and Essex County Council to ensure that this level of development in Witham and Braintree can be accommodated with minimal impact of the Trunk Road through a combination of measures designed to maximise the internalisation of trips and the use of non car modes of travel. Ultimately, however, provision may need to be made for further local widening to dual 3 lanes in a similar way to the scheme currently under way between Witham & Hatfield Peverel.

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