



Uttlesford District Council: Draft Local Plan

Pre-Publication Report on behalf of Takeley Parish Council

Appendix 1

Transportation Report by Railton TPC Ltd

Transport Objection to Proposed Housing
Allocations South-West Takeley:
Representations on behalf of Takeley
Parish Council

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1. INTRODUCTION

- 1.1. This report has been prepared on behalf of Takeley Parish Council in response to recently identified possible housing allocations to the south-west of Takeley. The report assesses the potential adverse impact of these proposed developments, in particular at the Four Ashes junction and at Junction 8 of the M11 and considers the general issues of transport sustainability.
- 1.2. Railton TPC Ltd has previously prepared a report on behalf of Takeley Parish Council objecting to the possible allocation of a number of housing and employment sites in Takeley Parish (*'Uttlesford Strategic Land Availability Assessment: Representations on Behalf of Takeley Parish Council: Transport'*, 22 March 2016). The sites south-west of Takeley were not considered in the previous report. The previous report concluded that the Four Ashes junction and Junction 8 of the M11 currently operate close to or over capacity in the peak hours and that the potential for improvements at these junctions is very limited. It also concluded that only very modest new development can be accommodated within Takeley or along the B1256 corridor without severe adverse impacts in terms of queues and delays for drivers and severe adverse impacts for pedestrians and vulnerable highway users within Takeley and around the Four Ashes junction.
- 1.3. The three additional sites that have recently been identified as potential housing allocations are summarised in the following table:

Table 1.1: Possible Sites South-West of Takeley

Ref.	Address	Quantum of development	Access
02HBO15	Land at Bonningtons Farm, Station Road, Takeley	54	Station Road
03HBO15	Land west of Station Road, Takeley	280-467	Station Road
04HBO15	Land west of Station Road, (Hatfield Broad Oak Parish)	203-338	Via 03HBO15
Total		537-859	

- 1.4. Although a UDC press release indicated an allocation of '230' homes at Takeley, this does not fit the sites considered in the Strategic Land Availability Assessment (SLAA). Site 02HBO15 is too small to produce such a number although site 03HBO15 has a capacity of 280-467, with a defined boundary, but if allocated then site 02HBO15 (54

dwelling) would be 'logically' allocated also - producing a minimum of 334 dwellings, which I have taken as a minimum figure for analysis. Site 04HBO15 is a westward extension of site 03 with a capacity of 203-338. The addition of all three sites at the maximum figures produces a maximum of 859 dwellings which is the figure used in my analysis below.

- 1.5. A Transport Statement relating to sites 03HBO15 and 04HBO15 was prepared by Journey Transport Planning in May 2015. This report failed to undertake any detailed assessment of the likely level of impact of the proposed development on the Four Ashes junction and Junction 8 of the M11 and it did not consider the site's constrained pedestrian access. The data presented in the report were from the 2001 Census rather than the currently available 2011 Census and there was no recognition of the unsustainable travel patterns of local residents revealed by the Census data. The conclusions of the Transport Statement are therefore considered to be partial and flawed.
- 1.6. The following section sets out the likely level of vehicle trip generation associated with the sites that have been identified. Section 3 identifies the potential impact of this level of vehicle trip generation on the local highway network, in particular the Four Ashes junction and Junction 8 of the M11. Section 4 considers the transport sustainability of the sites. Section 5 deals with pedestrian access. Section 6 comprises a summary and conclusion.

2. TRIP GENERATION OF POSSIBLE SITES

2.1. Typical trip generation rates for residential sites are set out in Essex Highways document, 'Uttlesford Local Plan Highway Impact Assessment' (October 2013). These are summarised in the following table:

Table 2.1: Trip Generation Rates

Development Type	AM Peak			PM Peak		
	in	out	2-way	in	out	2-way
private houses per dwelling	0.156	0.406	0.562	0.376	0.227	0.603
houses rented per dwelling	0.128	0.245	0.373	0.295	0.179	0.474

Source: Table 5-1 of Uttlesford Local Plan Highway Impact Assessment (Essex Highways Oct 2013)

2.2. The application of these trip generation rates to the possible level of development at the sites south-west of Takeley gives the following vehicle trips in the weekday peak hours:

Table 2.2: Trip Generation of Possible Sites

Minimum Development (334 dwellings)						
Site ref	AM Peak			PM Peak		
	in	out	2-way	in	out	2-way
total	48	114	162	115	69	184
Maximum Development (859 dwellings)						
Site ref	AM Peak			PM Peak		
	in	out	2-way	in	out	2-way
total	124	293	418	295	179	474

2.3. In the AM peak hour, the possible residential developments together could generate between 162 and 418 new vehicle trips on the highway network in the AM peak hour and between 184 and 474 new vehicle trips during the PM peak hour.

3. TRANSPORT IMPACT OF POSSIBLE SITES

New Vehicle Trips on the Local Highway Network

- 3.1. The 2011 census data for the Uttlesford 006 super output area (middle layer) that includes Takeley and the Canfields has been interrogated to derive a distribution of vehicle trips originating at the possible sites. A summary of the output data is attached as **Appendix 1**. It should be noted that less than 3% of trips generated by the possible developments are predicted to travel south on the B183. The vast majority of trips will therefore travel to and from the north via the Four Ashes junction.
- 3.2. The application of the distribution and assignment of trips to the trip generation of the three sites gives the vehicle flows on the local highway network shown in **Figure 3.1** and summarised in the following table:

Table 3.1: Increase in Vehicle Flows

Link/junction	minimum		maximum	
	AM Peak	PM Peak	AM Peak	PM Peak
M11 southbound approach to J8	15	35	38	90
M11 northbound approach to J8	2	4	5	11
A120 eastbound approach to J8	12	29	31	75
B1256 approach to J8	68	42	176	107
Total at J8	97	110	250	283
B1256 eastbound approach to Four Ashes junction	29	69	74	177
B1256 westbound approach to Four Ashes junction	8	19	21	49
B183 approach to Four Ashes Junction	111	67	285	174
Parsonage Road	10	24	26	61
Total at Four Ashes junction	158	179	406	461

- 3.3. The table shows that the possible residential development could lead to increases in vehicles approaching the Four Ashes junction of between 111 and 285 vehicles in the AM peak hour and between 68 and 176 vehicles approaching Junction 8 of the M11 from the B1256 in the AM peak hour. In the PM peak hour the largest increases are towards the sites with between 69 and 177 vehicle trips approaching the Four Ashes junction from the B1256 east (from Junction 8 of the M11).

Percentage Increase in Link Flows

- 3.4. Observed 2014 traffic flows have been derived from surveys undertaken in relation to a recent application for development to the east of the Four Ashes junction and from the

2013 Essex Highways report in relation to Junction 8 of the M11 (*Uttlesford Draft Local Plan Highway Impact Assessment of Draft Local Plan to 2031*, March 2014). **Figure 3.2** shows the existing traffic flows and the percentage increase in traffic flows associated with the possible developments south-west of Takeley. The data are summarised in the following table:

Table 3.2: Total Traffic Flows on the Local Highway Network with Possible Development

link	Min. % increase		Max. % increase	
	AM Peak	PM Peak	AM Peak	PM Peak
B1256 approach to J8 of M11	8%	7%	21%	19%
Parsonage Road towards Four Ashes junction	3%	9%	8%	24%
B1256 west towards Four Ashes junction	7%	16%	19%	41%
B1256 east towards Four Ashes Junction	1%	5%	3%	14%
B183 towards Four Ashes junction	36%	20%	93%	52%

- 3.5. The table shows that the possible development south-west of Takeley could lead to significant increases in traffic flows on the highway network. These increases are likely to exacerbate existing capacity problems at the Four Ashes junction and at Junction 8 of the M11.

Four Ashes Junction

- 3.6. The Four Ashes junction currently experiences queues and delays in the peak hours. The junction has been assessed in detail as part of a recent planning appeal in relation to a site to the east of the junction. The appeal has been withdrawn and no allowance for traffic associated with the appeal site has been made. **Appendix 2** contains an extract from the Transport Assessment that accompanied the planning application that went to appeal. This makes it clear that the current junction is operating over capacity and that traffic growth and committed development will exacerbate the problems at the junction. The extract confirms that the existing junction is very constrained and no additional land is available for the widening of arms or junction reconfiguration.
- 3.7. The conclusion of the recent work was that it would not be possible to introduce any significant changes to the layout of the junction but it may be possible to increase the efficiency of the existing signalised junction to an extent that would be able to off-set the additional 87-96 vehicle trips associated with the development that was proposed east of the junction. The possible developments to the south of the junction could add an additional 179 to 461 additional vehicle movements to this junction in the peak

hour or between 2 and 5 times as much traffic as was associated with the planning application east of the junction. It should also be noted that the suggested increase in capacity at the junction would rely on running the signals at maximum cycle time (120 seconds). Such a long cycle time is not appropriate in situations where pedestrian demand is high. The junction is located in the centre of the village and many pedestrians, including vulnerable highway users such as school children currently cross at the junction and the possible allocations south-west of Takeley would generate further pedestrian demand at the junction. If cycle times are too long, pedestrians will choose to cross when they do not have priority thus leading to highway risk, particularly for those most vulnerable such as school children.

- 3.8. More than 97% of the traffic generated by the sites south-west of Takeley will use the route via the Four Ashes junction. No alternative route is available for almost all the traffic associated with the possible development sites. Further, almost all pedestrian movements between the site and the main destinations within Takeley would cross at the junction, increasing the frequency at which the pedestrian phases are called and thus reducing the junction's ability to accommodate vehicles.
- 3.9. It is concluded that the Four Ashes junction constitutes a significant safety and capacity constraint to development in Takeley but particularly in relation to development located to the south-west of the village accessed via the B183.

Junction 8 of M11

- 3.10. Junction 8 of the M11 has been subjected to detailed study as part of the work undertaken by Essex Highway in relation to the Uttlesford Local Plan. The work is summarised in Essex Highways' Report, '*Uttlesford Local Plan Highway Impact Assessment of Draft Local Plan to 2031*' (March 2014). In particular, Table 8-1 of that report showed the existing junction to operate slightly over capacity in 2012 in both the AM and PM peak hours (practical reserve capacities of -1.2% and -7.1% in the AM and PM peak hours respectively). The report goes on to identify those links that are particularly susceptible to congestion with the addition of traffic associated with development. The B1256 arm of the junction is included in this list.
- 3.11. The work undertaken by Essex Highways was based on TEMPRO/NTM forecasts of traffic growth. These are set out in Table 4-2 of the Essex Highways Report. Traffic monitoring data are available for the period 2012 to 2015 from the Department of Transport's permanent traffic monitoring sites on the A120 east and west of Junction 8 of the M11. The following table sets out the traffic growth rates assumed in the Essex Highways report and those observed between 2012 and 2015:

Table 3.3: Traffic Growth on A120 east and west of Junction 8 of M11

Location	Essex Highways Growth 2012-2018		Observed Growth 2012-2015
	AM	PM	Daily
A120 east of J8 of M11	+0.9%	+1.2%	+13.4%
A120 west of J8 of M11	+0.1%	+0.3%	+8.3%

- 3.12. Although the observed data are expressed as changes in daily flows it is notable that the level of growth observed over a three year period between 2012 and 2015 is around ten times the growth predicted for a period of 6 years from 2012 to 2018 for the purposes of assessing Junction 8 of the M11. These data strongly suggest that the future traffic flows at Junction 8 of the M11 have been significantly underestimated in the work undertaken by Essex Highways to assess the ability of the junction to accommodate additional traffic.
- 3.13. The Essex Highways Report includes an assessment of a proposed improvement to the junction involving the reconfiguration of the service area exit and widening of lanes and approaches where this is possible. The junction has been re-modelled to demonstrate the extent of the benefits. The results show some improvement in the operation of the junction in the PM peak hour but there is shown to be some deterioration in performance in the AM peak hour. The various scenarios tested show the B1256 Dunmow Road arm to operate over capacity in both peak hours in a number of the future year scenarios. These results need also to be read in the context of the likely under-estimation of traffic growth.
- 3.14. It is clear from the modelling work that has been undertaken that the mitigation measures that are available, short of a major reconfiguration of the whole junction are capable of delivering only modest improvements in capacity and these appear to be in only one of the peak periods. The junction will remain over capacity with committed development traffic and additional development allocations that impact on the junction will lead to significant queues and delays.
- 3.15. Although there are complex interactions between traffic flows at signals around the junction, in terms of the B1256 arm of the junction, the modelling work suggests that when the number of vehicles approaching on the B1256 exceeds around 800 vehicles during the AM peak and around 600 vehicles during the PM peak, the arm reaches capacity and queues and delays become significant.

- 3.16. **Figure 3.2** shows that westbound traffic on the B1256 approaching Junction 8 of the M11 is currently over 800 vehicles in the AM peak hour and approaching 600 vehicles in the PM peak hour. These flows are likely to have increased further since the time of the traffic surveys due to background traffic growth and traffic associated with new development along the B1256 corridor. The possible new development south-west of Takeley leads to an increase of 8%-21% in the AM peak hour and 7%-19% in the PM peak hour. The greatest increase on the B1256 is during the AM peak hour when the existing flows approaching Junction 8 are already at their maximum and above the level that can be accommodated by the junction. During the PM peak hour the traffic associated with the possible development leads to traffic flows in excess of 600 vehicles suggesting that the possible development will lead to significant queues and delays at the junction during the PM peak.

Other Possible Local Allocations

- 3.17. There are further proposals for development adjacent to the A120 to the east of Junction 8 of the M11 that would generate additional traffic flows at the motorway junction. These proposals include the following:
- 1,400 dwellings at Easton Park, Great Dunmow;
 - 1,400 dwellings at Stebbing on the border of Uttlesford and Braintree Districts;
 - 400 dwellings at Stortford Road, Great Dunmow, and
 - 150 dwellings at Helena Romanes, Great Dunmow.
- 3.18. These proposals total 3,350 dwellings. If the trip generation rates set out in Table 2.1 above are applied to this number of dwellings, the total number of new trips in the AM peak hour would be 1,630 and 1,850 in the PM peak hour. A proportion of these will pass through Junction 8 of the M11. Those that travel to and from the south will not appear on the junction itself since slip roads are provided between the A120 east and the M11 south. However, all trips to and from the west and the north will impact on the operation of the junction. A review of the pattern of car driver trips in Great Dunmow derived from the 2011 Census shows that 3.6% of car trips are to and from the north (via the M11) and 14.9% of car trips are to and from the west (via the A120). The proposals would therefore add a further 302 car trips to Junction 8 in the AM peak hour and 342 car trips in the PM peak hour. These trips will lead to a further deterioration in performance of the junction with significant increases in queues and delays for both existing and new vehicles using the junction.

Conclusion

- 3.19. The following conclusions are drawn from the above:
1. The possible developments south-west of Takeley will lead to significant increases in traffic flows at the Four Ashes junction in the peak hours. The junction already operates at or above capacity in the peak hours. Residents in the new development would have no choice but to travel through this congested junction leading to a significant deterioration in junction performance.
 2. Pedestrians from the new development would need to cross the Four Ashes junction and the increased frequency of calling pedestrian phases will further increase queues and delays for drivers. Alternatively, if the time allowed for pedestrians to cross the junction is reduced, pedestrians will be disadvantaged and may risk crossing during vehicles stages with adverse safety implications.
 3. There is very little scope to improve the capacity of the Four Ashes junction.
 4. Junction 8 of the M11 is currently congested and the proposed development would significantly increase queues and delays on the B1256 approach to this junction. The current proposals to improve the performance of Junction 8 of the M11 provide little additional capacity on the B1256 arm of the junction.
 5. Observations of traffic growth on the A120 through Junction 8 of the M11 suggest that previous modelling of the junction has significantly underestimated traffic growth.
 6. The above conclusion makes no allowance for any other possible allocations within Takeley. The proposed three sites, in the absence of any further development in and around Takeley will lead to significant adverse impacts in terms of queues and delays at the Four Ashes junction and Junction 8 of the M11. The performance of Junction 8 of the M11 would be further adversely affected by major development east of the junction adjacent to the A120 at Dunmow and Stebbing.

4. TRANSPORT SUSTAINABILITY

Access to Facilities

- 4.1. Some parts of the possible sites south-west of Takeley lie within 800m of some local facilities close to the Four Ashes junction (local shopping, post office, newsagent, pharmacy). The vast majority of the site lies in excess of 800m from Roseacres Primary School. There is no local GP surgery. Those living within Takeley are unable to access the following facilities on foot or by bicycle:
- Bulk food shopping and comparison shopping;
 - The vast majority of work destinations;
 - Secondary education;
 - Further and higher education;
 - Leisure and recreation facilities such as sports centres, swimming pools, cinemas, theatres;
 - Hospitals;
 - Most personal business such as banks, building societies, lawyers, hairdressers;
- 4.2. The possible sites are not, therefore, sustainably located in terms of minimising the need to travel and maximising the use of sustainable modes.

Bus Services

- 4.3. The sites are within 800m of a bus stop. The frequency of the local bus service (no. 5) is hourly. The service runs between Stansted Airport and Bishops Stortford between approximately 07:00 and 19:00 Monday to Saturday. This level of service, although better than nothing, is not sufficient to constitute an opportunity to achieve any significant mode shift from car to bus.
- 4.4. It is conceivable that with significant new development, it would be financially viable for operators to increase the frequency and hours of bus services. However, there are no bus priority measures existing or proposed along the B1256 corridor. Buses will therefore be subject to the same delays as private cars. Any significant development in the area, certainly the level of development that would be required to support a higher level of bus service, will lead to significant queues and delays at the Four Ashes junction and Junction 8 of the M11 and this will have an adverse impact on bus passengers as well as other highway users during peak periods.

- 4.5. It is noted that the bus service No. 5 is run by Stephenson's of Essex Ltd in partnership with Essex County Council. The partnership suggests that the service is currently subsidised and without this subsidy the service would cease. Additional development along the route of this service would generate some additional patronage and may allow the level of subsidy to decrease but there is no guarantee that the route would become financially viable. It is also possible that the level of service will decrease if the level of subsidy is reduced.
- 4.6. It is concluded that although all possible sites lie within 800m of a bus stop, the existing level of service is not high and there is no prospect that it will improve without there being very significant adverse impacts in terms of congestion at the Four Ashes junction and Junction 8 of the M11.

Existing Travel Patterns

- 4.7. **Appendix 3** contains data extracted from the 2011 Census showing the mode and destination of work trips for those living within the Uttlesford 006 area. The census area includes Takeley and the Canfields and also Stansted airport.
- 4.8. The car driver mode share for the Uttlesford 006 area is 78.1%. This compares with an average for Uttlesford as a whole of 71.8% and an average for the eastern region of 65.7%. The car driver mode share is the second highest within Uttlesford District. Given that the 006 area includes Stansted Airport that has both high frequency bus services and rail services the overall level of car use by those living in Takeley is likely to be even higher than the 78.1% average for the whole area.
- 4.9. The walk mode share for the Uttlesford 006 area is 4.1%. This compares with 9.9% for Uttlesford as a whole and 11.2% for the eastern region. The figure of 4.1% is the joint lowest level of walking in all the areas within Uttlesford.
- 4.10. The high level of car driver mode share and the low level of walk mode share indicates that Takeley is not a sustainable location for significant development.
- 4.11. Paragraph 34 of the National Planning Policy Framework (NPPF) requires development to be located in areas that minimise the need to travel and maximise the use of sustainable travel modes. The existing travel patterns demonstrate that Takeley, as a location for new development, neither minimises the need to travel nor maximises the use of sustainable modes. The proposed allocation is therefore contrary to national policy.

5. PEDESTRIAN ACCESS

- 5.1. It has been stated above that almost all car trips generated by the possible development south-west of Takeley would travel via the congested and constrained Four Ashes junction. It has also been pointed out that the vast majority of pedestrian journeys to local facilities will cross the Four Ashes junction with the effect of reducing further the capacity available for vehicles.
- 5.2. The pedestrian route between the possible sites and the centre of Takeley follows the eastern side of the B183. The route passes over the existing bridge over the Flitch Way. The footway has a substandard width of less than 1.5m for a distance of over 20m over the bridge. This width, particularly bounded by the bridge parapet on one side is inadequate to accommodate the significant pedestrian flow expected to be generated by the possible development. The Institution of Highways and Transportation's publication, 'Providing for Journeys on Foot' provides advice on footway widths:

'5.7 [...] designers should be aware that, based on the established standard of providing sufficient width for wheelchairs or double buggies to pass, pedestrians require an absolute minimum obstacle-free width of 1.8m and a desirable minimum width of two metres. On high speed roads and those with a regular or high flow of HGV's it is preferable to allow an additional minimum of 0.6m to allow for vehicle overhangs and pedestrian "kerb shyness". Street furniture will normally be in this area. There may also be a "dead" area of approximately 0.25–0.5m at the back of the footway if the footway is bounded, for example by a wall.

5.8 The following effective design widths are recommended:

- Absolute minimum width 1.8m*
- Desirable minimum width 2.0m*
- Preferred width 2.6m*

5.9. It is not suggested that footways with widths less than 1.8m should never be provided as it is clear that existing narrow footways do provide a level of pedestrian amenity. A 1.5m wide footway (kerb to back of footway) is better than no footway at all. However, there is a lower limit where the footway width is insufficient to accommodate normal walking activity in safety. This minimum will be dictated by site specific criteria, including:

- Pedestrian flow and composition; and,*
- Vehicle flow and speed.' (p.74 Providing for Journeys on Foot, IHT, 2000)*

- 5.3. The scope for widening the footway is constrained by the presence of the bridge parapets. The narrow footway over the bridge would be unsafe for school children or

parents with buggies passing over the bridge. It is concluded that unless the standard of the footway over the bridge could be improved the sites to the south would be unsuitable for any development generating significant pedestrian movements.

- 5.4. It is also noted that forward visibility over the bridge for motorists is restricted by the vertical alignment of the road. The straight horizontal alignment of the road, however, will tend to encourage higher vehicle speeds. All pedestrians between the possible sites and Takeley would need to cross the B183 in order to reach the footway on the eastern side of the bridge. The lack of forward visibility over the bridge makes the crossing of the road in the vicinity of the bridge dangerous, particularly for vulnerable road users.

6. SUMMARY AND CONCLUSION

- 6.1. This report has been prepared on behalf of Takeley Parish Council in response to recently identified possible housing allocations to the south-west of Takeley. The sites are identified as being able to accommodate between 537 and 859 dwellings although a range of 334 to 859 dwellings has been used in this report, the lower figure reflecting press release information.
- 6.2. A previous report prepared by Railton TPC Ltd did not consider these three possible sites. The previous report concluded that the Four Ashes junction and Junction 8 of the M11 currently operate close to or over capacity in the peak hours and that the potential for improvements at these junctions is very limited. It also concluded that only very modest new development can be accommodated within Takeley or along the B1256 corridor without severe adverse impacts in terms of queues and delays for drivers and severe adverse impacts for pedestrians and vulnerable highway users within Takeley and around the Four Ashes junction.
- 6.3. The three new possible sites could generate between 184 and 474 car trips in the peak hours, the vast majority of which will pass through the Four Ashes junction. The Four Ashes junction is already operating at or above capacity in the peak hours. The possible sites could lead to up to a doubling of traffic arriving at the junction from the B183 in the peak hours. The requirement for almost all pedestrian movements from the possible sites to cross the Four Ashes junction will serve to reduce further the capacity available for vehicles. The possible development would therefore lead to severe queues and delays at this junction.
- 6.4. Junction 8 of the M11 is currently operating at or above capacity during peak periods. There is only limited scope to increase capacity without a very radical reconfiguration of the junction and even with these improvements the B1256 approach remains over or close to capacity. The possible developments south-west of Takeley would generate significant additional flows at Junction 8 of the M11 leading to a further deterioration in the junction's performance. An assessment of the likely impact of further proposed housing allocations in Dunmow and Stebbing adjacent to the A120 indicates that they would lead to an increase of 302 to 342 vehicle trips passing through Junction 8 in the peak hours with the consequence of further increases in queues and delays.
- 6.5. Observations of traffic growth on the A120 either side of Junction 8 indicate growth of between 8% and 13% between 2012 and 2015. This is far in excess of the growth predicted by Essex Highways in their most recent assessment of the junction. It is

therefore likely that the impact of further additional traffic approaching the junction from the B1256 in the peak hours will have an even more severe impact than would have been previously predicted.

- 6.6. Pedestrian movement between the sites and Takeley is constrained by the provision of only one footway of the B183 over the Flitch Way bridge. This has substandard width and the scope for widening is constrained by the bridge parapets. The footway is of insufficient width to safely accommodate significant pedestrian flows, particularly if they include vulnerable highway users such as school children. The safety of pedestrians using this route is further compromised by the lack of forward visibility for motorists over the bridge.
- 6.7. An assessment of current travel patterns shows that the car driver mode share for people living in Takeley is the second highest in Uttlesford District and the level of walking is joint lowest. The unsustainable transport habits of residents reflect the lack of local facilities and employment, the distance to all higher order facilities and the lack of public transport services in the village. The location is not, therefore consistent with national policy that requires development to be located in areas that minimise the need to travel and maximise the use of sustainable modes.
- 6.8. Overall it is concluded that Takeley does not represent a sustainable location for any significant amount of new housing development and there are likely to be severe impacts in terms of queues and delays at the Four Ashes junction and Junction 8 of the M11 if such development were to be promoted.

Figures

Figure 3.1: Assignment of Development Trips

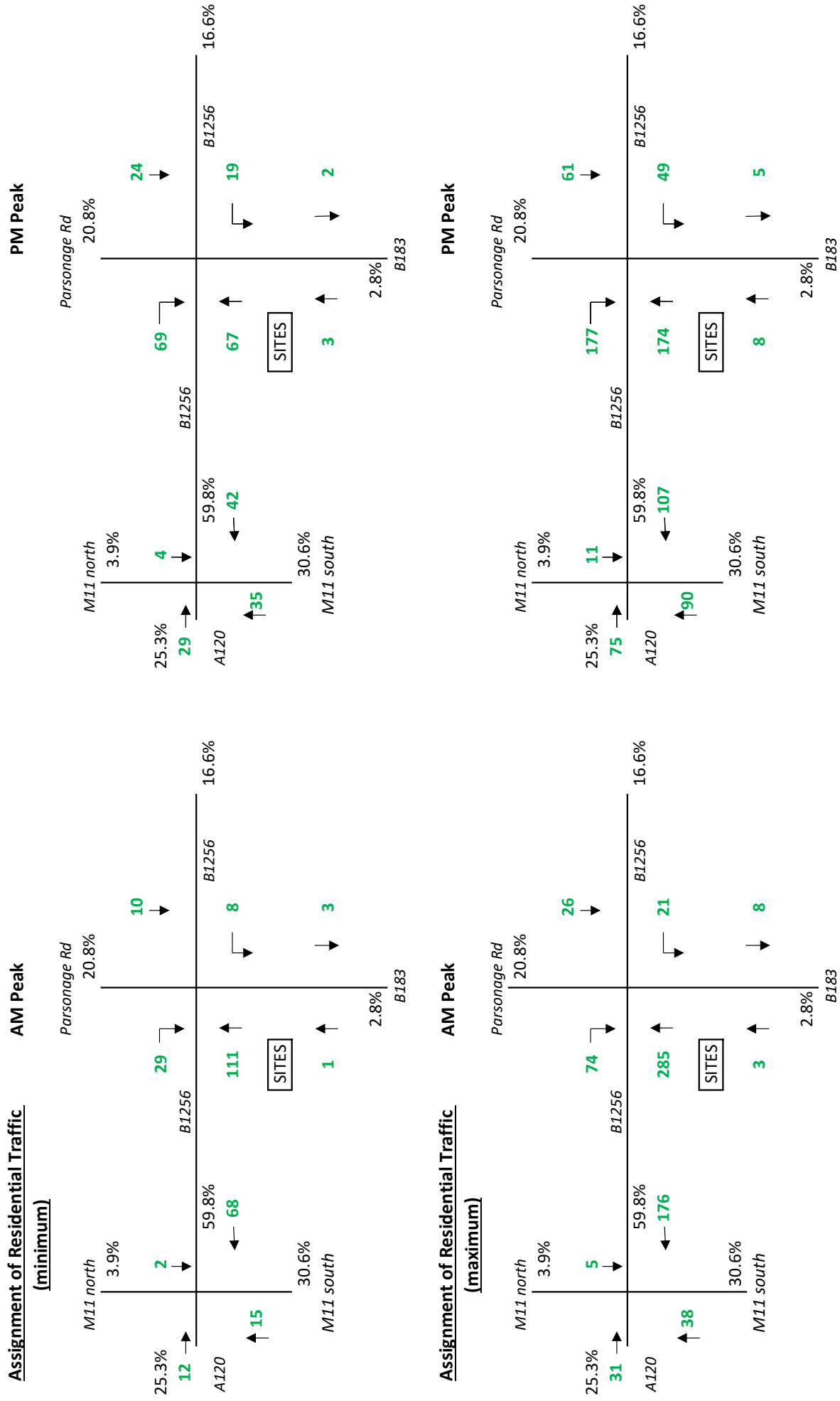
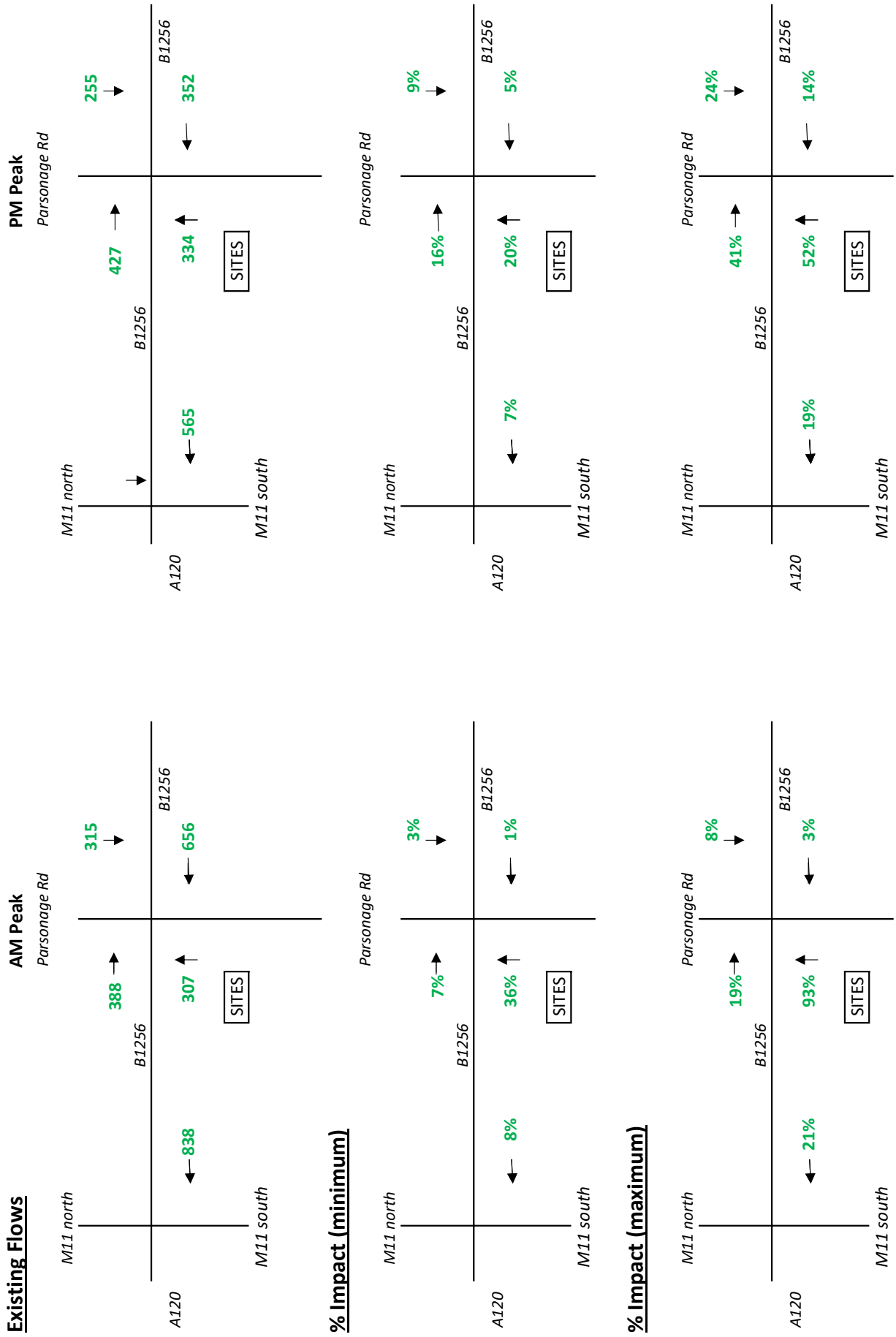


Figure 3.2: % Impact of Development Traffic



Appendices

Appendix 1: Distribution of Traffic based on 2011 Census Data

Appendix 1: Distribution and Assignment of Car Trips (2011 Census)

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

	% drive	Proportion by Route						Route Assignment					
		M11 N	M11 S	west	east	B183	local	M11 N	M11 S	west	east	B183	local
E02004591 : Uttlesford 001	1.1%			1				0.0%	0.0%	1.1%	0.0%		0.0%
E02004592 : Uttlesford 002	2.2%			1				0.0%	0.0%	2.2%	0.0%		0.0%
E02004593 : Uttlesford 003	1.1%			1				0.0%	0.0%	1.1%	0.0%		0.0%
E02004594 : Uttlesford 004	1.3%				1			0.0%	0.0%	0.0%	1.3%		0.0%
E02004595 : Uttlesford 005	4.1%			0.5			0.5	0.0%	0.0%	2.1%	0.0%		2.1%
E02004596 : Uttlesford 006	18.8%						1	0.0%	0.0%	0.0%	0.0%		18.8%
E02004597 : Uttlesford 007	4.8%				1			0.0%	0.0%	0.0%	4.8%		0.0%
E02004598 : Uttlesford 008	2.5%				1			0.0%	0.0%	0.0%	2.5%		0.0%
E02004599 : Uttlesford 009	2.8%					1		0.0%	0.0%	0.0%	0.0%	2.8%	0.0%
Babergh	0.1%				1			0.0%	0.0%	0.0%	0.1%		0.0%
Basildon	0.6%			0.5	0.5			0.0%	0.0%	0.3%	0.3%		0.0%
Bedford	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
Braintree	1.8%				1			0.0%	0.0%	0.0%	1.8%		0.0%
Breckland	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
Brentwood	0.9%			1				0.0%	0.9%	0.0%	0.0%		0.0%
Broadland	0.0%				1			0.0%	0.0%	0.0%	0.0%		0.0%
Broxbourne	1.7%				1			0.0%	0.0%	1.7%	0.0%		0.0%
Cambridge	1.3%	1						1.3%	0.0%	0.0%	0.0%		0.0%
Castle Point	0.0%			0.5	0.5			0.0%	0.0%	0.0%	0.0%		0.0%
Central Bedfordshire	0.1%				1			0.0%	0.0%	0.1%	0.0%		0.0%
Chelmsford	3.7%				1			0.0%	0.0%	0.0%	3.7%		0.0%
Colchester	0.9%				1			0.0%	0.0%	0.0%	0.9%		0.0%
Dacorum	0.0%			1				0.0%	0.0%	0.0%	0.0%		0.0%
East Cambridgeshire	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
East Hertfordshire	16.0%				1			0.0%	0.0%	16.0%	0.0%		0.0%
Epping Forest	4.5%			1				0.0%	4.5%	0.0%	0.0%		0.0%
Fenland	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
Forest Heath	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
Great Yarmouth	0.0%				1			0.0%	0.0%	0.0%	0.0%		0.0%
Harlow	8.2%			1				0.0%	8.2%	0.0%	0.0%		0.0%
Hertsmere	0.3%			1				0.0%	0.3%	0.0%	0.0%		0.0%
Huntingdonshire	0.1%	1						0.1%	0.0%	0.0%	0.0%		0.0%
Ipswich	0.2%				1			0.0%	0.0%	0.0%	0.2%		0.0%
King's Lynn and West Norfolk	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
Luton	0.4%			0.5	0.5			0.0%	0.2%	0.2%	0.0%		0.0%
Maldon	0.1%				1			0.0%	0.0%	0.0%	0.1%		0.0%
Mid Suffolk	0.0%				1			0.0%	0.0%	0.0%	0.0%		0.0%
North Hertfordshire	0.5%				1			0.0%	0.0%	0.5%	0.0%		0.0%
North Norfolk	0.0%	0.5			0.5			0.0%	0.0%	0.0%	0.0%		0.0%
Norwich	0.0%	0.5			0.5			0.0%	0.0%	0.0%	0.0%		0.0%
Peterborough	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
Rochford	0.0%				1			0.0%	0.0%	0.0%	0.0%		0.0%
South Cambridgeshire	1.4%							1.4%	0.0%	0.0%	0.0%		0.0%
South Norfolk	0.0%	0.5			0.5			0.0%	0.0%	0.0%	0.0%		0.0%
Southend-on-Sea	0.3%				1			0.0%	0.0%	0.0%	0.3%		0.0%
St Albans	0.1%			1				0.0%	0.1%	0.0%	0.0%		0.0%
St Edmundsbury	0.3%	0.5			0.5			0.2%	0.0%	0.0%	0.2%		0.0%
Stevenage	0.7%			1				0.0%	0.7%	0.0%	0.0%		0.0%
Suffolk Coastal	0.0%				1			0.0%	0.0%	0.0%	0.0%		0.0%
Tendring	0.3%				1			0.0%	0.0%	0.0%	0.3%		0.0%
Three Rivers	0.0%			1				0.0%	0.0%	0.0%	0.0%		0.0%
Thurrock	0.7%			1				0.0%	0.7%	0.0%	0.0%		0.0%
Watford	0.1%			1				0.0%	0.1%	0.0%	0.0%		0.0%
Waveney	0.0%				1			0.0%	0.0%	0.0%	0.0%		0.0%
Welwyn Hatfield	0.7%			1				0.0%	0.7%	0.0%	0.0%		0.0%
East Midlands	0.2%	1						0.2%	0.0%	0.0%	0.0%		0.0%
London	13.1%			1				0.0%	13.1%	0.0%	0.0%		0.0%
North East	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
North West	0.3%	1						0.3%	0.0%	0.0%	0.0%		0.0%
Northern Ireland	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
Scotland	0.1%	1						0.1%	0.0%	0.0%	0.0%		0.0%
South East	0.9%			1				0.0%	0.9%	0.0%	0.0%		0.0%
South West	0.2%			1				0.0%	0.2%	0.0%	0.0%		0.0%
Wales	0.0%			1				0.0%	0.0%	0.0%	0.0%		0.0%
West Midlands	0.2%	1						0.2%	0.0%	0.0%	0.0%		0.0%
Yorkshire and The Humber	0.0%	1						0.0%	0.0%	0.0%	0.0%		0.0%
Total	100.0%							3.9%	30.6%	25.3%	16.6%	2.8%	20.8%

Appendix 2: Extract from Icen Transport Assessment (operation of Four Ashes Junction)

Transport Assessment

Land West of Great Canfield Road, Takeley

Iceni Projects Limited on behalf of
Gladman Developments Limited &
Takeley Farming LLP

July 2014

ICENI PROJECTS LIMITED
ON BEHALF OF GLADMAN
DEVELOPMENTS LIMITED &
TAKELEY FARMING LLP

Table 7.6 B1256/A120 Roundabout Junction (South Roundabout)

Test Scenario	Arm	AM Peak		PM Peak	
		RFC	Max Q	RFC	Max Q
Existing	A	0.42	0.73	0.23	0.30
	B	0.51	1.00	0.39	0.63
	C	0.60	1.47	0.52	1.05
	D	0.00	0.00	0.00	0.00
Base	A	0.57	1.30	0.29	0.42
	B	0.81	3.72	0.73	2.45
	C	0.83	4.47	0.65	1.79
	D	0.00	0.00	0.00	0.00
Proposed	A	0.56	1.25	0.30	0.42
	B	0.79	3.36	0.75	2.65
	C	0.86	5.09	0.65	1.83
	D	0.00	0.00	0.00	0.00
Sensitivity Base	A	0.58	1.40	0.31	0.45
	B	0.91	6.55	0.84	4.11
	C	0.93	8.31	0.69	2.21
	D	0.00	0.00	0.00	0.00
Sensitivity Proposed	A	0.58	1.40	0.31	0.46
	B	0.91	6.52	0.86	4.54
	C	0.95	9.90	0.70	2.27
	D	0.00	0.00	0.00	0.00

Notes: Arm A: B1256 Bridge Over A120 Arm B: A120 W/B Off Slip

Arm C: B1256 South Arm D: A120 W/B On Slip

RFC = ratio of flow to capacity

B1256/B183/Parsonage Road Signalised Junction

7.13 The results shown in Table 7.7 demonstrate that the junction currently operates over capacity in the AM peak and will also be over capacity in the PM peak with just the committed developments in place (without the proposed development); adding growth will further exacerbate this. Considering the two Proposed scenarios in the AM peak, being the worst case, a practical reserve capacity (PRC) of -54.0% in the Proposed scenario and -62.8% in the Proposed Sensitivity scenario is estimated. As stated previously, the Proposed scenario is considered to be the most reliable future assessment as the large number of committed developments combined with background growth to 2019 will contain an element of double counting, therefore overestimating future flows considerably.

Table 7.7 B1256/B183/Parsonage Road Signalised Junction

Test Scenario	Existing		Optimised	
	AM	PM	AM	PM
Existing	-29.4%	5.6%	3.3%	34.1%
Base	-42.4%	-4.3%	-3.9%	23.1%
Proposed	-54.0%	-11.7%	-8.9%	16.5%
Sensitivity Base	-51.1%	-11.3%	-10.6%	15.3%
Sensitivity Proposed	-62.8%	-18.5%	-15.2%	9.5%

- 7.14 With regard to the models, the existing timings in the controller specification have been used and it has been assumed that they ran to the maximum, which is reasonable as the flows through the junction are high. It has also been assumed that the pedestrian crossing appears every cycle to test the worst case scenario, however, it is considered highly unlikely the pedestrian crossing appears every cycle during the morning peak. As the junction fails based on the existing specification, a separate run has been undertaken with the timings optimised, which shows that all the PM periods have a positive PRC (with the pedestrians appearing every cycle). The AM peak is over capacity once the committed developments are added, although the extent to which it fails is significantly reduced with a PRC of -3.9% to -15.2% compared with -29.4% based on current flows and signal timings. Consideration has been given to changing the method of control but this does not improve the situation.
- 7.15 An ideal solution would be to introduce an additional ahead lane westbound on Dunmow Road, however, due to land constraints this is not achievable. Another option could be running the side roads together and letting right turners go in gaps as the flows would appear to suit this, however, further consideration would need to be given to the safety aspects of allowing this manoeuvre.
- 7.16 A better option may be to install MOVA (Microprocessor Optimised Vehicle Actuation) as the junction lends itself to this system of operation due to two of the arms being split phased which should result in a good discharge across the stop line. The main road has dedicated right turn lanes so again traffic giving way does not adversely affect the ahead/left traffic. MOVA looks for gaps in traffic to decide whether to stay at green or move to another approach. It also considers the level of queuing on other approaches to enable the system to generate its own signal timings.

Appendix 3: Mode of Travel from 2011 Census

Appendix 3: Travel to Work Data

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

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population All usual residents aged 16 and over in employment the week before the census
units Persons
date 2011
usual residence E02004596 : Uttlesford 006 (2011 super output area - middle layer)

place of work	All categories: Method of travel to work (2001 specification)	Train	Bus, minibus or coach	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot
E02004591 : Uttlesford 001	34	0	2	0	27	3	0	1
E02004592 : Uttlesford 002	78	0	6	0	53	4	0	15
E02004593 : Uttlesford 003	34	1	2	0	27	1	1	2
E02004594 : Uttlesford 004	45	0	1	1	31	7	1	4
E02004595 : Uttlesford 005	140	3	4	0	98	13	3	18
E02004596 : Uttlesford 006	601	10	23	7	447	37	20	57
E02004597 : Uttlesford 007	133	1	8	0	115	4	2	0
E02004598 : Uttlesford 008	66	0	3	0	59	2	1	1
E02004599 : Uttlesford 009	72	0	3	0	66	1	1	1
Babergh	2	0	0	0	2	0	0	0
Basildon	15	0	0	0	15	0	0	0
Bedford	1	0	0	0	1	0	0	0
Braintree	54	0	3	0	43	4	1	3
Breckland	1	0	0	0	1	0	0	0
Brentwood	24	1	0	0	22	1	0	0
Broadland	0	0	0	0	0	0	0	0
Broxbourne	46	2	0	0	40	3	0	1
Cambridge	36	5	0	0	30	0	0	1
Castle Point	1	0	0	0	1	0	0	0
Central Bedfordshire	3	0	0	0	3	0	0	0
Chelmsford	92	2	1	0	87	2	0	0
Colchester	26	0	1	0	21	2	0	2
Dacorum	0	0	0	0	0	0	0	0
East Cambridgeshire	1	0	0	0	1	0	0	0
East Hertfordshire	449	13	16	2	380	28	3	6
Epping Forest	116	2	1	0	106	5	0	1
Fenland	0	0	0	0	0	0	0	0
Forest Heath	0	0	0	0	0	0	0	0
Great Yarmouth	0	0	0	0	0	0	0	0
Harlow	211	5	1	1	196	7	1	0
Hertsmere	9	2	0	0	6	1	0	0
Huntingdonshire	4	0	0	0	3	1	0	0
Ipswich	5	0	0	0	5	0	0	0
King's Lynn and West Norfolk	0	0	0	0	0	0	0	0
Luton	9	0	0	0	9	0	0	0
Maldon	3	0	0	0	3	0	0	0
Mid Suffolk	0	0	0	0	0	0	0	0
North Hertfordshire	11	0	0	0	11	0	0	0
North Norfolk	0	0	0	0	0	0	0	0
Norwich	3	1	1	0	1	0	0	0
Peterborough	1	0	0	0	1	0	0	0
Rochford	0	0	0	0	0	0	0	0
South Cambridgeshire	37	1	1	0	33	1	1	0
South Norfolk	0	0	0	0	0	0	0	0
Southend-on-Sea	7	0	0	0	7	0	0	0
St Albans	3	0	0	0	3	0	0	0
St Edmundsbury	9	0	0	0	8	0	0	1
Stevenage	16	0	0	0	16	0	0	0
Suffolk Coastal	1	0	0	0	1	0	0	0
Tendring	10	0	1	0	8	0	0	1
Three Rivers	1	0	0	0	1	0	0	0
Thurrock	17	0	0	0	17	0	0	0
Watford	4	0	0	0	2	0	0	1
Waveney	0	0	0	0	0	0	0	0
Welwyn Hatfield	17	0	0	0	17	0	0	0
East Midlands	5	0	0	0	5	0	0	0
London	582	206	7	7	312	14	3	8
North East	0	0	0	0	0	0	0	0
North West	6	0	0	0	6	0	0	0
Northern Ireland	1	0	0	0	0	0	0	1
Scotland	2	0	0	0	2	0	0	0
South East	25	1	1	1	22	0	0	0
South West	5	0	0	0	4	0	0	1
Wales	1	0	0	0	1	0	0	0
West Midlands	7	0	1	0	5	1	0	0
Yorkshire and The Humber	0	0	0	0	0	0	0	0
	3,082	256	87	19	2,381	142	38	126
		8.4%	2.9%	0.6%	78.1%	4.7%	1.2%	4.1%