Essex Highways

Uttlesford Draft Local Plan

Highway Impact Assessment of Draft Local Plan to 2031

March 2014

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integrated expertise

Essex County Council

Document Control Sheet

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Report Title	Uttlesford Draft Local Plan: Highway Impact Assessment of Draft Local Plan to 2031
Project Number	TTP1043
Status	Final
Revision	V1
Control Date	19th March 2014

Record of Issue

Issue	Status	Author	Date	Check	Date	Authorised	Date
1	Draft	C Saunders	28.02.14	M Young	03.03.14		
2	Draft	C Saunders	05.03.14	M Young	05.03.14	J Jones	05.03.14
3	Final	C Saunders	07.03.14	M Young	19.03.14	J Jones	19.03.14

Distribution

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Contents

Tables

Appendices

Executive Summary

This study follows on from the October 2013 report in which Essex Highways assessed the potential impact on the highway network of various development and site allocation proposals within Uttlesford District up to 2026. This report considers the updated development proposals as detailed by Uttlesford District Council officers and a new assessment year of 2031. Consistent with the earlier study, the same development trip rates have been used, but updated traffic growth factors have been applied to reflect the 2031 assessment year.

National statistics demonstrate that Uttlesford, as a rural district, has:

- higher than average household car ownership (only 10% of households do not have a car, compared with 26% nationally),
- higher than average cars per household (1.6 compared with 1.2 nationally),
- higher than average level of travel to work by car (41% compared with 38% nationally),
- lower than average travel to work by train (0.5% compared with 2.6% nationally), and
- journeys to work are longer than average (44% of journeys are longer than 10km, compared with 28% nationally).

Sustainable Development

Delivering sustainable development is at the heart of the National Planning Policy Framework and Travel Plans are a recognised mechanism for managing travel demand. It is recommended that, given the demographics of Uttlesford residents, development Travel Plans make provision for relevant travel surveys, a review and monitoring strategy, objectives and SMART targets (Specific, Measurable, Achievable, Realistic, Time-bound), sustainable transport measures, additional mitigation measures, timescales, phasing programme and on-site management responsibilities. Consideration should also be given to encouraging Travel Plan Co-ordinators to work together to deliver sustainable initiatives.

Further travel demand management can be achieved through the use of Smarter Choices, whereby personalised travel planning is provided to existing residents and businesses, and improved bus service, footpath and cycleway provision can be actively promoted.

Highway Impact

As with the October 2013 study, three key areas for development have been assessed: Saffron Walden, Great Dunmow and Elsenham. The site allocations comprise various land uses including housing, retail, education and employment.

Saffron Walden

The 2031 assessments include a number of previously identified mitigation measures to accommodate the level of development being proposed in Saffron Walden. These include a new road linking Thaxted Road with Radwinter Road, traffic management schemes and, where possible, individual junction improvements. Of the 11 junctions assessed in the town, the various measures result in either no overall change in junction capacity or an improvement over the 'without ULP development' scenario. The exception is the Mount Pleasant Road / Debden Road junction which is expected to experience delays on both the southern and western arms as a result of the re-routeing of traffic caused to the traffic restriction mitigation measures. Mitigation measure costs are estimated to be in the order of £1m.

Great Dunmow

Five key junctions have been assessed in Great Dunmow, two of which have required mitigation measures. The Hoblongs junction improvement scheme combines an improvement to both the B1256 / Chelmsford Road junction and the intersection of the B1256 with the A120 grade separated junction. The Stortford Road / Rosemary Lane mini-roundabout is shown to be approaching capacity in the forecast year, but it is likely that this will be further relieved by the Dunmow western bypass, and the reassignment of some traffic over and above that assumed in the study and so no mitigation is proposed.

Elsenham

Formal highway assessments of the cumulative effect that developments and site allocations in Elsenham would be likely to have on the local highway network have not been undertaken. However, mitigation measures have been proposed, including demand management, improvements to Hall Road, and a western link towards the B1383 (costing between £7-10m excluding land acquisition).

It should be noted that, due to the location of the major site allocation in Elsenham, and the distance from it to the major road network, traffic is likely to use a number of routes to reach it. A more detailed study using a detailed highway assignment route choice model would provide more confident predictions of the site allocations' impact, and it is recommended that this is provided as part of any planning application submission. There are, however, limited options to reduce development traffic impact, and these

hinge on demand management, reducing the need to travel and high quality provision of alternative modes of travel to key attractors.

Strategic Road Network

The analysis of the impact of the UDC LP on the strategic road network has concentrated on the M11 J8. The assessment has been done assuming that the Stansted Airport G1 (35mppa), Bishops Stortford North ASRs development, and background growth is in place.

The previously identified mitigation measure has been revised, which provides a new exit from the motorway service area (MSA) onto the eastbound A120, improves this section of the A120 between J8 and the A120/A1250 roundabout, and also provides improved capacity on the approaches to the A120/A1250 junction.

However, as a strategic junction, it is anticipated that even with the mitigation measures in place, J8 will be over capacity in 2031 without the ULP traffic. It is emphasised that the assessment methodology, using spreadsheet assignment, is overly robust, as it does not allow for any changes in travel choices, routeing, journey timing or destination changes. The subsequent assignment of ULP traffic to the junction, particularly that arising from the Elsenham site, is subject to significant variation, and with sensitivity testing, only a very broad conclusion can be reached about its future capacity without more detailed highway assignment modelling with route choice capability.

The J8 mitigation measure, which is likely to cost in the region of £5m, would free up capacity at the junction for all traffic. As such, funding contributions should not be linked to any one development site. Essex County Council (ECC), as highway authority, will also be applying for funding to support M11 corridor schemes, which include J8, from the South East Local Enterprise Partnership (SELEP) Strategic Economic Plan (SEP).

1. Introduction

Essex Highways were commissioned in 2012 by Uttlesford District Council (UDC) to undertake a study to assess the draft Uttlesford Local Plan (ULP) site allocation proposals. This subsequent study provides an update and extension to the earlier study, following the rebasing of the Local Plan to 2031. The aim of the study is to assess the implications of the ULP in highways terms in key areas, and to re-evaluate the previously identified mitigation measures and to identify if any additional measures are required. As before, two future years, 2018 and 2031 have been assessed, with a base year of 2012. This is in order to more clearly understand the impact of already committed development, and then the cumulative effect of the ULP proposals.

Updated committed and proposed ULP development site information has been provided by UDC and the assessment year changed from 2026 to 2031. This report summarises the updated junction assessment results in the key study areas.

The previous Essex Highways report, *Uttlesford Local Plan Highway Impact Assessment: Assessment of Highway Impact of Potential Local Plan Sites*, October 2013, should be read in conjunction with this report.

The specific objectives of this study were to estimate the impact of the preferred ULP options on key junctions in Saffron Walden, Great Dunmow and on the strategic road network. Where this was subsequently determined to be appropriate, mitigation measures were investigated and their effectiveness reviewed. All methodologies remain the same as previously reported.

The Newport assessments have not been revisited as there was no change to site allocation information and no junction issues were identified in the earlier study.

The key change over the earlier study is the inclusion of a significant level of additional housing in Elsenham and this area has been evaluated in more detail as a consequence.

1.1 Travel Demographics

Uttlesford is a rural district where household car ownership is recognised as being higher than the national average; nationally 26% of households have no car, in Essex 18% have no car, while in Uttlesford only 10% of households are without a car. The number of

cars per household is also higher than nationally, with the average number of vehicles per household being 1.2 nationally, 1.4 in Essex and 1.6 in Uttlesford[1].

For the main journey purpose during peak periods, travel to work is made by train by only 0.5% of Uttlesford residents (1.5% Essex, 2.6% England). Travel to work by car, whether as a driver or passenger, is made by 41% of Uttlesford residents, 42% of Essex residents and 38% nationally. A higher percentage of Uttlesford residents do, however, work from home, 11%, with 7% of Essex residents, and 6.6% nationally[2].

Uttlesford residents travel comparatively further to work, as shown in Table 1-1, which is taken from the 2001 Census[3] as the equivalent 2011 Census data is not yet available. This shows that 44% of Uttlesford journeys to work are more than 10km, compared with 39% in Essex, and 28% nationally.

Table 1-1: 2001 Census: Distance Travelled to Work (All modes)

	England	Essex	Uttlesford
More than 20km	13%	24%	28%
10-20km	15%	15%	16%
5-10km	18%	13%	12%
Less than 5km	40%	33%	26%

[1] "2011 Census: Car or van availability, local authorities in the United Kingdom", Office of National Statistics, Table KS404UK, October 2013.
[2] "2011 Census: Method of travel to work", Table CT0015, Office of National Statistics, November 2013
[3] "Distance Travelled to Work (UV35)", Neighbourhood Statistics Geographies, 2001.

2. Sustainable Development

Delivering sustainable development is at the heart of National Planning Policy Framework (NPPF) and in order to promote the sustainable transport opportunities available, NPPF states that all developments which generate significant amounts of movement should be required to provide a Travel Plan.

A Travel Plan is a long term management tool offering a package of measures and initiatives that aim to reduce car journeys and encourage healthy and sustainable transport choices. Travel Plans should make provision for relevant travel surveys, a review and monitoring strategy, objectives and SMART targets (Specific, Measurable, Achievable, Realistic, Time-bound), sustainable transport measures, additional mitigation measures, timescales, phasing programme and on-site management responsibilities. The cost of each measure and the funding source should be specified in the Action Plan to show a commitment to delivering the proposed measures. A commitment to appointing a Travel Plan Coordinator (TPC) should be stated in the Travel Plan for when the site end-users are known.

Before development on site commences, clear Travel Planning proposals for the development as a whole should be submitted to and agreed in writing by the Local Planning Authority. The Travel Plan will need to demonstrate that the development traffic is within the predicted levels in the transport assessment. It will be subject to regular reviews by both the site TPC and the Local Planning Authority (LPA) in order to ensure objectives and targets are being achieved.

Demand responsive travel options like taxi-buses and car pools will be supported and the Council will continue to work in partnership to provide community transport schemes like Uttlesford Community Transport which provides transport for people who, through age, disability or rural isolation find it difficult to access public transport.

As detailed in Section 1.1, car use is higher than the national average in Uttlesford and so robust site Travel Plans are vital to ensure there any detrimental effect on the surrounding highway network is minimised. Good connections to the public transport network should be provided and high quality footpaths and cycle paths are essential. With a high percentage of Uttlesford residents working from home, measures which facilitate this are vital, including high speed broadband connection as well as flexible ticketing opportunities on public transport services.

Wherever possible, it is recommended that either site-specific TPCs work together to deliver packages of sustainable improvements, or that developers collaborate to provide

an overall TPC for a given area. In this way economies of scale can be achieved, to lend greater weight to any initiatives.

Consideration should also be given to the rolling out of Smarter Choices, which is a methodology for providing personalised travel information to existing residents and businesses, to encourage their use of more sustainable travel modes. This is most effective when combined with improvements to alternative travel, including bus service improvements and footway and cycle schemes. This offers a mechanism to help to manage travel demand on the local road network and developers could be encouraged to use this to offset the possible impact of new development in addition to their own travel planning initiatives.

3. Future Development Sites & Study Areas

The revised site allocation information used in this study was provided by UDC officers in October 2013 in the form of a spreadsheet which included individual development details and the projected trajectories for both committed and ULP sites. This spreadsheet is reproduced at Appendix A, and the capacity assessments subsequently undertaken and reported are based on this information. It should be noted that any subsequent changes in policy, or development assumptions, could be expected to have an impact on the reported analysis.

3.1 Residential Development in Uttlesford

Table 3-1 below shows the total numbers of dwellings in each settlement arising from the list of committed and ULP developments provided by UDC and their expected completion period. The last column shows the change in dwelling numbers compared to the previous study. The details of each site allocation can be found in Appendix A.

Table 3-1: Total committed and ULP dwelling numbers by settlement and future year

Area	No. of Dwellings			Change from previous study
	2012-2018	2019-2031	2012-2031	
Saffron Walden	784	676	**1,460**	**+207**
Great Dunmow	890	2,061	**2,951**	**+578**
Stansted Mountfitchet	450	0	**450**	**+79**
Takeley	491	53	**544**	**+44**
Thaxted	123	0	**123**	**+8**
Newport	81	60	**141**	**0**
Elsenham	707	1,900	**2,607**	**+2154**
Felsted	34	190	**224**	**+27**
Great Chesterford	65	30	**95**	**-5**
Other villages & small sites	518	675	**1,193**	**+763**
Totals	**4,143**	**5,645**	**9,788**	**+3855**

3.2 Non-residential Sites in Uttlesford

The employment sites that have been identified throughout the district, together with other non-residential land uses included in the assessment, are detailed in Appendix A. These are broadly summarised by general location and land use in Table 3-2.

Table 3-2: Employment and Non-residential land use developments by area

Area	Land use
Saffron Walden	Warehousing (industrial & retail); convenience retail; discount foodstore; primary school; B1 (a,b,c), B2, B8; care home; local centre; café/restaurant/pub; hotel;
Great Dunmow	Primary schools; retail foodstore; care home; B1 office
Newport	Care home
Elsenham	B1a office & mixed use
Chesterford	R&D; B1 office
Start Hill	B1 office; industrial; warehousing
Stansted Airport: airport-related	B1 office; industry; warehousing
Stansted Airport: non-airport-related	Offices; warehousing
Wendens Ambo	B1a
Flitch Green	Retail unit

3.3 Study Areas

Both the Saffron Walden and Great Dunmow areas have been reassessed for this updated study, together with M11 Junction 8.

For this update Elsenham has been included as a study area due to the significant additional development proposed. Its extent has been established with reference to the site allocations and key areas of the road network that would be likely to be affected. Accordingly, nearby Stansted Mountfitchet has been included in the evaluation.

4. Methodology

4.1 Previous Work

The methodology as set out in the 2013 study report has been maintained for this updated work. Where methodology varies this is detailed herein.

4.2 Scenarios

The evaluation has been done for a series of scenarios, as set out in Table 4-1 below, which correspond to those in the earlier study other than the change in forecast year to 2031.

Table 4-1: Assessment Scenarios and variations

	Saffron Walden	Gt Dunmow	J8 / A120
2012 Base	✓	✓	✓
2018 Base + CD	✓	With bypass	✓
2018 Base + CD + ULP	✓	With bypass	✓
2018 Base + CD + ULP	+ Mitigation measures	+ Mitigation measures	+ Mitigation measures
2031 Base + CD	✓	With bypass	✓
2031 Base + CD + ULP	✓	With bypass	✓
2031 Base + CD + ULP	+ Link Road		
2031 Base + CD + ULP	+ Mitigation measures	+ Mitigation Measures	+ Mitigation measures

4.3 Forecast Traffic Flows

Section 4 of the 2013 study details the methodology used to determine the forecast traffic flows for all future scenarios. This has only been varied inasmuch as the forecast year has changed and therefore the growth values for 2031 vary accordingly.

4.3.1 Future Assessment Years & Background Traffic Growth

Background traffic growth from 2012 to the forecast years has been updated in the models using TEMPRO growth and alternative planning assumptions. All assumptions outlined in the previous study were used again to calculate the growth factors for 2031. The growth rates used are set out in Table 4-2 below.

Table 4-2: Growth factors calculated by area for 2012-2018 and 2012-2031

Area	Traffic Growth Period			
	2012-2018		2012-2031	
	AM	PM	AM	PM
TEMPRO calculated values				
Saffron Walden	1.038	1.055	1.071	1.134
Great Dunmow	1.036	1.059	1.067	1.142
Uttlesford	1.035	1.055	1.064	1.134
TEMPRO & NTM calculated values				
M11 & Services (Motorway)	1.002	1.005	1.119	1.128
A120 east of J8 (Trunk Road)	1.009	1.012	1.130	1.139
A120 west of J8 (Principal Dual)	1.001	1.003	1.089	1.097
Dunmow Road (Local Route)	1.002	1.005	1.098	1.107

4.4 Development Trip Generation & Assignment

Section 5 of the 2013 study outlines the trip generation and assignment methodology used.

4.4.1 Trip Rates

The trip rates detailed in the earlier report were maintained for this updated study. In some instances, ie committed development in Elsenham, Stansted Mountfitchet and the G1 Stansted Airport development, where trip generation was available from submitted Transport Assessments or traffic models, forecast trip generation was taken directly from these documents.

All committed and ULP developments trip generation information is detailed in Appendix B.

4.4.2 Distribution & Assignment of Future Development Trips

The distribution and assignment methodology outlined in Section 5 of the previous report was again used when assigning trips for new development locations, with the exception of committed development in Elsenham, where this was based on submitted TA information.

4.5 Mitigation Measures

4.5.1 Demand Management

The most effective way of minimising the impact of development on the local and strategic road network is to minimise the need to travel, to reduce reliance on the car and to actively encourage the use of more sustainable travel modes. In a rural district such as Uttlesford, with the travel characteristics as set out in section 1.1, it is important to locate development close to existing facilities, or to ensure that such facilities can be delivered as part of the development proposal.

The latter point is key to the site allocation at Elsenham; a mixed use development will help to optimise the number of internal trips so that trip purposes are satisfied without the need to leave the development. However, while planning can specify the type of land use that is to be delivered, if there is insufficient demand (either not enough workers living in the vicinity, or not enough workplaces available) it is difficult to ensure that there is a balanced provision of facilities from the outset.

Without this in place when a site begins to be occupied, it is difficult to then manage the consequent travel demand as journeys become defined, and there is only limited opportunity to change travel modes. It is important, therefore, to ensure that there is good provision for travel by public transport (bus and train), as well as good walking and cycling links to existing local facilities, when residents first move in so that their initial travel choices can be positively influenced.

It should be noted that the use of Smarter Choices, where existing residents are encouraged to change travel mode to reduce demand on the network, is more difficult to employ in a largely rural population, due to the diversity of travel origins and destinations.

4.5.2 Saffron Walden Mitigation Measures

One of the planning criteria for the implementation of Saffron Walden Policy 1 is to provide a link road between Thaxted Road and Radwinter Road. Given that development information provided by UDC indicates that the majority of the housing on this site is not likely to be built until after 2020/21, for the purposes of the ULP assessment, the link road is not assumed to be in place until 2031.

4.5.3 Great Dunmow Mitigation Measures

A scheme to improve the Hoblongs junction has been identified and is linked to the development of nearby Smiths Farm. As such, the scheme has been evaluated as part of the updated study work and included in both forecast years.

4.5.4 Elsenham Mitigation Measures

Assessment of the likely impact of the site allocations in Elsenham and Stansted Mountfitchet has indicated that mitigation measures may be needed. These are discussed in section 7.2.

4.6 Junction Analysis Methodology

As detailed in Section 6 of the previous report, junctions have been assessed using standard industry software. More detail is given of the junction analysis methodology and outputs in the Technical Note included at Appendix C.

5. Impact of ULP Site Allocations in Saffron Walden

As in the earlier study, the impact of traffic from the proposed ULP sites on the main highway links in Saffron Walden has been assessed in terms of the anticipated effect on the operation of each junction. The individual junction capacity analyses are discussed in more detail in the Technical Note, contained in Appendix C. This section summarises the overall findings for each of the scenarios set out in Table 4-1. The mitigation measures are the same as those previously proposed.

For simplicity the analysis results have been categorised to give a broad indication of the situation in each scenario. These categories are:

- ✓ No capacity issues in either peak hour
- ⊘ One or more arms approaching capacity in either of the peak hours
- ✗ One or more arms at or exceeding capacity in either of the peak hours

5.1 Junction Impacts

Table 5-1 summarises the capacity status of each of the key junctions in Saffron Walden assuming that no network changes have been, showing the worst situation in either of the peak hours.

Table 5-1: Summary of Saffron Walden Junction Capacity Status

		2012	2018		2031	
	Junction	Base	Committed	Committed + ULP	Committed	Committed + ULP
1	B185 Thaxted Rd / B1053 Radwinter Rd	⊘	⊘	✗	✗	✗
2	B184 Thaxted Rd / Peaslands Rd	✓	⊘	⊘	⊘	✗
3	Mount Pleasant Rd / Debden Rd (existing layout)	✓	✓	✓	✓	⊘
4	B1052 London Rd / Debden Rd	⊘	⊘	⊘	✗	✗
5	B184 High St / B184 George St	✓	⊘	✗	✗	✗
6	B184 High St / Castle St	✓	✓	✓	✓	✓
7	B184 High St / Church St	✗	✗	✗	✗	✗

		2012	2018		2031	
	Junction	Base	Committed	Committed + ULP	Committed	Committed + ULP
8	B184 Audley Rd / B184 High St	⊘	⊘	⊘	✗	✗
9	B184 East St / Fairycroft Rd / Cates Cnr	✓	✓	✓	✓	✓
10	B1052 London Rd / Borough Ln	✓	✓	⊘	⊘	⊘
10b	B1052 Newport Rd / Audley End Rd	⊘	✗	✗	✗	✗

Of the eleven junctions that have been reviewed, seven are expected to exceed capacity in the forecast year with all development in place, and two would be approaching capacity. The evaluation of the policy proposal and mitigation measures aimed at addressing the capacity issues are discussed in the next section.

5.2 Saffron Walden Policy 1 – Link road to east of town

As detailed in the previous report, one of the planning criteria for the implementation of Saffron Walden Policy 1 is to provide a link road between Thaxted Road and Radwinter Road, and the impact of this link road on the capacity of junctions in the town has been evaluated in 2031. Further details of the link road and the assumptions made on the resulting transfer of trips can be found in Section 7.2 of the 2013 report.

Table 5-2: Summary of Saffron Walden Junction Capacity Status: 2031 with Link Road

		2031		
	Junction	Committed	Committed + ULP	With Link Rd
1	B185 Thaxted Rd / B1053 Radwinter Rd	✗	✗	⊘
2	B184 Thaxted Rd / Peaslands Rd	⊘	✗	✗
3	Mount Pleasant Rd / Debden Rd (signals)	✓	✓	✓
4	B1052 London Rd / Debden Rd	✗	✗	✗
5	B184 High St / B184 George St	✗	✗	✗
6	B184 High St / Castle St	✓	✓	✓
7	B184 High St / Church St	✗	✗	✗
8	B184 Audley Rd / B184 High St	✗	✗	✗
9	B184 East St / Fairycroft Rd / Cates Cnr	✓	✓	✓
10	B1052 London Rd / Borough Ln	⊘	⊘	⊘
10b	B1052 Newport Rd / Audley End Rd	✗	✗	✗

While the link road would help to relieve the Thaxted Road / Radwinter Road junction, the overall impact is expected to result in six junctions being over capacity in the forecast year, and two would be approaching capacity.

The additional mitigation measures identified in the earlier study were then evaluated to assess their likely effect and are reported in the next section.

5.3 Saffron Walden Mitigation Measures

A number of mitigation measures were identified as part of the 2013 study in order to relieve congestion at a number of key junctions. Section 7.3 of the previous study sets out the details of each mitigation measure, and they are summarised below:

- MM1: Thaxted Road northbound traffic restriction at Thaxted Road / Radwinter Road junction,

- MM2: Debden Road northbound traffic restriction at Mount Pleasant Road/ Borough Lane junction,
- MM3: B184 Thaxted Road / B1053 Radwinter Road junction reconfiguration,
- MM4: B184 Thaxted Road / Peaslands Road junction reconfiguration,
- MM5: Mount Pleasant Road / Debden Road junction reconfiguration,
- MM6: B1052 London Road / Debden Road junction reconfiguration,
- MM7: B184 High Street / B184 George Street junction reconfiguration, and
- MM8: B1052 London Road / Borough Lane & B1052 Newport Road / Audley End Road junctions reconfiguration.

The assessment of several mitigation measures together is simplistic, as drivers would be likely to vary their journey in the light of the network changes. The outputs reported herein are, therefore, an estimation based on current movements, and professional judgement and do not take account of possible local re-routeing which will undoubtedly occur.

5.3.1 Saffron Walden Mitigation Measures Summary Results

The cumulative impact in 2031 of all of these mitigation measures is summarised in Table 5-3, again with the worst peak hour impact denoted.

Table 5-3: Saffron Walden Junction Capacity Analysis Summary: 2031 with Mitigation Measures

		2031			
	Junction	Committed	Committed + ULP	With Link Rd	With Link Rd & Mitigation Measures
1	B185 Thaxted Rd / B1053 Radwinter Rd	✗	✗	⊘	✓
2	B184 Thaxted Rd / Peaslands Rd	⊘	✗	✗	✓
3	Mount Pleasant Rd / Debden Rd (signals)	✓	✓	✓	✗
4	B1052 London Rd / Debden Rd	✗	✗	✗	⊘
5	B184 High St / B184 George St	✗	✗	✗	✗
6	B184 High St / Castle St	✓	✓	✓	✓
7	B184 High St / Church St	✗	✗	✗	✗
8	B184 Audley Rd / B184 High St	✗	✗	✗	✗
9	B184 East St / Fairycroft Rd / Cates Cnr	✓	✓	✓	✓

		2031			
	Junction	Committed	Committed + ULP	With Link Rd	With Link Rd & Mitigation Measures
10	B1052 London Rd / Borough Ln	⊘	⊘	⊘	✓
10b	B1052 Newport Rd / Audley End Rd	×	×	×	×

The implementation of the previously identified mitigation measures result in either no overall change or an improvement over the 2031 with committed development situation for almost all the junctions reviewed. The exception is the Mount Pleasant Road / Debden Road junction which would be expected to experience additional delays on the Debden Road south approach and on Mount Pleasant Road in both peak periods. As previously stated, the traffic assignment assumptions have been based on existing observations and professional judgement. Using this methodology it is not possible to allow for more intricate local re-routeing which is likely to result from the cumulative impact of the mitigation measures proposed. The adverse impact on the Mount Pleasant Road / Debden Road junction is, therefore, likely to be a worst case based on the simplistic modelling methodology used.

Costs of the mitigation measures are detailed in the October 2013 report, and are estimated to total in the region of £1m.

6. Impact of ULP Site Allocations in Great Dunmow

As in the earlier study, the impact of traffic from the proposed ULP sites on the main highway links in Great Dunmow has been assessed in terms of the anticipated effect on the operation of each junction. The individual junction capacity analyses are discussed in more detail in the Technical Note, contained in Appendix C. This section summarises the overall findings for each of the scenarios set out in Table 4-1. The mitigation measures are the same as those previously proposed. The symbols used are the same as those set out on the first page of the previous section.

6.1 Western Bypass

The analysis of the network impact of potential ULP sites in Great Dunmow has been undertaken with the assumption that the western bypass is in place, using the same reassignment assumptions as the earlier study (see Appendix H in earlier report).

6.2 Junction Impacts

Table 6-1 summarises the capacity status of the existing layout of each of the key junctions under the forecast year scenarios, showing the worst situation in either of the peak hours, assuming that the bypass is in place in all future years.

Table 6-1: Summary of Great Dunmow Junction Capacity Status

		2012	2018		2031	
	Junction	Base	Committed	Committed + ULP	Committed	Committed + ULP
1	B1256 / Chelmsford Rd (Hoblong's)	⊘	✓	✗	✗	✗
2	B184 High St / Stortford Rd / Market Pl	✓	✓	✓	✓	✓
3	Stortford Rd / Rosemary Ln	⊘	✓	⊘	⊘	✗
4	A120 / B1256 Interchange (north rbt)	✓	✓	✓	⊘	✗
5	A120 / B1256 Interchange (south rbt)	✓	✓	✓	✓	✓

The analysis has indicated that three junctions could have capacity issues in the forecast year, one of which (Hoblongs) would be over capacity without ULP traffic, the other two with the additional ULP traffic in 2031:

- B1256 / Chelmsford Road (Hoblongs)
- Stortford Road / Rosemary Lane
- A120 / B1256 Interchange (northern 'dumbbell' roundabout)

6.3 Great Dunmow Mitigation Measures

The Rosemary Lane junction is shown to experience capacity issues on its western arm during the PM peak. As some of the traffic at this junction could also use the western bypass, it may be that the level of traffic reassignment to the bypass has been under-estimated in the study. No mitigation measure is, therefore, proposed, particularly as the junction is shown to be only just at capacity in one time period.

6.3.1 Great Dunmow Mitigation Measures Summary Results

The Hoblongs and A120 northern dumbbell junction junctions have been reassessed for 2031, to show the effect of the proposed mitigation scheme and the results are summarised in Table 6-2, again with the worst peak hour impact specified.

Table 6-2: Great Dunmow Junction Capacities with all Mitigation Measures Implemented

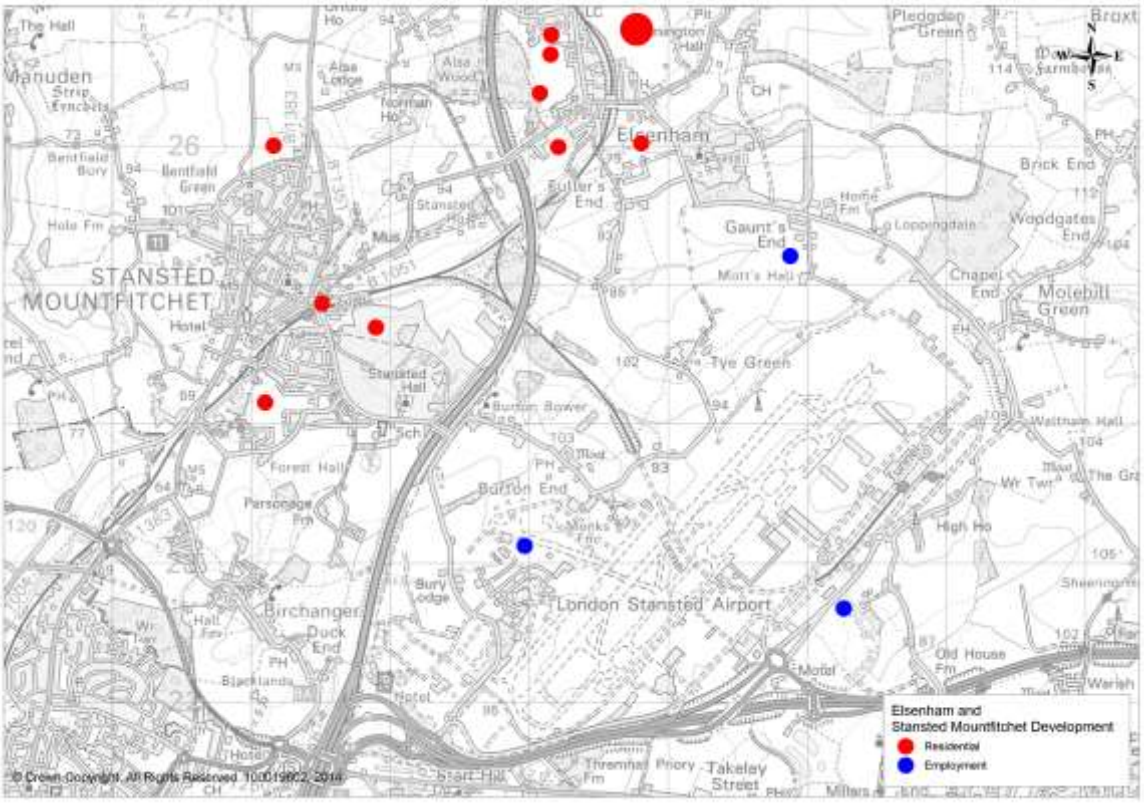
		2031		
	Junction	Committed	Committed + ULP	Committed + ULP + Mitigation
1	B1256 / Chelmsford Rd (Hoblong's)	✗	✗	✓
4	A120 / B1256 Interchange (north rbt)	⊘	✗	⊘

The B1256 approach to the A120 northern dumbbell would operate at a level near to capacity in both the AM and PM peak hour. However, the improved two lane southbound approach to the interchange would offer a significant benefit over the existing one lane plus flare layout, and it is anticipated that the junction will operate satisfactorily. There is no detrimental impact on either of the A120 off-slips.

7. Impact of ULP Site Allocations in Elsenham

The key element in this further study is the change in site allocations for housing development in Elsenham. Including already committed development, this has meant an increase from around 450 to more than 2,600 homes in the village. Given the location of the village it is important to assess the likely impact of the proposal on the local road network and its interaction with the wider road network. The extent of the area of interest is shown in Figure 7-1.

Figure 7-1 Elsenham Study Area



7.1 Current conditions

Elsenham can be considered to be in a more sustainable development area as there is a mainline rail station in the village, immediately adjacent to the major site allocation site. The frequency of trains at the station reflects its position on the 'stopping' line between London and Cambridge. Stansted Mountfitchet rail station is just under 2 miles distance, Stansted Airport rail station is some 3.5 miles distance, and Bishop's Stortford rail station is some 5 miles distance. The frequency, and London-bound journey times for Elsenham, Stansted Airport and Bishop's Stortford rail stations are set out in Table 7-1.

Table 7-1: Train Journey Times to London

	Elsenham	Stansted Mountfitchet	Stansted Airport	Bishop's Stortford
To Liverpool St	2/hr, 56 mins	2/hr, 41*-52 mins	4/hr, 47 mins	4/hr, 37-47 mins
To Stratford	n/a	n/a	n/a	2/hr, 55 mins

In 2011/12 the London service at Stansted Mountfitchet was enhanced*, with the Stansted Airport Express service stopping once per hour at the station. This improved the London journey time for one of the two services to 41 mins, and passenger numbers increased at the station by 16% that year, and by a further 6% the following year; over the same period passenger numbers at Elsenham have reduced slightly, and at Bishop's Stortford have increased by 14%[4]. This indicates that Stansted Mountfitchet and Bishop's Stortford stations may be more attractive to rail passengers, and Elsenham residents may be tending to travel to other stations with better services (for comparison, passenger numbers at Audley End station have increased by more than 8% over the same period).

As previously stated, Uttlesford residents are more likely to own cars and to use them to travel to work, which is likely to be a higher than national average distance away. Travel to work by train forms a very small percentage, 0.5%, of Uttlesford residents' journeys to work. Looking at 2011 Census ward data for the Elsenham and Henham ward, car ownership is even higher than at District level, with only 7% of households without a car, and with an average of 1.8 cars per household[5].

With car ownership in Elsenham even higher than average and, without adequate measures to encourage the use of non-car modes, or the provision of adequate facilities to reduce the need to travel, the site allocations in the village would be likely to lead to a significant increase in the level of traffic on the local road network.

The village is not immediately accessible to the strategic road network, being some 4.5 miles from the A120 to the south via Hall Road, 3.5 miles to the A120 at Bishops Stortford via Grove Hill, and 5 miles to the M11 J8 via Grove Hill or 6.3 miles via Hall Road.

In addition to the Hall Road or Grove Hill routes, there are a number of more minor roads which could be used by drivers in order to avoid the Lower Street area of Stansted Mountfitchet, particularly during peak periods. These include Tye Green Road / Bury Lodge Lane / Church Road / Forest Hall Road, a route which, although tortuous, is more direct for drivers heading towards the south west, ie Bishop's Stortford and Sawbridgeworth, and the A120W/Bishop's Stortford bypass.

[4] Station useage, 2012-13 report, Office of Rail Regulator, February 2013

[5] Table KS101EW Households and car ownership at ward level, Office of National Statistics, March 2014

The nature of the road network in Stansted Mountfitchet means that there is little that can be done within the village centre to facilitate more free-flowing traffic conditions, particularly in the Grove Hill, Lower Street and Chapel Hill areas.

7.2 Potential Mitigation Measures

7.2.1 Demand Management

As previously discussed in section 4.5.1, the most effective way of minimising the impact of development on the local road network is to minimise the need to travel, and to reduce reliance on the car and encourage the use of more sustainable travel modes. Stipulating that the major site includes a range of land uses, to satisfy as many of the needs of the new (and existing) residents, as well as very good connections to the public transport network, will be essential in order to reduce its impact on the network.

It is recommended that high quality frequent bus services to the key attractors of Stansted Airport and Stansted Mountfitchet, are provided from the initial occupation of the major allocation site to encourage its residents (and other Elsenham residents) to use alternative travel modes. The Airport is itself a major travel interchange, having both rail and extensive onward bus connections, as well as being a major source of employment. Consideration should also be given to improving bus services to Bishop's Stortford, as car journeys to this town would be very likely to either route through Stansted Mountfitchet, or to find alternative routes through the country lanes.

Education trips can have a significant impact on the network. Primary school trips are likely to be more localised, with the proposed on-site school serving local demand. Secondary school provision is currently available in Stansted Mountfitchet; if the senior school is re-located to within the site allocation development, consideration should be given to supporting the travel of any pupils transferring from the existing site as a planning condition, as these are unlikely to qualify for free school transport due to the comparatively short distance involved.

7.2.2 Hall Road Improvement

Developers have put forward the suggestion that the Hall Road route to the south should be improved to encourage traffic to use this road in preference to travelling through Stansted Mountfitchet. Evaluation of journey times using online tools indicates that, currently, it would take the same amount of time to travel to the M11 J8 via Hall Road as via Stansted Mountfitchet, although the latter route is 1.3 miles shorter.

During peak periods the shorter route would be likely to be subject to more delays and journey time variability as this route also includes several key junctions and roads restricted by on-street parking, ie Grove Hill, Lower St, Lower St/Chapel Hill, Chapel Hill, Chapel Hill/Silver St, and B1383/A120. Conversely, the Hall Road route would be expected to be mainly free-flowing, as it does not pass through any junctions or links which are known to currently experience significant delays.

Even if traffic is encouraged to use Hall Road, there would still be additional traffic passing between Elsenham and Stansted Mountfitchet as a result of the site allocations, which would increase pressure on the Grove Hill signals, and the Lower St/Chapel Hill junction, and other links in Stansted Mountfitchet. In itself, this congestion would further discourage through traffic from using the Grove Hill route but would be detrimental to travellers to and from Stansted Mountfitchet itself.

7.2.3 Point Closure

Increased congestion in Stansted Mountfitchet would be likely to further encourage drivers to use the more minor rural routes to the south and west of Elsenham, as mentioned above. For instance, a point closure of Tye Green Road may be necessary in order to discourage traffic from using this route, the timing of its implementation and the exact location of which would need to be agreed.

7.2.4 Western Link

While conditions are difficult to improve within the eastern side of Stansted Mountfitchet, it may be possible to provide a link road through from the B1051 Stansted Road to the west of Elsenham, across the north of Stansted Mountfitchet, to the B1383 in the vicinity of High Lane. This would enable traffic to bypass the eastern side of Stansted Mountfitchet and to reach the route which was the old A11 and, as such, is a more suitable route for traffic to take to reach Bishop's Stortford etc. Such a link, which would be approximately 1.1km in length, would cost in the region of £7.5-10m, excluding land costs, and would need to be subject to a more detailed feasibility assessment. An indicative sketch of the link is included at Appendix D.

The link would bypass the Lower Street area, but southbound traffic would still need to pass through the central area of the village, which is itself subject to delays caused by the manoeuvring of parked vehicles and pedestrian crossings.

Provision of the western link may lead to some existing traffic diverting from the B1383 to use the link to reach destinations towards the south-east, eg the Airport, Takeley, and the A120 east, using Hall Road. This may have further adverse impacts on traffic levels in Elsenham High Street.

7.3 Traffic Assignment

This work has highlighted the difficulty of evaluating the impact of development traffic when there are several routing options available. While the study has relied on Census Journey to Work information to inform the spreadsheet evaluations, this is a coarse tool, which does not provide sufficient information to determine the most appropriate routes.

While journey time surveys help to determine the current routes' attractions in terms of delays, the change in journey times as a result of additional traffic and the change in driver behaviour over time as a consequence, is dependent on a considerable range of assumptions.

A more detailed study using a detailed highway assignment route choice model would provide more confident predictions of the site allocations' impact, and it is recommended that this is provided as part of any planning application submission. This would also enable testing of future routeing proposals.

8. Impact of ULP Site Allocations on Strategic Road Network

Assignment of the committed and site allocations traffic onto the strategic road network is subject to a number of considerations, given that there is no local highway assignment model available. While routeing from more distant locations is relatively easily arrived at using the spreadsheet methodology, that from site allocations closer to the M11 is subject to more variation, given that there are a number of routes that can be taken to reach the motorway at J8.

8.1 M11 Junction 8

8.1.1 Previous modelling

The work carried out in 2013 showed that in its existing state, Junction 8 would experience a significant increase in delay in 2018 and 2026 with the addition of background growth, committed development and ULP traffic, with several approaches operating over capacity and with lengthy queuing. Table 8-1 provides an overall summary of the total delay at the junction across the scenarios previously modelled.

Table 8-1: Junction 8 Analysis undertaken in 2013 for 2018 and 2026 future years

Scenario	Total Traffic (PCUs)	PRC (%)	Total Delay (PCU Hrs)	Ave Delay per PCU (secs)
AM				
2012 Base	6161	-1.2%	106	62
2018 Base + Committed + G1	6325	-21.8%	177	101
2018 Base + Committed + G1 + ULP	6649	-51.5%	411	223
2026 Base + Committed + G1	6948	-108.3%	668	346
2026 Base + Committed + G1 + ULP	7729	-118.6%	1115	519
PM				
2012 Base	6385	-7.1%	112	63
2018 Base + Committed + G1	6483	-10.0%	115	64
2018 Base + Committed + G1 + ULP	6864	-85.2%	545	286
2026 Base + Committed + G1	7068	-90.2%	597	304
2026 Base + Committed + G1 + ULP	7928	-157.8%	1195	543

More specifically, the modelling highlighted that congestion would potentially be significant in the 2026 traffic flow scenarios on the following junction approaches:

- M11 northbound off-slip
- Services exit (and on the circulatory carriageway in the AM peak)
- A120 eastbound
- A120 westbound (Thremhall Avenue)
- B1256 Dunmow Road
- On the circulatory carriageway at the intersection with the cut-through in the south-eastern section of the junction.

Mitigation measures were devised for the western side of the junction to improve the delay on the circulatory between the M11 northbound off-slip and the A120 eastbound. The scheme considered removed the exit onto the junction from the motorway service area (MSA) and its associated signalling and stop-lines, and relocated the exit on to the eastbound A120 between Junction 8 and the A120/A1250 roundabout to the west. This also included widening the eastern end of this section of the A120 eastbound carriageway from two lanes to three lanes and widening the corresponding westbound A120 approach to four lanes.

The results of the modelling showed that these mitigation measures provided some benefit, removing all delay associated with the services exit from Junction 8 and significantly reducing the queuing on the A120 eastbound approach. However, the mitigation was found to unduly affect the A120/A1250 roundabout, due to the need for some MSA exiting traffic to u-turn at the roundabout in order to return to J8. The Highways Agency asked that this be reviewed, as there was a risk that eastbound traffic would tail back to J8.

8.1.2 Updated Modelling

The recent updated modelling of J8 has made use of the earlier Linsig model, and the future base cases include background growth, suitably adjusted for the Local Plan proposals up to a revised 2031 future year, the growth associated with Stansted Airport G1 (to 35mppa), and that related to the Bishop's Stortford North recently committed development.

The review of the J8 mitigation measure, to reduce the impact on the A120/A1250 junction, resulted in a revised scheme being drawn up. This enabled MSA exiting traffic to turn either left or right to rejoin the network, and no longer required a u-turn manoeuvre. The proposed design is attached at Appendix E.

The subsequently updated Linsig model has assumed that the following mitigation measures are in place:

- Removing the exit from the MSA onto J8 and its associated signals and stop-lines;

- Relocating the MSA exit to the eastern A120 between J8 and the A120/A1250 roundabout to the west of Junction 8, with three lanes available enabling both left and right turns to be made via a signalised junction arrangement which would operate under two stages;
- Widening of the A120 westbound carriageway from two to three lanes between the A120/A1250 roundabout and the proposed MSA junction;
- Widening the A120 eastbound carriageway from two to three lanes west of the proposed MSA junction, and from two to four lanes between the proposed junction and J8;
- Widening the A120 eastbound and A1250 northbound approaches to the A120/A1250 Dunmow Road roundabout to two full lanes.

The overall results of the analysis are shown in Table 8-2; the cycle time under all scenarios is 75 seconds.

Table 8-2: Junction 8 Analysis, including MSA exit improvement

	Total Traffic (PCUs)	PRC %	Total Delay (PCU Hrs)	Ave Delay per PCU (secs)
AM:				
2012 Base	6161	-20.3	116	68
2018 Base	6634	-12.5	115	62
2018 Base + ULP	7025	-11.9	125	64
2031 Base	7618	-54.1	354	167
2031 Base + ULP	8687	-130.9	737	305
PM:				
2012 Base	6385	20.2	75	42
2018 Base	6882	8.5	95	50
2018 Base + ULP	7307	-64.9	298	147
2031 Base	7957	-188.6	601	272
2031 Base + ULP	9099	-195.5	891	353

It is evident that, overall, the additional traffic from committed development and in particular the ULP development would lead to a significant rise in delay at the junction despite the mitigation measures being proposed. However, it is noticeable that when compared to the results obtained from the previous 2026 modelling work for the existing layout, in spite of the significant increases in flows in the 2031 scenarios, the total delay at the junction is considerably lower as a result of the mitigation measures proposed.

The modelling shows that the mitigation measures would be expected to relieve a notable amount of congestion on the western side of J8, with queuing removed on the circulatory carriageway at the site of the existing MSA exit and queuing notably reduced

on the A120 eastbound approach. However, the results suggest that in the 2031 traffic flow scenarios there would be significant congestion on the following approaches:

- M11 northbound off-slip,
- A120 westbound approach (Thremhall Avenue)
- The circulatory carriageway itself at the intersection of the north:south cut-through route within the roundabout.

In the case of the likely queuing on the M11 northbound off-slip, the modelling showed that this could potentially stretch back on to the M11 northbound main carriageway in the AM and PM peak of both the 2031 with and without ULP development scenarios.

The mitigation measure which has been devised for J8 is expected to cost in the region of £5m which includes the improvement works to the A120/A1250 junction. The J8 mitigation measure would free up capacity at the junction for all traffic. As such, funding contributions should not be linked to any one development site. ECC, as highway authority, will also be applying for funding to support M11 corridor schemes, which include J8, from the South East Local Enterprise Partnership (SELEP) Strategic Economic Plan (SEP)[6].

8.1.3 Sensitivity Testing

The junction analysis has assumed that the Elsenham site allocation will make use of the Hall Road route in preference to the Grove Hill route. While this means that development traffic heading for the M11S will use J8a and so not pass through J8, it also means that traffic heading towards the west, ie the A120W and Bishop's Stortford and Sawbridgeworth etc, will also travel through J8.

While it is possible to undertake some sensitivity testing, to see how an assignment with more Elsenham traffic using the B1383 would affect the capacity of J8, this then assumes a greater level of traffic would either travel through Grove Hill and Lower Street, or that there is a greater need for the Stansted Mountfitchet northern link.

8.2 A120 junctions

The routeing of ULP traffic from the major site allocation would also have an effect on the likely impact on the two A120 junctions to the west of J8. As such no detailed modelling of the westernmost junction (A120 / B1383) has been undertaken, and the easternmost (A120/A1250) junction has only been evaluated with the Hall Road use assumptions in place.

[6] More information on the Strategic Economic Plan can be found at http://www.southeastlep.com/about-us/activities/262-developing-a-growth-strategy-and-prioritising-investment-in-the-south-east

Capacity issues at the A120 / B1383 roundabout have already been highlighted as part of the Bishop's Stortford North application, which includes a contribution towards future works. It is recommended that its capacity is evaluated as part of any planning submission for the Elsenham allocation. However, any subsequently identified improvement scheme cost should not be borne by any one development site.

8.3 Modelling caveats

It should also be noted that, as set out in the previous chapter, the spreadsheet methodology used to derive development traffic flows makes no allowance for background traffic reassignment, variable demand in terms of travel mode and time choices, and changes in destinations, as a consequence of increased traffic on the network.

As such, junction evaluations are likely to be overly robust in estimating the forecast traffic flows that need to be accommodated in 2036.

Appendices

Appendices

Appendix A

ULP Development Trajectory

ASSESSMENT OF HIGHWAY IMPACT ON LOCAL PLAN SITES 2013 **UPDATED INFORMATION ON LOCAL PLAN SITES OCT 2013**

TABLE 2-3 SAFFRON WALDEN ULP HOUSING DEVELOPMENT										
	No. of Dwellings						Current year & years 1-5	Years 6-11	Years 12-17	
Site Name & Location	2012-2018	2019-2026	2012-2026	Update/ Comment	Site Name & Location	Capacity	2013/14-2018/19	2019/20-2024/25	2025/26-2030/31	
Saffron Walden 1	0	800	800		Saffron Walden Policy 1: Land between Radwinter Road and Thaxted Road	800	150	450	200	UTT/13/2060/OP X 300 dec pending
Saffron Walden 2	60	0	60		Saffron Walden Policy Area 2: Former Willis and Gambier Site, Radwinter Road	60	60			UTT/13/1982/FUL x 52 dec pending
Saffron Walden 3	20	0	20	now committed						
					SAFFRON WALDEN Land at Ashdon Road Commercial Centre	167	150	17		NEW
TABLE 2-8 SAFFRON WALDEN COMMITTED DEVELOPMENTS: DWELLINGS										
Bell College South Road	37	0	37	BUILT						
McCarthy & Stone, South Road	27	0	27	BUILT						
Friends School	45	0	45		Land at Friends School	44	44			UTT/0188/10
Friends School (RSL)	31	0	31	BUILT						
Lt Walden Road	15	0	15		Land west of Little Walden Road	15	15			UTT/1576/12/DFO
8 Station Road	10	0	10	EXPIRED						
Ashdon Road	130	0	130		Land south of Ashdon Road	130	130			UTT/1572/12/DFO
Paxtons Depot	12	0	12		Goddards Yard, Thaxted Road	14	14			UTT/13/0669/FUL
Thaxted Rd (Kiln Court)	23	9	32		Land rear of The Kilns, Thaxted Road	52	52			UTT/13/1937/OP
Former Gas Works Thaxted Rd	9	0	9		Former Gas Works Site, Radwinter Road	5	5			built 13/14
8-10 King Street	16	0	16		8- 10 King Street	8	8			UTT/0280/12/REN
Emson Close	9	0	9		Land at Emson Close	9		9		UTT/0609/11/REN
					The Sun Inn Gold Street	6	6			UTT/0681/12
					Lodge Farm, Radwinter Road (part of Jossaumes site)	31	31			UTT/12/5226/FUL Sheltered housing
					Saffron Walden Policy 3: Tudor Works Debden Road	24	24			UTT/1252/12/OP

TABLE 2-4 GREAT DUNMOW ULP HOUSING DEVELOPMENTS										
	No. of Dwellings						Current year & years 1-5	Years 6-11	Years 12-17	
Site Name & Location	2012-2018	2019-2026	2012-2026	Update/ Comment	Site Name & Location	Capacity	2013/14-2018/19	2019/20-2024/25	2025/26-2030/31	
Great Dunmow 1	0	850	850		Great Dunmow Policy 1: Land west of Woodside Way	850	150	460	240	UTT/13/2107/OP x 790 Dec Pending
Great Dunmow 2	100	180	280		Great Dunmow Policy 2: Land west of Chelmsford Road	350	200	150		UTT/13/1684/OP x 370 dec pending
					GREAT DUNMOW Land west of Great Dunmow and south of Stortford Road	400		50	350	NEW
					Redevelopment of Helena Romanes school	100			100	NEW
TABLE 2-9 GREAT DUNMOW COMMITTED DEVELOPMENTS: DWELLINGS										
Riverside	5	0	5	EXPIRED						
Springfields	25	0	25	BUILT						
Woodlands Pk Sector 1 Emblems	50	55	105		Outstanding development at Woodlands Park Sectors 1-3	864	153	264	447	
Woodlands Pk Sector 2	120	232	352		Woodlands Park Sector 4	124	124			
Woodlands Pk Sector 3	120	233	353							
Woodlands Pk Sector 3 RSL	61	0	61							
Perkins Garage	12	0	12		Perkins Garage, Stortford Road	12	12			UTT/0193/10
Council Depot, High Street	0	10	10	no longer included						
Land Adj Holmans Yard	6	0	6		Land adjacent Harmans Yard	6	6			UTT/0912/10
9 Stortford Road	6	0	6	d -						
Former Council Offices, 46 High Street	10	0	10		Former Council Offices, 46 High Street	2	2			UTT/2116/10
South of Ongar Road	100	0	100		South of Ongar Road	100	100			UTT/13/1979/FUL Dec Pending
North of Ongar Road	73	0	73		Land north of Ongar Road	73	43			UTT/1147/12
Woodlands Park Sector 4	125	0	125							
					Barnetson Court, Braintree Road	10	10			UTT/1519/12/FUL
					Land at Brick Kiln Farm, St Edmunds Lane	65	65			UTT/13/0847/OP

TABLE 2-5 NEWPORT ULP HOUSING DEVELOPMENTS										
	No. of Dwellings						Current year & years 1-5	Years 6-11	Years 12-17	
Site Name & Location	2012-2018	2019-2026	2012-2026	Update/ Comment	Site Name & Location	Capacity	2013/14-2018/19	2019/20-2024/25	2025/26-2030/31	
Newport 1	0	60	60		Newport Policy Area 1	84	84			UTT/13/1769/OP
Newport 2	70	0	70		Newport Policy Area 2	70		70		
TABLE 2-10 NEWPORT COMMITTED DEVELOPMENTS: DWELLINGS										
The Maltings Station Rd	11	0	11	BUILT						
					Carnation Nurseries, London Road	22	22			UTT/12/5198/OP
					Hillside and land to rear, Bury Water Lane	45	45			UTT/13/1817/OP care home + 45

TABLE 2-6 OTHER ULP HOUSING DEVELOPMENTS										
	No. of Dwellings						Current year & years 1-5	Years 6-11	Years 12-17	
Site Name & Location	2012-2018	2019-2026	2012-2026	Update/ Comment	Site Name & Location	Capacity	2013/14-2018/19	2019/20-2024/25	2025/26-2030/31	
Stansted 1: 14-28 Cambridge Road	11	0	11							
Stansted 2: Land at 10 Cambridge Road	14	0	14							
Stansted 3: St Mary's Primary School, St Johns Rd	45	0	45		Stansted Mountfitchet Policy 3: St Mary's Primary School. St Johns Road	35	35			sheltered housing
Takeley 1: Land at and to the rear of Takeley Primary School	60	0	60		Takeley/Little Canfield Policy 1: Land at and to the rear of former Takeley Primary School, Roseacres	75	75			
					Takeley/Little Canfield Policy 2: Land south of Dunmow Road and west of The Pastures/Orchard Fields	41	41			UTT/1335/12/FUL
Takeley 3: North View and 3 Warren Close	55	0	55	now committed	Takeley/Little Canfield Policy 3: North View and 3 The Warren	45	45			UTT/13/1779/FUL X 46
Takeley 4: Land at Former Takeley Service Station and between Ridge House and Remarc	15	0	15		Takeley/Little Canfield Policy 4: Land at Former Takeley Service Station and between Ridge House and Remarc	15	15			
Takeley 5: Land to the south of the B1256 between Olivias and New Cambridge House	30	0	30	committed in part	Part of Takeley Policy 5: WITH permission - land adjacent Olivias, Dunmow Road	6	6			12/5142/FUL x 6
					Part of Takeley Policy 5:WITHOUT permission - land adjacent Olivias, Dunmow Road	14		14		
Thaxted 1: Sampford Road	60	0	60	now committed	Thaxted Policy 1: Land south of Sampford Road	60	60			UTT/5754/12

Elsenham 1: Land west of Station Road (Planning permission granted June 2012 UTT/0142/12/OP)	155	0	155	now committed	Elsenham Policy 1 land west of Station Road	155	155			UTT/0142/12/OP
Elsenham 2: Land west of Hall Road	40	75	115	now committed	Elsenham Policy 2: Land west of Hall Road	130	130			UTT/13/0177/OP
Elsenham 3: Land south Stansted Road	0	130	130	now committed	Elsenham Policy 3: Land south of Stansted Road	165	165			UTT/13/1790/OP
					ELSENHAM Land to the north east of Elsenham	2100	200	950	950	NEW
Great Chesterford 1: New World Timber and Great Chesterford Nursery, London Road	20	20	40		Great Chesterford Policy 1: New World Timber and Great Chesterford Nursery, London Road	35	15	20		
Great Chesterford 2: Land south of Stanley Road	30	30	60	committed in part	Part of Great Chesterford Policy 2: Land south of Stanley Road	60	50	10		UTT/12/5513/OP x 5(
Clavering 1: Land to the rear of the shop and Oxleys Close	14	0	14	now committed	CLAVERING Policy 1: Land rear of the shop and Oxleys Close	14	14			UTT/2251/11/FUL
Henham 2: land north of Chickney Road and west of Lodge Cottages	30	0	30	now committed	HENHAM Policy 2: Land north of Chickney Road and west of Lodge Cottages	14	14			UTT/13/0909/OP
					NEW HENHAM Policy 1: Land at Blossom Hill Farm, Chickney Road	25				
Radwinter 1: Land north of Walden Road	40	0	40		RADWINTER Policy 1: Land north of Walden Road	40				
Stebbing 1: Land to east of Parkside and Garden Fields	10	0	10		STEBBING Policy 1: Land east of Parkside and Garden Fields	10				

Table 2-11 OTHER UTTLESFORD COMMITTED DEVELOPMENTS										
	No. of Dwellings						Current year & years 1-5	Years 6-11	Years 12-17	
Site Name & Location	2012-2018	2019-2026	2012-2026	Update/ Comment	Site Name & Location	Capacity	2013/14-2018/19	2019/20-2024/25	2025/26-2030/31	
S. Mountfitchet Almont House	7	0	7	EXPIRED						
S.Mountfitchet 8 Water Lane	8	0	8	EXPIRED						
S.Mountfitchet Rochford Nurseries	193	0	193		STANSTED MOUNTFITCHET Outstanding development at Foresthall Park	85	85			
S.Mountfitchet Rochford RSL	54	0	54	BUILT						
					STANSTED MOUNTFITCHET 68-70 Bentfield Road	6	6			UTT/2479/11
					STANSTED MOUNTFITCHET 2 Lower Street	14	14			UTT/1522/12/FUL
					STANSTED MOUNTFITCHET Mead Court, Cannons Mead	2	2			UTT/13/0749/FUL x 29 (& loss of 27 units)
					STANSTED MOUNTFITCHET Land at Walpole Farm, Cambridge Road	160	160			UTT/13/1618/OP
					STANSTED MOUNTFITCHET Elms Farm, Church Road	51	51			UTT/13/1959/OP
S. Mountfitchet Rochford Nurseries (Former school site)	39	0	39							
S.Mountfitchet Land at Mont House	4		4	BUILT						
Takeley, Island Sites Priors Green	9	24	33		TAKELEY/LT CANFIELD Outstanding development on Priors Green "Island Sites" WITHOUT planning permission	39		24	15	
Takeley, Island Sites Priors Green	18	30	48		TAKELEY/ LT CANFIELD Outstanding development on Priors Green "Island Sites" WITH planning permission	19	19			

Takeley, Priors Green	178	0	178		TAKELEY/Lt CANFIELDOutstanding development on Priors Green	84	84			
					TAKELEY Stansted Motel and 2 Hamilton Rd	13	13			UTT/0240/12
					TAKELEY South of Dunmow Road, Brewers End	100	100			UTT/13/1393/op
					TAKELEY Land at Chadhurst, Dunmow Road	12	12			UTT/13/1518/FUL
Takeley, Priors Green RSL	74	0	74	BUILT						
Takeley, Takeley Nurseries	7	0	7	BUILT						
Thaxted Wedow Road	55	0	55		THAXTED Land off Wedow Road	55	55			UTT/13/1153/DFO
					THAXTED Land east of Barnard's Fields	8	8			UTT/13/0108
Elsenham, The Orchard	53	0	53		ELSENHAM The Orchard, Station Road	51	51			UTT/1500/09/OP UTT/2166/11/DFO
					ELSENHAM Land at Alsa Leys, Elsenham	6	6			UTT/12/5508/ful
Felsted/Little Dunmow, Fflitch Green	0	68	68		FLITCH GREEN Phase 6 and village centre WITHOUT planning permission	147			147	
Felsted/Little Dunmow, Flitch Green RSL	0	86	86		FLITCH GREEN Land at Webb Road and Hallet Road	9	9			UTT/13/1123/FUL
Felsted Hartford End Brewery	0	43	43		FELSTED Harford End Brewery	43		43		UTT/2310/10/FUL
					FELSTED land at Watch House Green	25	25			UTT/13/0989/OP
Great Easton	20	20	40	BUILT						
Gt Hallingbury, Newlands, Woodside Cottage & Oakside, Church Rd,	6	0	6	now included in windfall allowance						
High Roding Meadow House Nursery	25	0	25		HIGH RODING Land at Meadow House	25	25			utt/1823/08 13/1767 x 30 dec pending
Littlebury Peggys Walk	14	0	14	BUILT						
Manuden, Site off the Street	14	0	14		MANUDEN land off The Street	10	10			UTT/0692/12/FUL

TABLE 2-7 ULP EMPLOYMENT SITE & NON-RESIDENTIAL LAND USE DEVELOPMENTS										
							Current year & years 1-5	Years 6-11	Years 12-17	
Site Name & Location	Land Use				Policy	Land Use	2013/14-2018/19	2019/20-2024/25	2025/26-2030/31	
Saffron Walden: Land between Radwinter Rd & Thaxted Rd	Industrial warehousing	0	6ha	6ha	Saffron Walden Policy 1	employment	6ha			
	Retail warehousing	0	4,500	4,500		Primary school		210 pupil		
	Primary school	0	210 pupil	210 pupil		convenience retail	790m2			
					Saffron Walden Policy XX – Land North of Thaxted Road	retail warehousing	2,973m2			
						discount foodstore	1,523m2			
						B1/B2/B8	0.63 ha			
Great Dunmow: Land north of Stortford Rd & west of Woodside Way	Primary school	0	210 pupil	210 pupil	Great Dunmow Policy 1: Land west of Woodside Way			210 pupil		
	Retail food store	0	2,322	2,322		?	?	?		
Great Dunmow: Land west of Chelmsford Rd	Primary school	0	210 pupil	210 pupil	Great Dunmow Policy 2: Land west of Chelmsford Road	Primary school		210 pupil		
	Warehousing	0	7,432	7,432		retail foodstore	1400			UTT/13/1884/OP x 1850m2
	Care home	0	130 residents	130 residents		care home	70 bed			
Great Dunmow: Waste Transfer Centre	B1 office	1.7ha	0	1.7ha (site area)	Great Dunmow: Waste Transfer Centre	B1 office	1.7ha			
Newport: Bury Water Ln	Care home	0	50 residents	50 residents	Newport: Hillside and land to rear, Bury Water Lane	Care home	125			120 extra care and 5 respite

Elsenham: Gaunts End	B1a Office and Mixed Use	6,967	7,000	13,967	Elsenham: Gaunts End	B1a Office and Mixed Use	6,967	7,000	13,967	
Chesterford Research Park	Business Park	6,000	18,000	24,000	Chesterford Research Park	Business Park	6,000	18,000	24,000	
Chesterford Research Park	Business Park	6,000	18,000	24,000	Chesterford Research Park	Business Park	6,000	18,000	24,000	
Stansted Airport - Airport-related	Business, Industry, Warehousing	9,800	19,580	29,380	Stansted Airport - Airport-related	Business, Industry, Warehousing	9,800	19,580	29,380	
Stansted Mountfitchet,: land north east of Bury Lodge Lane	Offices	6,300	12,700	19,000	Stansted Mountfitchet,: land north east of Bury Lodge Lane	Offices	6,300	12,700	19,000	
	Warehousing	12,300	24,700	37,000		Warehousing	12,300	24,700	37,000	
Wendens Ambo, N of B1039, W of B1383	B1a office	900	0	900	Wendens Ambo, N of B1039, W of B1383	B1a office	900	0	900	
					FLITCH GREEN Land at Webb Road and Hallet Road	1 x retail unit	386m2			
					Elsenham Policy 1 land west of Station Road	care home	55			
					STANSTED MOUNTFITCHET Land at Walpole Farm, Cambridge	B1		600		
					Gt Dunmow: Land west of Great Dunmow and South of Stortford Road	secondary school			12 ha	
						medical centre				
					Saffron Walden: Ashdon Road Commercial Centre					
					1.25 hectares of land to be used as a Builders Merchant and Yard (Use Class B8)	Builders Yard B8	1.25 ha			
					up to 0.47 hectares of land to be used as Offices (B1(a))	offices B1a		0.47 ha		

					up to 0.4 hectares of land to be used for Offices and/or Research and Development and/or Light Industrial (Use Class B1 (a), (b) and (c)),	offices/R&D B1 (a), (b) and ©		0.4 ha		
					up to 1.16ha of land for use as Business, General Industrial and Storage and Distribution uses (Use Classes B1, B2 and/or B8),	B1, B2 and/or B8		1.16 ha		
					a Local Centre of up to 0.86ha for uses falling within Use Class A1, including a local retail store (with the net A1 retail floor space limited to 279m2)	Local Centre/Retail		325m2		
					cafe/restaurant/public house (Use Classes A3 and A4), a hotel (Use Class C1),	A3/A4/C1		335 m2		
						Hotel 40 rooms		1000m2		

Appendix B

Trip Generation

Saffron Walden Residential ULP Vehicle Trips

The vehicle trip generation rates produced as part of the 2013 study have been applied to the number of ULP dwellings for Saffron Walden, and the results shown in Table 1.

*Table 1: **Summary of Saffron Walden ULP Residential Generated Vehicle Trips***

ULP Site	2018 ULP Development				2031 ULP Development			
	AM Peak		PM Peak		AM Peak		PM Peak	
	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP
Houses Privately owned	37	96	96	56	59	153	143	86
Houses Rented	4	7	9	5	12	22	27	16
Flats Privately owned	2	10	8	3	7	30	26	11
Flats Rented	1	1	1	1	2	4	3	3
Total	**44**	**114**	**114**	**65**	**80**	**209**	**199**	**116**

Great Dunmow Residential ULP Vehicle Trips

The same process was undertaken for each key town and the resultant trips for Great Dunmow are shown below in Table 2.

Table 2: Summary of Great Dunmow ULP Residential Generated Vehicle Trips

ULP Site	2018 ULP Development				2031 ULP Development			
	AM Peak		PM Peak		AM Peak		PM Peak	
	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP
Houses Privately owned	31	80	74	44	74	193	179	108
Houses Rented	6	12	14	9	15	29	35	21
Flats Privately owned	4	16	14	6	10	39	34	14
Flats Rented	1	2	2	2	3	5	4	4
Total	**42**	**110**	**104**	**61**	**102**	**266**	**252**	**147**

Wider Uttlesford Area Residential ULP Vehicle Trips

The resultant trips for the remaining wider area ULP developments are shown in Table 3.

*Table 3: **Summary of Wider Area ULP Residential Generated Vehicle Trips***

ULP Site	2018 ULP Development				2031 ULP Development			
	AM Peak		PM Peak		AM Peak		PM Peak	
	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP
Houses Privately owned	37	102	97	58	241	683	634	378
Houses Rented	8	15	18	11	51	96	113	69
Flats Privately owned	4	8	8	4	1	6	2	1
Flats Rented	3	3	3	3	0	1	0	0
Total	**51**	**128**	**125**	**75**	**293**	**786**	**750**	**448**

Total Residential ULP Vehicle Trips

The information on the ULP proposals as set out in the preceding tables has been summarised in Table 4 to provide an overall indication of the total generated trips associated with the Local Plan.

*Table 4: **Summary of Total ULP Residential Generated Vehicle Trips***

ULP Site	2018 ULP Development				2031 ULP Development			
	AM Peak		PM Peak		AM Peak		PM Peak	
	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP
Houses Privately owned	111	294	282	167	379	1043	969	580
Houses Rented	19	36	44	27	79	149	177	108
Flats Privately owned	11	37	33	14	19	78	64	27
Flats Rented	5	6	6	6	5	10	7	7
Total	**145**	**373**	**364**	**213**	**482**	**1280**	**1218**	**722**

Please note this table includes the Newport ULP residential generated vehicle trips as outlined in the previous study.

Other Land Use ULP Vehicle Trip Generation

The estimated total trips arising from the potential employment sites and other non-residential land uses in the UDC area are shown in Table 5, which have been calculated from the trip rates shown in Table 3-2 of the main report and the site information shown in Table 6 in Appendix B.

*Table 5: **Summary of ULP Employment sites' attracted Vehicle Trips***

ULP Site	2018 ULP Development				2031 ULP Development			
	AM Peak		PM Peak		AM Peak		PM Peak	
	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP
Saffron Walden: Land between Radwinter Rd & Thaxted Rd	38	10	6	36	0	0	0	0
Saffron Walden: Former Willis and Gambier Site, Radwinter Rd	5	4	3	5	0	0	0	0
Saffron Walden: Land at Ashdon Rd Commercial Centre	0	0	0	0	39	-20*	10	-5*
Saffron Walden: Land north of Thaxted Rd	98	26	52	114	0	0	0	0
Great Dunmow: Land north of Stortford Rd & west of Woodside Way	0	0	0	0	0	0	0	0
Great Dunmow: Land west of Chelmsford Rd	36	23	65	71	0	0	0	0
Great Dunmow: Waste Transfer Centre	37	6	7	43	0	0	0	0
Newport: Bury Water Ln	0	0	0	0	4	3	3	4
Elsenham: Gaunts End	147	32	66	178	147	32	66	178
Chesterford Research Park	182	32	30	175	231	36	44	259
Start Hill, Great Hallingbury, S of B1256	77	15	16	82	77	22	16	82
Stansted Airport – Airport related	50	9	8	42	100	18	15	84
Stansted Airport - Non Airport related	195	40	43	204	392	80	86	412
Wendens Ambo, N of B1039, W of B1383	20	3	4	23	0	0	0	0

ULP Site	2018 ULP Development				2031 ULP Development			
	AM Peak		PM Peak		AM Peak		PM Peak	
	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP
Fitch Green, land at Webb Road and Hallet Road	19	13	34	35	0	0	0	0

*Please note the negative figures are derived from the difference in trip rates calculated from the existing similar development compared to the future, smaller development proposed to be located here, extracted from the Transport Assessment submitted for the planning application of this site.

Development Trip Generation: Committed

The estimated total trips arising from the committed sites in the UDC area are shown below in Table 6, which have been calculated from the trips rates shown in Table 3-2 of the main report and the site information shown in Table 7, Table 8, Table 9 and Table 10 in Appendix B.

For Stansted Airport, while the G1 employment trips are included in TEMPRO, passenger trips are not. The passenger traffic associated with the G1 Stansted Airport development, as shown in Table 6, has therefore been extracted from the G1 documents: Environmental Statement Vol 16 Air Traffic Data, April 2006, and Vol 11 Addendum Update, Surface Access Transport Assessment, July 2007. This has utilised predicted passenger hourly flow profiles, mode share and vehicle occupancy. As previously stated, passenger levels in 2012 were less than 18mppa.

For the purposes of this assessment it has been assumed that the airport operated at 17.5mppa in 2012, and will be operating at 25mppa in 2018, and at 35mppa in 2031. The 10mppa level has been calculated by subtracting the G1 35mppa profiles from the 25mppa profiles, and these values have been factored for the 7.5mppa level. For 2018, therefore, an additional 7.5mppa would be expected to be on the network, and in 2031 a further 10mppa, and these are the trips set out in the table.

*Table 6: **Summary of Committed development Vehicle Trips***

Committed Development Site	2018 Committed Development				2031 Committed Development			
	AM Peak		PM Peak		AM Peak		PM Peak	
	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP
Saffron Walden	47	122	116	68	1	3	3	2
Great Dunmow	63	166	156	90	86	223	211	123
Newport	1	3	3	2	0	0	0	0
Other areas	234	613	568	328	100	260	76	44
Stansted Airport px	55	227	3	72	74	302	4	97
Total	**400**	**1131**	**846**	**560**	**261**	**788**	**294**	**266**

Appendix C

Junction Modelling Technical Note

Uttlesford Local Plan Highway Impact Assessment

Junction Analysis Technical Note – Assessment Year 2031

February 2014

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Document Control Sheet

Report Title	Uttlesford Local Plan: Junction Analysis Technical Note – Assessment Year 2031
Project Title	Uttlesford LDF
Project No.	TTP1043
Status	Final
Revision	00
Control Date	28th February 2014

Record of Issue

Issue	Status	Author	Date	Check	Date	Authorised	Date
01	Final	B Johnston	28/02/14	M Young	28/02/14	J Jones	28/02/14

Distribution

Organisation	Contact	Number of Copies
Uttlesford District Council	**Andrew Taylor**	**1**
Essex Highways	**Mary Young**	**1**

1. Introduction

Junction Analysis:

The results shown in the next section have been obtained from junction capacity assessments of selected priority, roundabout and signalised junctions within Saffron Walden and Great Dunmow. The evaluation of M11 Junction 8 is also reported. These are for the AM and PM peak hours for the 2012 Base year, 2018 and 2031 forecast years with Committed Development, and the latter two scenarios again with the addition of ULP development.

We would note that the modelled results for the Base Year evaluations have not been directly calibrated against on-site observations although the outputs have been checked to ensure that the results offer a satisfactory assessment of junction capacities.

Junction Analysis with Infrastructure Change:

For Saffron Walden, the ULP includes a policy proposal for the provision of a new link road. This is not likely to be in place until 2031, and so analysis has been undertaken to estimate its impact on junctions within the town at that time, which involves reassignment of background traffic.

Junction Analysis with Mitigation Measures:

Several further mitigation measures have been proposed in order to address junction capacity issues in Saffron Walden. The results for the 2031 with committed and ULP development, with link road and with each individual mitigation measure, are reported in this section.

Technical:

The LinSig program was used to undertake the assessments of the signalised junctions and the ARCADY program for the assessments of the priority and roundabout junctions. In order to show how close to capacity the junction approaches are for each scenario, we have presented a Degree of Saturation (DoS) % figure, which represents both the Ratio of Flow to Capacity (RFC) values obtained from the ARCADY assessments and a Degree of Saturation (DoS) value from the LinSig assessments, these being in effect the same unit.

RFC values below 0.85 are generally accepted as representing stable operating conditions; generally RFC values in excess of 0.85 represent overloaded conditions (i.e., congested conditions), although for LinSig, the threshold value is more usually considered to be 90%. The queue lengths shown are mean maximum queue lengths calculated by the software over the hour period and are in equivalent passenger car units (PCUs).

The majority of the roundabout junctions assessed are mini-roundabouts, and this option has been selected within the ARCADY software. However, for the London Road / Debden Road junction in Saffron Walden, the use of the standard roundabout option was found to produce a closer correlation to existing conditions and so this option was used and is reported herein.

This Technical Note should be read in conjunction with the September 2013 Highway Impact Report as it contains more information on the proposed mitigation measures.

2. Junction Analysis – Existing Layouts

2.1. Saffron Walden

Junction 1: B184 Thaxted Rd / B1053 Radwinter Rd

The junction currently operates using MOVA, which takes account of live traffic conditions at this junction and automatically adjusts signal timings accordingly. Undertaking the analysis with a fixed cycle time (as shown in Tables 1a and 1b below) does not represent the flexible nature of the MOVA function. However, the proprietary software does not provide an option for evaluation of MOVA. Instead we have re-analysed the junction using a shorter cycle time and in the Optimisation Mode in order to try and replicate this function. The outputs from this are illustrated in Tables 1c and 1d below.

Table 1a: B184 Thaxted Road / B1053 Radwinter Road AM Peak (Fixed Cycle Time=180sec)

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q
B1053 Radwinter Rd	1	92.8%	**27**	102.5%	**40**	112.6%	**65**	105.5%	**47**	119.8%	**85**
B184 Thaxted Rd	1	95.1%	**32**	101.3%	**42**	105.6%	**53**	104.4%	**49**	109.0%	**63**
B184 East St	1	68.2%	**18**	78.2%	**21**	85.8%	**24**	80.9%	**22**	88.3%	**26**

Base Year:
The capacity assessment of this signal controlled junction shows that in the AM peak hour the Thaxted Road and Radwinter Road approaches are operating at capacity. The analysis also shows extensive queuing on all arms.
Future Years:
As would be expected the addition of the committed development takes the junction over capacity.

Table 1b: B184 Thaxted Road / B1053 Radwinter Road PM Peak (Fixed Cycle Time=180sec)

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q
B1053 Radwinter Rd	1	83.8%	**23**	91.5%	**27**	96.8%	**32**	98.1%	**34**	106.8%	**52**
B184 Thaxted Rd	1	94.3%	**29**	103.3%	**43**	108.4%	**56**	111.1%	**64**	121.0%	**95**
B184 East St	1	71.5%	**22**	83.0%	**27**	92.1%	**31**	96.9%	**37**	107.1%	**60**

Base Year:
The results for the PM peak are broadly comparable to those seen for the AM peak, albeit with slightly better results on Radwinter Road, reflecting the lower westbound flows at this time of day. There are still, however, lengthy queues on all approaches and the Thaxted Road arm is shown to be operating at capacity.

Future Years:
Conditions on Thaxted Road, already the most congested arm, continue to worsen with the addition of committed development.

Table 1c: B184 Thaxted Road / B1053 Radwinter Road AM Peak (Cycle Time=120sec, Optimised)

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q
B1053 Radwinter Rd	1	61.0%	**13**	68.3%	**15**	73.5%	**17**	69.0%	**15**	73.9%	**17**
B184 Thaxted Rd	1	86.6%	**19**	92.2%	**23**	98.5%	**29**	97.4%	**28**	110.0%	**54**
B184 East St	1	79.6%	**14**	91.8%	**18**	112.3%	**46**	95.0%	**20**	110.6%	**44**

Base Year - Optimised:
Optimisation of the junction clearly theoretically improves its capacity although queuing still occurs on all arms.
Future Years - Optimised:
Thaxted Road and East Street are both shown to be over capacity with committed development, but the optimisation 'shares' some of the congestion between these links, which moderates the impact of the additional traffic.

Table 1d: B184 Thaxted Road / B1053 Radwinter Road PM Peak (Cycle Time=120sec, Optimised)

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q
B1053 Radwinter Rd	1	54.8%	**11**	59.8%	**13**	63.3%	**14**	62.9%	**14**	66.0%	**15**
B184 Thaxted Rd	1	84.4%	**17**	92.4%	**22**	97.0%	**26**	102.1%	**34**	117.5%	**73**
B184 East St	1	80.7%	**17**	94.0%	**23**	103.3%	**36**	103.9%	**38**	112.7%	**62**

Base Year - Optimised:
Optimisation of the junction clearly theoretically improves its capacity although queuing still occurs on all arms.
Future Years - Optimised:
As with the morning peak analysis Thaxted Road and East Street are both shown to be over capacity with committed development, but the optimisation 'shares' some of the congestion between these links, which moderates the impact of the additional traffic.

Junction 2: B184 Thaxted Rd / Peaslands Rd

Table 2a: B184 Thaxted Road / Peaslands Road AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B184 Thaxted Rd N	1	0.40	1	0.43	1	0.49	1	0.45	1	0.52	1
B184 Thaxted Rd S	1	0.60	1	0.65	2	0.69	2	0.67	2	0.95	12
Peaslands Rd	1	0.74	3	0.81	4	0.92	8	0.84	5	1.07	29

Base Year:

It is evident from the assessments that, in the AM peak hour, the mini-roundabout junction approaches operate within capacity and with only minimal queuing.

Future Years:

The junction continues to operate satisfactorily with the addition of committed development, however, in 2031 both Thaxted Rd S and Peaslands Road reach or exceed capacity with ULP development.

Table 2b: B184 Thaxted Road / Peaslands Road PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B184 Thaxted Rd N	1	0.78	3	0.85	5	0.89	7	0.93	9	1.15	59
B184 Thaxted Rd S	1	0.36	1	0.42	1	0.45	1	0.46	1	0.65	2
Peaslands Rd	1	0.72	2	0.79	4	0.83	4	0.86	5	1.12	47

Base Year:

As with the AM peak assessments, the PM peak analysis indicates that all approaches operate within capacity and with very little queuing.

Future Years:

The junction continues to operate satisfactorily with the addition of committed development until 2031, when the Thaxted Road N arm is expected to reach capacity. In 2031 with ULP development both this arm and Peaslands Road are over capacity.

Junction 3: Debden Rd / Mount Pleasant Rd / Borough Ln

Table 3a: Debden Road / Mount Pleasant Road / Borough Lane AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Debden Rd N	1	0.04	**0**	0.04	**0**	0.04	**0**	0.04	**0**	0.05	**0**
Mount Pleasant Rd	1	0.40	**1**	0.50	**1**	0.56	**1**	0.53	**1**	0.98	**10**
Debden Rd S	1	0.20	**0**	0.23	**0**	0.24	**0**	0.24	**0**	0.26	**0**
Borough Ln	1	0.33	**1**	0.37	**1**	0.50	**1**	0.39	**1**	0.56	**1**

Base Year:

The analysis indicates that this priority cross roads junction is operating within capacity for both the AM and PM peak hours.

Future Years:

The junction continues to operate satisfactorily in both time periods with all development with the priority cross roads layout, although Mount Pleasant Rd is indicated to be reaching capacity in 2031 with ULP development. As previously mentioned no allowance has been made for possible re-assignment of existing traffic as a result of the SE link road being implemented. This may lead to additional traffic using Mount Pleasant Road to avoid the town centre at peak periods.

Table 3b: Debden Road / Mount Pleasant Road / Borough Lane PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Debden Rd N	1	0.02	**0**	0.02	**0**	0.02	**0**	0.02	**0**	0.02	**0**
Mount Pleasant Rd	1	0.40	**0**	0.48	**1**	0.52	**1**	0.56	**1**	0.95	**8**
Debden Rd S	1	0.17	**0**	0.21	**0**	0.21	**0**	0.23	**0**	0.26	**0**
Borough Ln	1	0.45	**1**	0.53	**1**	0.57	**1**	0.59	**1**	0.83	**4**

Junction 4: Debden Rd / London Rd

As stated previously, the use of the standard roundabout option in ARCADY was found to produce a closer correlation to existing conditions at this junction than the mini-roundabout option and so the former was used.

Table 4a: Debden Road / B1052 London Road AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 Debden Rd N	1	0.76	**3**	0.81	**4**	0.83	**5**	0.84	**5**	0.87	**6**
Debden Rd S	1	0.51	**1**	0.59	**1**	0.60	**1**	0.61	**2**	0.68	**2**
B1052 London Rd	1	0.42	**1**	0.45	**1**	0.46	**1**	0.47	**1**	0.48	**1**

Base Year:

The analysis of this mini-roundabout junction indicates that the junction operates satisfactorily in the base year in both time periods. Any queuing which currently observed along London Road is as a result of traffic backing up from adjacent junctions.

Future Years:

During the PM period, the northern arm operates above 0.85, and exceeds capacity with ULP development in 2031, which is likely to be a consequence of vehicles turning right into Debden Road, which adversely impacts the capacity of the northern arm.

Table 4b: Debden Road / B1052 London Road PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 Debden Rd N	1	0.85	**5**	0.93	**10**	0.94	**11**	1.01	**24**	1.06	**40**
Debden Rd S	1	0.31	**0**	0.34	**1**	0.34	**1**	0.38	**1**	0.40	**1**
B1052 London Rd	1	0.45	**1**	0.49	**1**	0.50	**1**	0.53	**1**	0.55	**1**

Junction 5: B184 High St / B184 George St

Table 5a: B184 High Street / B184 George Street AM Peak (Fixed Cycle=80sec)

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q
High St N	1	82.2%	11	86.8%	12	91.7%	14	89.6%	13	96.5%	18
High St S	1 (LT/SA)	85.8%	5	91.4%	5	93.1%	5	94.5%	5	100.7%	5
	2 (RT)		8		17		19		21		34

Base Year:

The results of the analysis of this signal-controlled junction show that in the AM and PM peaks both the High Street north and south approaches operate within capacity. However there are queues during both time periods, and those to the north would be likely to block back across the turning to King Street at peak periods.

Future Years:

In the AM peak with committed development the queues on the northern arm increase marginally until 2031 with ULP development when the queue is slightly greater. The southern arm reaches capacity in 2018 with committed development, the main problem on this arm being the right-turning traffic. The northern arm exceeds capacity with the addition of committed development in 2018.

Table 5b: B184 High Street / B184 George Street PM Peak (Fixed Cycle=80sec)

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		DoS	Q	DoS	Q	DoS	Q	DoS	Q	DoS	Q
High St N	1	87.9%	13	96.7%	18	98.8%	21	104.0%	30	114.0%	53
High St S	1 (LT/SA)	89.1%	5	97.1%	5	100.6%	5	104.2%	5	110.7%	5
	2 (RT)		11		24		32		45		72

Future Years:

In the PM peak the junction reaches capacity in 2018 with the addition of committed development and worsens with the addition of all ULP traffic.

Junction 6: B184 Bridge St / Castle St

Table 6a: B184 Bridge Street / Castle Street AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B184 Bridge St	1	-	-	-	-	-	-	-	-	-	-
B184 High St	1	0.15	0	0.16	0	0.16	0	0.16	0	0.17	0

Base Year:

The operation of this uncontrolled priority junction is affected by right-turning traffic from Bridge Street into Castle Street which leads to the straight ahead northbound traffic being held up. Delays to southbound traffic would be primarily caused by traffic slowing down to turn left into Castle Street, but this is not shown in the junction analysis. The junction is shown to operate satisfactorily in both peak periods.

Future Years:

The addition of committed and ULP development indicates that the junction would continue to operate satisfactorily in both time periods.

Table 6b: B184 Bridge Street / Castle Street PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B184 Bridge St	1	-	-	-	-	-	-	-	-	-	-
B184 High St	1	0.19	0	0.21	0	0.22	0	0.24	0	0.26	0

Junction 7: B184 High St / Church St

Table 7a: B184 High Street / Church Street AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Church St	1	1.11	**37**	1.23	**66**	1.31	**90**	1.28	**80**	1.42	**128**

Base Year:

This priority junction has restricted movements in that Church Street is one-way, approaching the High Street. It is also a narrow street and there is little or no opportunity for two lanes of traffic to form. While the northbound High Street traffic would be intermittent as a result of the George Street traffic signals, a greater proportion of traffic turns right from Church Street during both time periods (during the AM approx. 70% of traffic turns right, and during the PM approx. 60%). This traffic then requires sufficient gap in both directions of traffic on the High Street in order to exit from Church Street.

The analysis clearly shows delays to traffic during both time periods at this junction.

Future Years:

The situation worsens in both time periods with the addition of committed and ULP development traffic.

Table 7b: B184 High Street / Church Street PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Church St	1	0.84	**5**	0.98	**13**	1.03	**19**	1.03	**20**	1.13	**38**

Junction 8: B184 Audley Rd / High St

Table 8a: B184 Audley Road / High Street AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B184 Audley Rd	1	0.82	**4**	0.91	**7**	0.96	**11**	0.95	**10**	1.02	**18**
	2	0.53	**1**	0.58	**1**	0.61	**2**	0.60	**1**	0.68	**2**

Base Year:

The results show that this restricted movement priority junction operates just within capacity in the AM and PM peaks, with small queues shown in the Audley End left and right turn lanes. Given that right turning traffic has to give way to traffic from both directions on the High Street, this movement has lower capacity available than the left turn lane.

Future Years:

With the addition of committed development the right turn lane approaches capacity in both time periods, and exceeds capacity in 2031 with the ULP traffic.

Table 8b: B184 Audley Road / High Street PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B184 Audley Rd	1	0.86	**5**	0.92	**8**	0.95	**10**	1.02	**18**	1.10	**32**
	2	0.50	**1**	0.49	**1**	0.54	**1**	0.55	**1**	0.66	**2**

Junction 9: Fairycroft Rd / Cates Corner

Table 9a: Fairycroft Road / Cates Corner AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Fairycroft Rd	1	0.06	**0**	0.07	**0**	0.07	**0**	0.07	**0**	0.07	**0**
	2	0.07	**0**	0.07	**0**	0.07	**0**	0.07	**0**	0.07	**0**

Base Year:

The AM and PM peak assessments for this restricted movement priority junction show that the junction has plenty of capacity.

Future Years:

This situation does not change with the addition of committed and ULP development traffic.

Table 9b: Fairycroft Road / Cates Corner PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Fairycroft Rd	1	0.11	**0**	0.11	**0**	0.11	**0**	0.12	**0**	0.12	**0**
	2	0.29	**0**	0.31	**0**	0.32	**0**	0.35	**1**	0.36	**1**

Junction 10: B1052 London Rd / Borough Ln

Table 10a: B1052 London Road / Borough Lane AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 London Rd N	1	0.75	**3**	0.84	**5**	0.89	**7**	0.87	**5**	0.93	**10**
Borough Ln	1	0.34	**1**	0.59	**1**	0.64	**2**	0.62	**2**	0.79	**3**
B1052 London Rd S	1	0.73	**3**	0.75	**3**	0.80	**4**	0.77	**3**	0.84	**5**

Base Year:

The results for the AM and PM peak hours show that all approaches to the mini-roundabout function are within capacity and with little queuing.

Future Years:

In the AM period the London Road N arm is approaching capacity in 2031 with the addition of committed development, which is slightly worsened with the addition of the ULP traffic in the same year.

In the PM period both London Road arms are approaching capacity in 2031 with the addition of committed development, which, like in the AM period, is slightly worsened with the addition of the ULP traffic in the same year.

Table 10b: B1052 London Road / Borough Lane PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 London Rd N	1	0.78	**3**	0.81	**4**	0.83	**5**	0.83	**5**	0.89	**7**
Borough Ln	1	0.52	**1**	0.38	**1**	0.41	**1**	0.41	**1**	0.54	**1**
B1052 London Rd S	1	0.71	**2**	0.80	**4**	0.84	**5**	0.86	**6**	0.98	**16**

Junction 10b: B1052 Newport Road / Audley End Road

Table 10c: B1052 Newport Road / Audley End Road AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 Newport Road	1	0.95	**13**	1.03	**29**	1.07	**43**	1.06	**40**	1.17	**88**
Audley End Road	1	0.79	**3**	0.84	**4**	0.90	**7**	0.87	**5**	0.93	**9**
B1052 London Rd	1	0.53	**1**	0.56	**1**	0.59	**1**	0.58	**1**	0.62	**2**

Base Year:

The results for the AM peak show that Newport Road is currently operating close to capacity.

Future Years:

In the AM period the Newport Road arm reaches capacity in 2018 with the addition of committed development and this worsens notably with the addition of the ULP traffic in the same year and then in the 2031 scenarios. Audley End Road is also approaching capacity.

In the PM period Newport Road is approaching capacity in 2018 and 2031 with committed development. The addition of ULP traffic pushes the arm over capacity in 2031. The other arms have sufficient spare capacity in the future year scenarios, with the exception of London Road in 2031 post ULP development which is predicted to be approaching capacity.

Table 10d: B1052 Newport Road / Audley End Road PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 Newport Road	1	0.83	**4**	0.89	**7**	0.91	**8**	0.97	**14**	1.05	**35**
Audley End Road	1	0.53	**1**	0.60	**1**	0.65	**2**	0.66	**2**	0.79	**4**
B1052 London Rd	1	0.63	**2**	0.69	**2**	0.72	**2**	0.77	**3**	0.85	**5**

2.2 Great Dunmow (Western Bypass assumed open in future years)

Junction 11: Hoblongs Junction - B1256 / Chelmsford Rd

Table 11a: B1256 / Chelmsford Road (Hoblongs Junction) AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Chelmsford Rd	1	0.29	**0**	0.18	**0**	0.39	**1**	0.24	**0**	1.30	**10**
	2	0.85	**5**	0.68	**2**	0.87	**5**	0.76	**3**	1.26	**39**
B1256 (north)	1	0.27	**0**	0.29	**0**	0.30	**0**	0.32	**0**	0.37	1

It is recognised that there is an existing capacity issue at this junction on the Chelmsford Road arm, particularly in the evening peak period and designs are being developed to address this issue and to facilitate planned growth.

The analysis of its existing configuration shows that the right-turn lane on this arm is approaching capacity in both the AM and PM peaks, with corresponding queuing. In 2018 the situation improves in the AM with the completion of the western bypass and associated reassignment of traffic from Chelmsford Road to the B1256. However, there is no corresponding improvement in the PM, mainly due to a smaller reduction in traffic turning right, a reduction in vehicles turning left into Chelmsford Road, and an increase in northbound through flows on the B1256. This means there are fewer opportunities for vehicles to turn right out of Chelmsford Rd.

In 2031 with committed development, during the AM the junction continues to operate satisfactorily. However, once ULP development flows are added, the Chelmsford Road arm would be over capacity. During the PM peak, with the committed development and ULP traffic, the junction would be expected to be over capacity.

Table 11b: B1256 / Chelmsford Road (Hoblongs Junction) PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Chelmsford Rd	1	0.40	**1**	0.42	**1**	1.05	**7**	1.03	7	1.41	**23**
	2	0.86	**5**	0.84	**4**	1.04	**17**	1.02	14	1.45	**75**
B1256 (north)	1	0.09	**0**	0.10	**0**	0.11	**0**	0.13	0	0.15	0

Junction 12: High St / Stortford Rd / B184 Market Pl

Table 12a: High Street / Stortford Road / B184 Market Place AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Stortford Rd	1	-	-	-	-	-	-	-	-	-	-
B184 Market Pl	1	0.41	**1**	0.28	**0**	0.29	**0**	0.30	**0**	0.33	**1**
	2	0.27	**0**	0.24	**0**	0.25	**0**	0.26	**0**	0.28	**0**
B184 High St	1	0.46	**1**	0.27	**0**	0.28	**0**	0.29	**0**	0.31	**0**

The results show that in the AM and PM peak hours this priority junction currently operates with all approaches well within capacity. In 2031 with committed and ULP development traffic, the junction is likely to operate with greater capacity than at present in both time periods, due to the relief resulting from the construction of the bypass.

Table 12b: High Street / Stortford Road / B184 Market Place PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Stortford Rd	1	-	-	-	-	-	-	-	-	-	-
B184 Market Pl	1	0.50	**1**	0.27	**0**	0.28	**0**	0.32	**0**	0.35	**1**
	2	0.29	**0**	0.24	**0**	0.25	**0**	0.27	**0**	0.30	**0**
B184 High St	1	0.50	**1**	0.18	**0**	0.19	**0**	0.22	**0**	0.26	**0**

Junction 13: Stortford Rd / Rosemary Ln

Table 13a: Stortford Road / Rosemary Lane AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Rosemary Ln	1	0.83	**4**	0.59	**1**	0.60	**1**	0.64	**2**	0.69	**2**
Stortford Rd E	1	0.45	**1**	0.43	**1**	0.44	**1**	0.46	**1**	0.50	**1**
Stortford Rd W	1	0.68	**2**	0.56	**1**	0.56	**1**	0.59	**1**	0.61	**2**

The Rosemary Lane arm of this mini-roundabout is shown in the AM peak to be approaching capacity, although the queuing levels are not significant. With the construction of the bypass the junction operates well within capacity in 2031 with all committed and ULP traffic on the network.

Table 13b: Stortford Road / Rosemary Lane PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Rosemary Ln	1	0.57	**1**	0.44	**1**	0.44	**1**	0.50	**1**	0.53	**1**
Stortford Rd E	1	0.50	**1**	0.51	**1**	0.52	**1**	0.56	**1**	0.62	**2**
Stortford Rd W	1	0.98	**16**	0.84	**5**	0.85	**5**	0.93	**10**	1.00	**22**

During the PM peak hour, the Stortford Road west arm operates at capacity. This is likely to be due to the weight of traffic arriving from the west, some 800 PCUs, which means that even very low opposing traffic movements (ie traffic turning right from the eastern arm) have a disproportionate impact on the capacity of the western arm of the junction. This is somewhat relieved by the bypass, although this arm of junction may continue to have capacity issues with all development in place. It should be noted that a simplistic method of reassigning traffic to the bypass has been used and it is quite possible the transfer could have been under-estimated. It is also likely that should any future delays occur at this junction it would further encourage appropriate traffic to use the bypass.

Junction 14: A120 / B1256 Interchange (north roundabout)

Table 14a: A120 eastbound off-slip / B1256 / B1008 Interchange (north roundabout) AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1256 southbound	1	0.71	**2**	0.79	**4**	0.85	**5**	0.86	**6**	1.01	**26**
A120 eastbound off-slip	1	0.38	**1**	0.41	**1**	0.45	**1**	0.44	**1**	0.50	**1**

The results show that in the AM and PM peaks, the northern dumbbell of this junction is operating within capacity in 2012. In the AM peak it continues to operate satisfactorily in 2018 with committed and ULP development traffic. In 2031, committed development traffic leads to the junction approaching capacity in the AM peak, and with ULP traffic, the northern arm would exceed capacity.

Table 14b: A120 eastbound off-slip / B1256 / B1008 Interchange (north roundabout) PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1256 southbound	1	0.64	**2**	0.72	**3**	0.78	**3**	0.82	**4**	1.00	**22**
A120 eastbound off-slip	1	0.50	**1**	0.57	**1**	0.61	**2**	0.63	**2**	0.73	**3**

The junction is expected to operate satisfactorily in the PM peak in 2031 with committed development, but the addition of ULP traffic means that the northern arm would be expected to be at capacity.

It should be noted that the A120 eastbound off-slip is not expected to experience capacity issues with its current configuration.

Junction 15: A120 / B1256 Interchange (south roundabout)

Table 15a: A120 / B1256 / B1008 Interchange (south roundabout) AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
A120 westbound off-slip	1	0.35	**1**	0.39	**1**	0.41	**1**	0.42	**1**	0.52	**1**
B1008 northbound	1	0.63	**2**	0.68	**2**	0.70	**2**	0.72	**3**	0.81	**4**

The southern element of the A120 dumb-bell junction is expected to operate well within capacity in both time periods and with all committed and ULP development traffic in 2031.

Table 15b: A120 / B1256 / B1008 Interchange (south roundabout) PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
A120 westbound off-slip	1	0.18	**0**	0.21	**0**	0.23	**0**	0.24	**0**	0.27	**0**
B1008 northbound	1	0.43	**1**	0.47	**1**	0.49	**1**	0.53	**1**	0.60	**1**

2.3 M11 Junction 8 (Existing Layout)

Table 16a: M11 Junction 8 AM Peak

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
M11 northbound off-slip	1	87.6%	**11**	91.4%	**14**	86.8%	**11**	128.7%	**115**	205.1%	**257**
	2	11.6%	**1**	11.1%	**1**	17.5%	**2**	16.7%	**1**	46.9%	**3**
Circulatory carriageway at intersection with M11 northbound off-slip	1	84.5%	**12**	79.5%	**11**	80.8%	**12**	71.5%	**12**	79.4%	**7**
	2	82.0%	**8**	72.8%	**14**	74.2%	**14**	69.4%	**13**	63.2%	**9**
	3	20.4%	**1**	63.6%	**7**	60.3%	**2**	62.5%	**3**	60.2%	**3**
Services exit	1	109.1%	**20**	109.1%	**20**	109.1%	**20**	122.5%	**34**	122.5%	**34**
	2	100.0%	**12**	100.0%	**12**	100.0%	**12**	112.1%	**23**	112.1%	**23**
Circulatory carriageway at intersection with Services exit	1	65.2%	**8**	61.4%	**7**	61.3%	**5**	60.0%	**6**	68.5%	**5**
	2	54.8%	**2**	62.5%	**2**	70.3%	**8**	64.5%	**7**	56.7%	**7**
	3	35.6%	**1**	45.3%	**3**	45.8%	**1**	53.1%	**1**	61.6%	**2**
	4	7.5%	**0**	8.0%	**0**	9.8%	**2**	8.2%	**2**	12.3%	**3**
A120 eastbound	1	100.1%	**36**	216.5%	**366**	161.4%	**300**	174.3%	**335**	267.2%	**649**
	2	56.4%	**9**	121.0%	**71**	77.2%	**13**	91.7%	**18**	109.2%	**53**
Circulatory carriageway at intersection with A120 eastbound	1	40.7%	5	33.7%	**6**	44.9%	**6**	47.6%	**6**	49.0%	**6**
	2	61.9%	6	33.6%	**6**	44.6%	**6**	47.5%	**6**	49.4%	**6**
	3	16.1%	2	9.6%	**1**	12.8%	**2**	12.0%	**1**	11.8%	**2**
	4	26.7%	5	16.8%	**3**	24.3%	**5**	20.9%	**3**	24.2%	**4**
M11 southbound off-slip	1	70.5%	**8**	43.2%	**5**	87.0%	**9**	118.3%	**65**	182.2%	**194**
	2	33.6%	**4**	20.6%	**3**	56.5%	**5**	57.3%	**4**	73.9%	**5**
	3	33.7%	**4**	30.7%	**4**	80.5%	**8**	115.4%	**35**	188.8%	**115**
Circulatory carriageway at intersection with M11 southbound off-slip	1	35.3%	2	31.2%	**3**	27.6%	**2**	24.5%	**1**	24.6%	**2**
	2	49.3%	2	38.7%	**3**	34.2%	**2**	30.8%	**1**	28.9%	**1**
	3	60.3%	12	69.6%	**5**	52.9%	**14**	55.5%	**16**	51.2%	**16**
A120 westbound (Thremhall Avenue)	1	60.6%	**10**	51.8%	**7**	58.9%	**9**	65.4%	**11**	74.2%	**14**
	2	56.8%	**10**	52.4%	**8**	59.9%	**10**	66.4%	**12**	73.6%	**15**
Circulatory carriageway at intersection with A120 westbound	1	35.3%	**4**	60.3%	**3**	47.6%	**4**	50.2%	**4**	62.6%	**4**
	2	35.7%	**4**	60.5%	**3**	47.9%	**4**	50.1%	**4**	62.7%	**4**
B1256 Dunmow Road	1	61.5%	**6**	94.2%	**12**	77.8%	**8**	145.9%	**109**	108.3%	**36**
	2	39.2%	**4**	70.4%	**6**	50.8%	**5**	113.5%	**24**	89.8%	**9**

Approach & Lane		2012 AM Base		2018 AM with committed development		2018 AM with committed & ULP development		2031 AM with committed development		2031 AM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Circulatory carriageway at intersection with B1256 Dunmow Road	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0
	2	56.6%	1	48.8%	1	56.1%	1	53.6%	2	67.3%	5
	3	56.8%	1	53.4%	1	61.2%	2	58.4%	4	70.9%	6
Southbound hamburger cut-through at intersection with circulatory carriageway	1	68.0%	11	64.8%	9	76.5%	10	81.7%	10	92.2%	13
	2	68.5%	7	68.3%	9	75.2%	11	82.5%	11	93.1%	14
	3	20.5%	1	48.4%	5	48.1%	6	53.5%	7	45.7%	5
Circulatory carriageway at intersection with cut-through	1	18.0%	4	20.0%	0	21.8%	0	15.8%	0	20.4%	5
	2	83.2%	14	79.8%	15	84.4%	15	83.2%	14	95.9%	35
	3	78.2%	10	79.3%	14	84.0%	14	89.2%	17	97.7%	39

The results suggest that the additional traffic would in the 2018 AM peak lead to the currently saturated A120 eastbound approach operating with significant queuing, while in 2031 the addition of committed and ULP traffic would be likely to result in the following approaches operating in excess of capacity and with associated extensive queuing:

- M11 northbound off-slip
- A120 eastbound
- M11 southbound off-slip
- B1256 Dunmow Road
- Southbound cut-through
- Circulatory carriageway at intersection with cut-through

The results show that the issue of congestion on the Services exit and at the associated circulatory carriageway stop-lines would be exacerbated by the additional traffic estimated in 2018 and 2031 with the queues from this part of the junction potentially stretching back to the M11 northbound mainline.

Table 16b: M11 Junction 8 PM Peak

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
M11 northbound off-slip	1	98.8%	24	86.7%	13	103.3%	38	157.7%	234	294.4%	424
	2	11.1%	1	13.8%	2	21.1%	2	24.8%	2	60.8%	3
Circulatory carriageway at intersection with M11 northbound off-slip	1	80.2%	19	82.9%	14	79.0%	16	72.6%	17	80.0%	10
	2	71.0%	12	78.7%	11	72.8%	11	70.6%	15	78.4%	15
	3	21.6%	0	62.5%	4	54.3%	2	57.6%	9	48.8%	1
Services exit	1	118.7%	29	119.2%	31	119.2%	30	133.9%	47	133.9%	48
	2	99.6%	12	100.0%	12	100.0%	12	112.5%	24	112.5%	24
Circulatory carriageway at intersection with Services exit	1	61.0%	5	55.0%	4	60.9%	7	59.2%	8	68.5%	5
	2	53.6%	4	69.7%	5	75.4%	11	66.0%	7	72.2%	7
	3	32.8%	1	39.0%	0	40.6%	1	48.8%	2	56.0%	2
	4	5.6%	0	8.0%	1	9.0%	2	8.8%	2	9.8%	3
A120 eastbound	1	103.2%	55	183.1%	340	144.9%	259	186.5%	394	245.8%	586
	2	50.9%	8	81.7%	13	62.9%	10	81.3%	14	94.5%	20
Circulatory carriageway at intersection with A120 eastbound	1	46.2%	6	36.5%	6	49.2%	6	47.4%	7	48.8%	6
	2	63.0%	6	36.6%	6	49.4%	6	47.7%	7	48.1%	6
	3	20.5%	3	13.0%	2	16.7%	2	14.2%	1	13.0%	1
	4	26.4%	4	18.8%	2	26.2%	4	21.4%	3	21.4%	4
M11 southbound off-slip	1	88.2%	13	68.6%	8	70.8%	8	78.1%	10	79.8%	11
	2	40.6%	5	42.0%	5	44.2%	5	49.5%	6	45.8%	6
	3	39.7%	4	42.0%	5	44.0%	5	51.1%	6	48.6%	7
Circulatory carriageway at intersection with M11 southbound off-slip	1	50.4%	4	37.6%	3	46.4%	5	41.5%	6	43.7%	3
	2	51.6%	4	42.0%	3	52.5%	5	45.5%	4	47.8%	5
	3	58.0%	9	61.9%	5	63.9%	4	68.0%	16	78.4%	8
A120 westbound (Thremhall Avenue)	1	50.9%	8	51.8%	8	65.2%	11	76.2%	15	99.1%	37
	2	48.2%	8	52.9%	8	69.1%	13	78.6%	16	99.3%	37
Circulatory carriageway at intersection with A120 westbound	1	41.9%	4	51.2%	4	41.2%	4	39.5%	4	40.5%	4
	2	42.1%	4	51.3%	4	41.3%	4	39.5%	4	40.6%	4
B1256 Dunmow Road	1	99.9%	13	52.1%	4	89.8%	9	110.1%	29	111.6%	34
	2	75.4%	5	35.2%	3	48.0%	3	77.5%	5	108.4%	18
	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0

Approach & Lane		2012 PM Base		2018 PM with committed development		2018 PM with committed & ULP development		2031 PM with committed development		2031 PM with committed & ULP development	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
Circulatory carriageway at intersection with B1256 Dunmow Road	2	37.2%	4	49.1%	2	47.8%	2	50.6%	5	67.0%	8
	3	37.4%	4	52.9%	2	52.8%	4	53.8%	6	68.5%	16
Southbound hamburger cut-through at intersection with circulatory carriageway	1	46.9%	8	66.4%	11	69.7%	10	92.5%	13	88.5%	13
	2	68.1%	12	63.6%	7	69.6%	7	97.7%	18	95.3%	17
	3	16.1%	0	23.3%	1	34.8%	2	58.0%	6	54.7%	3
Circulatory carriageway at intersection with cut-through	1	11.4%	3	11.8%	3	14.0%	3	11.1%	0	15.5%	0
	2	75.9%	14	75.7%	15	82.1%	13	75.5%	17	97.7%	25
	3	71.4%	12	75.8%	12	78.3%	7	75.3%	16	99.6%	37

As with the AM peak assessment, these results suggest that the additional traffic would lead in the 2018 PM peak to the currently saturated A120 eastbound approach operating with significant queuing, while in 2031 the addition of committed and ULP traffic would be likely to result in the following approaches operating in excess of capacity and with associated extensive queuing:

- M11 northbound off-slip
- A120 eastbound
- A120 westbound (Thremhall Avenue)
- B1256 Dunmow Road
- Southbound cut-through
- Circulatory carriageway at intersection with cut-through

The results show that the issue of congestion at the Services exit and at the associated circulatory carriageway stop-lines would be exacerbated by the additional traffic estimated in 2018 and 2031 with the queues from this part of the junction potentially stretching back to the M11 northbound mainline.

Mitigation measures, identified as part of the October 2013 work, have been further revised and are reported in Section 4.3.

3 Junction Analysis with Infrastructure Change

3.1 Saffron Walden – with Link Road

One of the planning criteria for the implementation of Saffron Walden Policy 1 is to provide for a link road between Thaxted Road and Radwinter Road. Given that development information provided by UDC indicates that the majority of the housing on this site is not likely to be built until after 2020/21, for the purposes of the ULP assessment, the link road is not assumed to be in place until 2031. Further information about the link road and spreadsheet model traffic reassignment can be found in Section 7.2 of the October 2013 Highway Impact Report.

This section provides a comparison of junction capacities, without and with the link road. It has been assumed that background traffic will re-assign to the link road, if it is a feasible alternative.

Each table in this section is directly comparable with its equivalent in the previous section, the last column of which is reproduced, together with the evaluation with the link road in place, providing an indication of the likely impact of the new infrastructure.

Junction 1: B184 Thaxted Rd / B1053 Radwinter Rd

Table 1a-LR: B184 Thaxted Road / B1053 Radwinter Road AM Peak (Fixed Cycle Time=180sec)

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Road	
		DoS	Q	DoS	Q
B1053 Radwinter Rd	1	119.8%	**85**	100.3%	**36**
B184 Thaxted Rd	1	109.0%	**63**	90.0%	**28**
B184 East St	1	88.3%	**26**	81.1%	**22**

Table 1b-LR: B184 Thaxted Road / B1053 Radwinter Road PM Peak (Fixed Cycle Time=180sec)

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Road	
		DoS	Q	DoS	Q
B1053 Radwinter Rd	1	106.8%	**52**	82.9%	**22**
B184 Thaxted Rd	1	121.0%	**95**	95.8%	**31**
B184 East St	1	107.1%	**60**	84.0%	**29**

Table 1c-LR: B184 Thaxted Road / B1053 Radwinter Road AM Peak (Cycle Time=120sec, Optimised)

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Road	
		DoS	Q	DoS	Q
B1053 Radwinter Rd	1	73.9%	**17**	55.4%	**17**
B184 Thaxted Rd	1	110.0%	**54**	84.0%	**26**
B184 East St	1	110.6%	**44**	69.9%	**19**

Table 1d-LR: B184 Thaxted Road / B1053 Radwinter Road PM Peak (Cycle Time=120sec, Optimised)

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Road	
		DoS	Q	DoS	Q
B1053 Radwinter Rd	1	66.0%	**15**	52.2%	**10**
B184 Thaxted Rd	1	117.5%	**73**	95.8%	**23**
B184 East St	1	112.7%	**62**	84.8%	**20**

With the exception of the AM period with Fixed Cycle Time, the assessment indicates that the junction would operate satisfactorily were the estimated level of re-assignment of traffic to the link road to take place. However the Thaxted Road arm would be likely to be approaching congested conditions.

Junction 2: B184 Thaxted Rd / Peaslands Rd

Table 2a-LR: B184 Thaxted Road / Peaslands Road AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
B184 Thaxted Rd N	1	0.52	**1**	0.45	**1**
B184 Thaxted Rd S	1	0.95	**12**	0.96	**13**
Peaslands Rd	1	1.07	**29**	1.11	**41**

Table 2b-LR: B184 Thaxted Road / Peaslands Road PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
B184 Thaxted Rd N	1	1.15	**59**	1.08	**32**
B184 Thaxted Rd S	1	0.65	**2**	0.72	**2**
Peaslands Rd	1	1.12	**47**	1.17	**65**

A consequence of traffic diverting to the link road is that the Peasland Road junction would become more congested in both time periods.

Junction 3: Debden Rd / Mount Pleasant Rd / Borough Ln

Table 3a-LR: Debden Road / Mount Pleasant Road / Borough Lane AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
Debden Rd N	1	0.05	**0**	0.05	**0**
Mount Pleasant Rd	1	0.98	**10**	1.09	**19**
Debden Rd S	1	0.26	**0**	0.26	**0**
Borough Ln	1	0.56	**1**	0.72	**2**

Table 3b-LR: Debden Road / Mount Pleasant Road / Borough Lane PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
Debden Rd N	1	0.02	**0**	0.02	**0**
Mount Pleasant Rd	1	0.95	**8**	1.05	**15**
Debden Rd S	1	0.26	**0**	0.26	**0**
Borough Ln	1	0.83	**4**	1.00	**13**

As with the Peasland Road junction, the capacity of the Mount Pleasant Road junction would reduce with the new link road in place in both time periods. The introduction of the eastern link road increases pressure on the Mount Pleasant Road arm as some of the traffic previously routing via the town centre from the east would switch to this route. Borough Lane is similarly affected by movements in the opposite direction in the PM peak.

Junction 4: Debden Rd / London Rd

Table 4a-LR: Debden Road / B1052 London Road AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
B1052 Debden Rd N	1	0.87	**6**	0.84	**5**
Debden Rd S	1	0.68	**2**	0.66	**2**
B1052 London Rd	1	0.48	**1**	0.43	**1**

Table 4b-LR: Debden Road / B1052 London Road PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
B1052 Debden Rd N	1	1.06	**40**	1.03	**30**
Debden Rd S	1	0.40	**1**	0.40	**1**
B1052 London Rd	1	0.55	**1**	0.51	**1**

The capacity of the London Road / Debden Road junction is likely to improve very slightly following traffic reassignment with the link road in place, but it would still be over capacity on the northern arm during the PM period.

Junction 5: B184 High St / B184 George St

Table 5a-LR: B184 High Street / B184 George Street AM Peak (Fixed Cycle=80sec)

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Road	
		DoS	Q	DoS	Q
High St N	1	96.5%	**18**	96.5%	**18**
High St S	1 (LT/SA)	100.7%	**5**	97.6%	**5**
	2 (RT)		34		21

Table 5b-LR: B184 High Street / B184 George Street PM Peak (Fixed Cycle=80sec)

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Road	
		DoS	Q	DoS	Q
High St N	1	114.0%	**53**	114.0%	**53**
High St S	1 (LT/SA)	110.7%	**5**	102.9%	**5**
	2 (RT)		72		36

The capacity of the High Street / George Street junction is likely to improve very slightly following traffic reassignment with the link road in place, but it would remain over capacity during both time periods.

Junction 6: B184 Bridge St / Castle St

The traffic flows at this junction are unaffected by the proposed link road. Therefore the 2031 Committed & ULP Development results detailed on page 10 are unchanged.

Junction 7: B184 High St / Church St

The traffic flows at this junction are unaffected by the proposed link road. Therefore the 2031 Committed & ULP Development results detailed on page 11 are unchanged.

Junction 8: B184 Audley Rd / High St

Table 8a-LR: B184 Audley Road / High Street AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
B184 Audley Rd	1	1.02	**18**	0.94	**9**
	2	0.68	**2**	0.67	**2**

Table 8b-LR: B184 Audley Road / High Street PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
B184 Audley Rd	1	1.10	**32**	1.04	**21**
	2	0.66	**2**	0.66	**2**

The capacity of the High Street / Audley Road junction would be likely to improve slightly, but would remain over capacity in both time periods.

Junction 9: Fairycroft Rd / Cates Corner

The traffic flows at this junction are unaffected by the proposed link road. Therefore the 2031 Committed & ULP Development results detailed on page 13 are unchanged.

Junction 10: B1052 London Rd / Borough Ln

Table 10a-LR: B1052 London Road / Borough Lane AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
B1052 London Rd N	1	0.93	**10**	0.92	**8**
Borough Ln	1	0.79	**3**	0.83	**4**
B1052 London Rd S	1	0.84	**5**	0.84	**5**

Table 10b-LR: B1052 London Road / Borough Lane PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Road	
		RFC	Q	RFC	Q
B1052 London Rd N	1	0.89	**7**	0.95	**11**
Borough Ln	1	0.54	**1**	0.59	**1**
B1052 London Rd S	1	0.98	**16**	0.98	**16**

The capacity of the London Road / Borough Lane junction is likely to be marginally improved in the AM with the new link road in place, but would be approaching capacity in both time periods.

Junction 10b: B1052 Newport Rd / Audley End Rd

The traffic flows at this junction are unaffected by the proposed link road. Therefore the 2031 Committed & ULP Development results detailed on page 15 are unchanged.

4 Junction Analysis with Mitigation Measures

4.1 Saffron Walden

Measure 1: Thaxted Road No Entry Northbound at Peasland Road junction

As shown in the Link Road evaluation in the previous section, several junctions in Saffron Walden would be likely to continue to experience capacity issues in 2031 with committed and ULP developments. Several mitigation measures have been identified, the first one of which is to restrict northbound movements on Thaxted Road north of its junction with Peasland Road, by introducing a No Entry restriction for all vehicles except buses and cycles.

The consequence of this measure is likely to be an increase in traffic on Peasland Road, as well as greater use of the link road. A benefit would be a reduction in traffic at the Thaxted Road / Radwinter Road junction. The evaluation has been done, using professional judgement guided by reference to existing junction turning movements, of the likely reassignment patterns, and the results are reported below. Information about the assumptions made in reassigning the traffic in the model can be found in Section 7.3.1 of the September 2013 Highway Impacts Report.

Each table in this section is directly comparable with its equivalent in the previous section, with an additional column to report on the mitigation measure impact, annotated as MM1.

Junction 1: B184 Thaxted Rd / B1053 Radwinter Rd

Table 1a-LR-MM1: B184 Thaxted Road/B1053 Radwinter Road AM Peak (Fixed Cycle Time=180sec)

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		DoS	Q	DoS	Q	DoS	Q
B1053 Radwinter Rd	1	119.8%	**85**	100.3%	**36**	132.9%	**124**
B184 Thaxted Rd	1	109.0%	**63**	90.0%	**28**	37.7%	**8**
B184 East St	1	88.3%	**26**	81.1%	**22**	81.1%	**22**

Table 1b-LR-MM1: B184 Thaxted Road/B1053 Radwinter Road PM Peak (Fixed Cycle Time=180sec)

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		DoS	Q	DoS	Q	DoS	Q
B1053 Radwinter Rd	1	106.8%	**52**	82.9%	**22**	105.8%	**50**
B184 Thaxted Rd	1	121.0%	**95**	95.8%	**31**	49.4%	**11**
B184 East St	1	107.1%	**60**	84.0%	**29**	100.3%	**41**

Table 1c-LR-MM1: B184 Thaxted Rd/B1053 Radwinter Rd AM Peak (Cycle Time=120sec, Optimised)

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		DoS	Q	DoS	Q	DoS	Q
B1053 Radwinter Rd	1	73.9%	**17**	55.4%	**17**	60.3%	**14**
B184 Thaxted Rd	1	110.0%	**54**	84.0%	**26**	78.1%	**8**
B184 East St	1	110.6%	**44**	69.9%	**19**	67.5%	**12**

Table 1d-LR-MM1: B184 Thaxted Rd/B1053 Radwinter Rd PM Peak (Cycle Time=120sec, Optimised)

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		DoS	Q	DoS	Q	DoS	Q
B1053 Radwinter Rd	1	66.0%	**15**	52.2%	**10**	51.4%	**11**
B184 Thaxted Rd	1	117.5%	**73**	95.8%	**23**	84.0%	**10**
B184 East St	1	112.7%	**62**	84.8%	**20**	65.8%	**15**

The junction would be expected to operate satisfactorily with the traffic restriction in place on Thaxted Road with an optimised 120 second cycle time. While the existing layout would be expected to work, consideration has been given to changing the layout and reverting to a priority junction, which could give additional space to pedestrians and cyclists. This is layout is explored later in the Technical Note.

Junction 2: B184 Thaxted Rd / Peaslands Rd

Table 2a-LR-MM1: B184 Thaxted Road / Peaslands Road AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B184 Thaxted Rd N	1	0.52	**1**	0.45	**1**	0.52	**1**
B184 Thaxted Rd S	1	0.95	**12**	0.96	**13**	0.78	**3**
Peaslands Rd	1	1.07	**29**	1.11	**41**	0.60	**1**

Table 2b-LR-MM1: B184 Thaxted Road / Peaslands Road PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B184 Thaxted Rd N	1	1.15	**59**	1.08	**32**	1.29	**78**
B184 Thaxted Rd S	1	0.65	**2**	0.72	**2**	0.50	**1**
Peaslands Rd	1	1.12	**47**	1.17	**65**	0.80	**4**

While the junction would be expected to operate satisfactorily in the AM peak period with the traffic restriction in place, during the PM peak period, the northern arm would be likely to experience delays. This is likely to be due to there being fewer opportunities to enter the roundabout from the northern arm as the western arm traffic would be unopposed.

A further mitigation measure would be to signalise the junction, a proposal which is currently being put forward as part of the planning discussions at the proposed KIER site east of Thaxted Road.

Junction 3: Debden Rd / Mount Pleasant Rd / Borough Ln

Table 3a-LR-MM1: Debden Road / Mount Pleasant Road / Borough Lane AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
Debden Rd N	1	0.05	**0**	0.05	**0**	0.04	**0**
Mount Pleasant Rd	1	0.98	**10**	1.09	**19**	1.51	**84**
Debden Rd S	1	0.26	**0**	0.26	**0**	0.12	**0**
Borough Ln	1	0.56	**1**	0.72	**2**	0.64	**2**

Table 3b-LR-MM1: Debden Road / Mount Pleasant Road / Borough Lane PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
Debden Rd N	1	0.02	**0**	0.02	**0**	0.02	**0**
Mount Pleasant Rd	1	0.95	**8**	1.05	**15**	1.27	**37**
Debden Rd S	1	0.26	**0**	0.26	**0**	0.17	**0**
Borough Ln	1	0.83	**4**	1.00	**13**	0.87	**5**

During the AM peak period Mount Pleasant Road would be become notably more congested, and during the PM peak period both this and the Borough Lane arm would experience increased delays. The closure of Thaxted Road is likely to lead to traffic to / from the south using the Mount Pleasant Road as the best alternative route to / from the town centre.

Further mitigation measures to change the priority of this junction, prevent traffic from entering Debden Road in a northbound direction at this junction ('No Entry'), and to introduce traffic signals are discussed later.

Junction 4: Debden Rd / London Rd

Table 4a-LR-MM1: Debden Road / B1052 London Road AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B1052 Debden Rd N	1	0.87	**6**	0.84	**5**	0.78	**3**
Debden Rd S	1	0.68	**2**	0.66	**2**	1.03	**23**
B1052 London Rd	1	0.48	**1**	0.43	**1**	0.53	**1**

Table 4b-LR-MM1: Debden Road / B1052 London Road PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B1052 Debden Rd N	1	1.06	**40**	1.03	**30**	1.00	**23**
Debden Rd S	1	0.40	**1**	0.40	**1**	0.59	**1**
B1052 London Rd	1	0.55	**1**	0.51	**1**	0.59	**1**

It is likely that the Thaxted Road traffic restriction would have an adverse effect on the London Rd / Debden Rd junction, as shown in the tables above. This is as a result of traffic diverting to this link from Thaxted Road. A possible solution is to introduce a similar restriction on Debden Road at its junction with Mount Pleasant Road, as referenced above. This would facilitate the junction reverting to a priority configuration, enabling B1052 traffic to move without restriction.

Junction 5: B184 High St / B184 George St

Table 5a-LR-MM1: B184 High Street / B184 George Street AM Peak (Fixed Cycle=80sec)

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		DoS	Q	DoS	Q	DoS	Q
High St N	1	96.5%	**18**	96.5%	**18**	116.8%	**50**
High St S	1 (LT/SA)	100.7%	**5**	97.6%	**5**	112.6%	**5**
	2 (RT)		34		21		96

Table 5b-LR-MM1: B184 High Street / B184 George Street PM Peak (Fixed Cycle=80sec)

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		DoS	Q	DoS	Q	DoS	Q
High St N	1	114.0%	**53**	114.0%	**53**	119.2%	**64**
High St S	1 (LT/SA)	110.7%	**5**	102.9%	**5**	120.4%	**5**
	2 (RT)		72		36		**120**

The Thaxted Road traffic restriction is expected to have a significant impact on the capacity of the High Street / George Street junction in both time periods as traffic reassigns to the High Street.

It is suggested that a peak period parking restriction is introduced on the High Street to enable two lanes of traffic to access the junction from the south. From the north, the junction capacity is hampered by the pedestrian crossing and the need for the stop line to be set back some distance from George Street. Consideration should therefore be given to relocating the pedestrian crossing and bringing the stop line further south, and this is explored later in this Technical Note.

Junction 6: B184 Bridge St / Castle St

Table 6a-LR-MM1: B184 Bridge Street / Castle Street AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B184 Bridge St	1	-	-	-	-	-	-
B184 High St	1	0.17	**0**	0.17	**0**	0.25	**0**

Table 6b-LR-MM1: B184 Bridge Street / Castle Street PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B184 Bridge St	1	-	-	-	-	-	-
B184 High St	1	0.26	**0**	0.26	**0**	0.35	**1**

The capacity of the Bridge Street / Castle Street junction is likely to be unchanged following implementation of the Thaxted Road restriction.

Junction 7: B184 High St / Church St

Table 7a-LR-MM1: B184 High Street / Church Street AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
Church St	1	1.42	**128**	1.42	**128**	1.26	**70**

Table 7b-LR-MM1: B184 High Street / Church Street PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
Church St	1	1.13	**38**	1.13	**38**	0.95	**10**

The capacity of the High Street / Church Street junction would be likely to improve following implementation of the Thaxted Road restriction. This also results in a nil detriment situation, when compared to the 2018 with committed development analysis, as reported in the tables on page 11.

In terms of further mitigation, while traffic signals would be expected to relieve the congestion at this junction, there is insufficient space in which to install the equipment and still maintain adequate and safe footways.

Junction 8: B184 Audley Rd / High St

Table 8a-LR-MM1: B184 Audley Road / High Street AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B184 Audley Rd	1	1.02	**18**	0.94	**9**	0.83	**4**
	2	0.68	**2**	0.67	**2**	0.68	**2**

Table 8b-LR-MM1: B184 Audley Road / High Street PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B184 Audley Rd	1	1.10	**32**	1.04	**21**	1.00	**15**
	2	0.66	**2**	0.66	**2**	0.69	**2**

During the AM peak period the capacity of the High Street / Audley Road junction would be likely to improve. However, it is predicted to still be at capacity in the PM peak with the introduction of the Thaxted Road restriction.

Junction 9: Fairycroft Rd / Cates Corner

The capacity of the Fairycroft Road / Cates Corner junction would not be expected to change with the Thaxted Road restriction in place.

Junction 10: B1052 London Rd / Borough Ln

Table 10a-LR-MM1: B1052 London Road / Borough Lane AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B1052 London Rd N	1	0.93	**10**	0.92	**8**	0.84	**5**
Borough Ln	1	0.79	**3**	0.83	**4**	0.79	**3**
B1052 London Rd S	1	0.84	**5**	0.84	**5**	0.88	**6**

Table 10b-LR-MM1: B1052 London Road / Borough Lane PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1	
		RFC	Q	RFC	Q	RFC	Q
B1052 London Rd N	1	0.89	**7**	0.95	**11**	0.91	**7**
Borough Ln	1	0.54	**1**	0.59	**1**	0.58	**1**
B1052 London Rd S	1	0.98	**16**	0.98	**16**	1.03	**29**

While the capacity of the London Road / Borough Lane junction is likely to be marginally improved in the AM peak period, its capacity reduces during the PM peak period with the Thaxted Road restriction in place, most notably on the London Road south arm which is predicted to just exceed capacity.

Measure 2: Debden Road No Entry Northbound at Mount Pleasant/Borough Lane junction

A second mitigation measure has been considered involving the prohibition of northbound traffic along Debden Road north of the junction with Mount Pleasant Road and Borough Lane. The introduction of a No Entry restriction (except for Buses and cycles) at this location would prevent northbound through-movements and significantly reduce the flow approaching the junction with London Road.

The consequence of this measure is likely to be a substantial increase in traffic on Borough Lane and London Road west of the junction with Debden Road. The evaluation has been done, using professional judgement, of the likely reassignment patterns. Information about the assumptions made in reassigning the traffic in the model can be found in Section 7.3.2 of the September 2013 Highway Impacts Report.

Note that only three of the junctions already assessed within this study would be directly affected by this particular closure:

- Debden Road / Mount Pleasant Road / Borough Lane
- B1052 London Road / Borough Lane
- Debden Road / B1052 London Road

Each table in this section is directly comparable with its equivalent in the previous section, with an additional column to report on the mitigation measures cumulative impact, annotated as MM2.

Junction 3: Debden Rd / Mount Pleasant Rd / Borough Ln

Table 3a-LR-MM1-MM2: Debden Road / Mount Pleasant Road / Borough Lane AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1		2031 AM with committed & ULP development, Link Rd & MM1 & MM2	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
Debden Rd N	1	0.05	**0**	0.05	**0**	0.04	**0**	0.10	**0**
Mount Pleasant Rd	1	0.98	**10**	1.09	**19**	1.51	**84**	1.70	**112**
Debden Rd S	1	0.26	**0**	0.26	**0**	0.12	**0**	0.43	**1**
Borough Ln	1	0.56	**1**	0.72	**2**	0.64	**2**	0.08	**0**

Table 3b-LR-MM1-MM2: Debden Road / Mount Pleasant Road / Borough Lane PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1		2031 PM with committed & ULP development, Link Rd & MM1 & MM2	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
Debden Rd N	1	0.02	**0**	0.02	**0**	0.02	**0**	0.08	**0**
Mount Pleasant Rd	1	0.95	**8**	1.05	**15**	1.27	**37**	1.55	**73**
Debden Rd S	1	0.26	**0**	0.26	**0**	0.17	**0**	0.63	**2**
Borough Ln	1	0.83	**4**	1.00	**13**	0.87	**5**	0.16	**0**

It has been assumed that the prohibition of entry to Debden Road for northbound traffic at the junction would not alter the traffic levels on the approaches but would simply change routing through the junction. Therefore, the measure would be unlikely to have a marked impact in either peak hour and Mount Pleasant Road is expected to continue to encounter congestion problems under such conditions.

It may well be the case, however, that local traffic would find alternative routes to their destinations, which could reduce traffic flows at the junction. Additional mitigation measures have been explored and are reported later, which seek to further reduce congestion at the junction.

Junction 4: Debden Rd / London Rd

Table 4a-LR-MM1-MM2: Debden Road / B1052 London Road AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1		2031 AM with committed & ULP development, Link Rd & MM1 & MM2	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 Debden Rd N	1	0.87	6	0.84	5	0.78	3	0.82	4
Debden Rd S	1	0.68	2	0.66	2	1.03	23	0.13	0
B1052 London Rd	1	0.48	1	0.43	1	0.53	1	0.91	9

The reassignment of traffic away from the Debden Road south approach and onto London Road would invariably lead to longer queues on both the London Road and Debden Road north approaches. This is a consequence of a higher traffic flow on London Road and a greater number of vehicles turning right into Debden Road south. In the AM peak, the London Road south approach would see the largest impact of the reassignment and be near its capacity, while in the PM peak the Debden Road north approach would see the most noteworthy impact, with the approach exceeding capacity and with longer queues. However, as could be expected, the queues on Debden Road south are effectively removed.

Table 4b-LR-MM1-MM2: Debden Road / B1052 London Road PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1		2031 PM with committed & ULP development, Link Rd & MM1 & MM2	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 Debden Rd N	1	1.06	40	1.03	30	1.00	23	1.06	40
Debden Rd S	1	0.40	1	0.40	1	0.59	1	0.09	0
B1052 London Rd	1	0.55	1	0.51	1	0.59	1	0.83	5

Junction 10: B1052 London Rd / Borough Ln

Table 10a-LR-MM1-MM2: B1052 London Road / Borough Lane AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1		2031 AM with committed & ULP development, Link Rd & MM1 & MM2	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 London Rd N	1	0.93	**10**	0.92	**8**	0.84	**5**	0.68	**2**
Borough Ln	1	0.79	**3**	0.83	**4**	0.79	**3**	1.98	**433**
B1052 London Rd S	1	0.84	**5**	0.84	**5**	0.88	**6**	0.86	**5**

This junction would see the most significant impact of the Debden Road northbound closure as much, if not all, of the reassigned traffic would be likely to channel along Borough Lane and pass through the junction to head north towards the town centre road network. The results suggest that the Borough Lane approach would not be able to accommodate the estimated level of traffic, mainly due to its single lane approach to the London Road junction. The London Road south approach would also be heavily impacted by such a reassignment of traffic as vehicles on this approach would have greatly reduced opportunities to enter the roundabout due to the level of traffic turning right from Borough Lane.

Table 10b-LR-MM1-MM2: B1052 London Road / Borough Lane PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1		2031 PM with committed & ULP development, Link Rd & MM1 & MM2	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 London Rd N	1	0.89	**7**	0.95	**11**	0.91	**7**	0.69	**2**
Borough Ln	1	0.54	**1**	0.59	**1**	0.58	**1**	1.27	**80**
B1052 London Rd S	1	0.98	**16**	0.98	**16**	1.03	**29**	0.94	**11**

Measures 3 to 9: Mitigation Measures at Junctions 1, 2, 3, 4, 5 & 10

As in the previous Technical Note, a number of further measures likely to be required to accommodate the knock-on effects of the traffic resulting from Mitigation Measures 1 and 2 have been modelled (the link road and prohibition of northbound traffic at the Peaslands Road junction). These are specifically focussed upon providing improvements to some of the key junctions within the town. The Mitigation Measures are outlined below:

- MM3: priority junction arrangement at B184 Thaxted Road / B1053 Radwinter Road;
- MM4: signalised junction layout at B184 Thaxted Road / Peaslands Road mini-roundabout;
- MM5: signalised junction layout at Mount Pleasant Road / Debden Road;
- MM6: priority junction arrangement at B1052 London Road / Debden Road mini-roundabout;
- MM7: two lane approach on High Street south and relocation of the pedestrian crossing at B184 High Street / B184 George Street;
- MM8: signalisation arrangement and one way approach on Borough Lane at B1052 London Road / Borough Lane;
- MM9: priority junction layout with pedestrian crossing facilities at B1052 Newport Road / Audley End Road.

Further information and outline junction improvements plans can be found in Sections 7.3.3 to 7.3.9 of the October 2013 Highway Impact Report.

Each table in this section is directly comparable with its equivalent in the previous sections, with an additional column to report on the mitigation measure impact, annotated as MM3-MM9.

We have undertaken some further reassignment of traffic for these measures due to the scheme proposed in Measure 8 which involves banning eastbound traffic along Borough Lane from its junction with London Road. This diverted traffic would be likely to use Debden Road southbound or to percolate along the routes to the south of Borough Lane to head east across the town.

Measure 3a: Conversion of Junction 1 - B184 Thaxted Rd / B1053 Radwinter Rd from signalised operation to priority layout.

Given the reduced flow on the Thaxted Road approach due to the prohibition of northbound traffic at the junction with Peaslands Road, as well as the link road, the junction layout has been revised from its current signalised layout to a priority junction arrangement, with traffic on the Thaxted Road approach giving way to the two-way flow between Radwinter Road and East Street. A ban on right-turns from Radwinter Road into Chaters Hill has also been modelled.

Table 1c-LR-MM1-MM3a: B184 Thaxted Rd/B1053 Radwinter Rd AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1		2031 AM with committed & ULP development, Link Rd & MM1 & MM3a	
		DoS	Q	DoS	Q	DoS	Q	RFC	Q
B1053 Radwinter Rd	1	73.9%	**17**	55.4%	**17**	60.3%	**14**	0.12	**0**
B184 Thaxted Rd	1	110.0%	**54**	84.0%	**26**	78.1%	**8**	0.72	**2**
B184 East St	1	110.6%	**44**	69.9%	**19**	67.5%	**12**	0.58	**1**

Table 1d-LR-MM1-MM3a: B184 Thaxted Rd/B1053 Radwinter Rd PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1		2031 PM with committed & ULP development, Link Rd & MM1 & MM3a	
		DoS	Q	DoS	Q	DoS	Q	RFC	Q
B1053 Radwinter Rd	1	66.0%	**15**	52.2%	**10**	51.4%	**11**	0.15	**0**
B184 Thaxted Rd	1	117.5%	**73**	95.8%	**23**	84.0%	**10**	0.85	**5**
B184 East St	1	112.7%	**62**	84.8%	**20**	65.8%	**15**	0.64	**2**

The combination of the likely reassignment of traffic to the link road and the prohibition of northbound traffic on Thaxted Road, together with the reconfiguration of the junction demonstrated that the junction would be likely to operate within capacity with all ULP in place in 2031.

Measure 4: Signalisation of Junction 2 - B184 Thaxted Rd / Peaslands Road

The increase in flows at the junction resulting from the introduction of the link road would require changes in operation to be made to restore the junction to a state below capacity. A signalised layout has been drawn and assessed within LinSig to help mitigate the impact of the link road. The results are shown below:

Table 2a-LR-MM1-MM4: B184 Thaxted Road / Peaslands Road AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1		2031 AM with committed & ULP development, Link Rd & MM1 & MM4	
		RFC	Q	RFC	Q	RFC	Q	DoS	Q
B184 Thaxted Rd N	1	0.52	**1**	0.45	**1**	0.52	**1**	47.0%	**3**
B184 Thaxted Rd S	1	0.95	**12**	0.96	**13**	0.78	**3**	50.8%	**4**
Peaslands Rd	1	1.07	**29**	1.11	**41**	0.60	**1**	44.5%	**3**

Table 2b-LR-MM1-MM4: B184 Thaxted Road / Peaslands Road PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1		2031 PM with committed & ULP development, Link Rd & MM1 & MM4	
		RFC	Q	RFC	Q	RFC	Q	DoS	Q
B184 Thaxted Rd N	1	1.15	**59**	1.08	**32**	1.29	**78**	70.8%	**6**
B184 Thaxted Rd S	1	0.65	**2**	0.72	**2**	0.50	**1**	37.5%	**3**
Peaslands Rd	1	1.12	**47**	1.17	**65**	0.80	**4**	73.1%	**6**

The analysis suggests that the measure would lead to the junction operating satisfactorily with a notable reduction in queuing on Thaxted Road north.

Measure 5: Signalisation of Junction 3 - Debden Road / Mount Pleasant Road / Borough Lane

As part of a S106 condition for the Friends School development, a signalised arrangement has been approved for installation at this junction. This will give all the approaches appropriate green time based on demand. A pedestrian stage has been included within the modelling as the area has a high number of pedestrian movements. Whilst it is recognised that the signalised arrangement will be in place before 2031, for the purposes of this study only 2031 with MM1 and MM2 has been tested.

Table 3a-LR-MM1-MM2-MM5: Debden Road / Mount Pleasant Road / Borough Lane AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1		2031 AM with committed & ULP development, Link Rd & MM1 & MM2		2031 AM with committed & ULP development, Link Rd & MM1 & MM2 & MM5b	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	DoS	Q
Debden Rd N	1	0.05	**0**	0.05	**0**	0.04	**0**	0.10	**0**	38.2%	**5**
Mount Pleasant Rd	1	0.98	**10**	1.09	**19**	1.51	**84**	1.70	**112**	101.0%	**30**
Debden Rd S	1	0.26	**0**	0.26	**0**	0.12	**0**	0.43	**1**	103.6%	**35**
Borough Ln	1	0.56	**1**	0.72	**2**	0.64	**2**	0.08	**0**	4.1%	**0**

Table 3b-LR-MM1-MM2-MM5: Debden Road / Mount Pleasant Road / Borough Lane PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1		2031 PM with committed & ULP development, Link Rd & MM1 & MM2		2031 PM with committed & ULP development, Link Rd & MM1 & MM2 & MM5b	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	DoS	Q
Debden Rd N	1	0.02	**0**	0.02	**0**	0.02	**0**	0.08	**0**	62.0%	**11**
Mount Pleasant Rd	1	0.95	**8**	1.05	**15**	1.27	**37**	1.55	**73**	103.2%	**29**
Debden Rd S	1	0.26	**0**	0.26	**0**	0.17	**0**	0.63	**2**	104.8%	**30**
Borough Ln	1	0.83	**4**	1.00	**13**	0.87	**5**	0.16	**0**	8.8%	**2**

The modelling shows that converting the junction to a signalised crossroads layout would enable the demand at the junction to be managed in a more effective way, with queuing on Mount Pleasant Road significantly reduced, albeit at the cost of increased queues on the other approaches, most notably Debden Road South. The introduction of a pedestrian stage to the junction would, as expected, lead to increased delay on each approach, although not to a significant extent.

Measure 6: Conversion of Junction 4 - Debden Road / London Road from a mini-roundabout to a priority junction

The closure of Debden Road northbound from north of the junction with Mount Pleasant Road and Borough Lane would lead to a relatively small flow on Debden Road approaching this junction from the south. Taking into account this reduction in flow on the route and the Air Quality Management Area status of the surrounding area, it was decided that the junction could be transformed into a priority junction with the London Road and Debden Road north approaches operating with priority over the Debden Road south approach. Such an arrangement would remove the instances of queuing on the Debden Road north approach and limit the requirement to queue on the London Road approach to only occasions where a vehicle is turning right into Debden Road south.

Table 4a-LR-MM1-MM2-MM6: Debden Road / B1052 London Road AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1		2031 AM with committed & ULP development, Link Rd & MM1 & MM2		2031 AM with committed & ULP development, Link Rd & MM1 & MM2 & MM6	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 Debden Rd N	1	0.87	6	0.84	5	0.78	3	0.82	4	-	-
Debden Rd S	1	0.68	2	0.66	2	1.03	23	0.13	0	0.34	1
B1052 London Rd	1	0.48	1	0.43	1	0.53	1	0.91	9	0.67	5

Table 4b-LR-MM1-MM2-MM6: Debden Road / B1052 London Road PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1		2031 PM with committed & ULP development, Link Rd & MM1 & MM2		2031 PM with committed & ULP development, Link Rd & MM1 & MM2 & MM6	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1052 Debden Rd N	1	1.06	40	1.03	30	1.00	23	1.06	40	-	-
Debden Rd S	1	0.40	1	0.40	1	0.59	1	0.09	0	0.27	0
B1052 London Rd	1	0.55	1	0.51	1	0.59	1	0.83	5	0.93	19

The results suggest that the revised layout would only lead to moderate queuing on the London Road approach in the PM peak hour and provide an overall benefit over a mini-roundabout option, largely due to the removal of any queuing on Debden Road north.

Measure 7: Provision of additional capacity at Junction 5 – High Street / George Street

As discussed earlier, a scheme involving banning parking on High Street south of the junction to allow for two full approach lanes has been tested, in addition to relocating the pedestrian crossing further north of the junction in line with the pedestrian desire lines to Swan Meadow car park.

Table 5a-LR-MM1-MM7: B184 High Street / B184 George Street AM Peak (Fixed Cycle=80sec)

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1		2031 AM with committed & ULP development, Link Rd & MM1 & MM7	
		DoS	Q	DoS	Q	DoS	Q	DoS	Q
High St N	1	96.5%	**18**	96.5%	**18**	116.8%	**50**	89.7%	**14**
High St S	1 (LT/SA)	100.7%	**5**	97.6%	**5**	112.6%	**5**	**71.7%**	**12**
	2 (RT)		34		21		96	87.8%	**16**

Table 5b-LR-MM1-MM7: B184 High Street / B184 George Street PM Peak (Fixed Cycle=80sec)

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1		2031 PM with committed & ULP development, Link Rd & MM1 & MM7	
		DoS	Q	DoS	Q	DoS	Q	DoS	Q
High St N	1	114.0%	**53**	114.0%	**53**	119.2%	**64**	98.0%	**22**
High St S	1 (LT/SA)	110.7%	**5**	102.9%	**5**	120.4%	**5**	53.1%	**7**
	2 (RT)		72		36		**120**	104.0%	**37**

The results indicate that the scheme would provide satisfactory junction performance in the AM peak hour. However, the PM peak would encounter some queuing problems, but they would be significantly reduced on both approaches. It should be noted that this mitigation is likely to provide a nil detriment situation at the junction, over the 2018 with committed development scenario reported at page 9.

Measure 8: Conversion of Junction 10 – B1052 London Road / Borough Lane junction to signalised operation

The northbound closures of Thaxted Road and Debden Road to through traffic would be likely to result in vehicles using Borough Lane as an alternative route to access the wider road network.

In addition, we have tested a number of further measures which would require widening or route closures at the junction to seek the best possible option. These options are as follows:

- Further measures #2: Two components would be included. The first being the widening of the eastbound London Road carriageway between the junctions with Newport Road and Borough Lane to incorporate a right-turn lane for traffic wishing to turn right into Borough Lane. The second measure would include the construction of a three-vehicle long flare on Borough Lane to accommodate left-turning traffic.
- Further measures #3: Instead of providing an extra lane for the right-turners into Borough Lane, the movement would be banned and traffic would be required to seek an alternative route. A left-turn flare would still be provided on Borough Lane.
- Further measures #4: Including the measures listed in #3, this would also incorporate a ban on eastbound traffic along Borough Lane. Such a measure would free up roadspace for two full length lanes on the Borough Lane approach to the junction.

It has been assumed within all option testing that an all red stage for pedestrians would be included at the junction which would be a significant safety improvement over the existing situation.

Table 10a-LR-MM1-MM2-MM8: B1052 London Road / Borough Lane AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development & Link Rd		2031 AM with committed & ULP development, Link Rd & MM1		2031 AM with committed & ULP development, Link Rd & MM1 & MM2		2031 AM with committed & ULP development, Link Rd & MM1 & MM2 & MM8	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	DoS	Q
B1052 London Rd N	1	0.93	**10**	0.92	**8**	0.84	**5**	0.68	**2**	57.1%	**13**
Borough Ln	1	0.79	**3**	0.83	**4**	0.79	**3**	1.98	**433**	126.1%	**146**
B1052 London Rd S	1	0.84	**5**	0.84	**5**	0.88	**6**	0.86	**5**	65.4%	**15**

Approach & Lane		2031 AM with committed & ULP development, Link Rd & MM1 & MM2 & MM8 + Further Measures #2		2031 AM with committed & ULP development, Link Rd & MM1 & MM2 & MM8 + Further Measures #3		2031 AM with committed & ULP development, Link Rd & MM1 & MM2 & MM8 + Further Measures #4	
		DoS	Q	DoS	Q	DoS	Q
B1052 London Rd N	1	67.5%	**14**	70.7%	**15**	76.8%	**12**
Borough Ln	1	102.6%	**54**	99.4%	**44**	45.0%	**7**
						82.6%	**16**
B1052 London Rd S	1	77.3%	**18**	81.0%	**19**	84.7%	**15**

Signalising the junction would enable Borough Lane to operate with reduced delay, however the amount of queuing would, in the AM peak, remain at a significantly high level and also cause the London Road south approach to experience greater delay than with the existing mini-roundabout layout. By introducing Further Measures #2, the junction would operate with greater capacity, although in the AM peak there would still be lengthy queuing on the Borough Lane and London Road south approaches. Implementing a right-turn ban into Borough Lane in Further Measures #3 would help to further reduce the delay at the junction, although the effects of such a tactic on other junctions would need to be studied separately. The Further measures #4 scheme to additionally ban eastbound movements along Borough Lane and introduce two full approach lanes on the approach would add a significant amount of additional capacity to the junction. However, whilst the results would suggest that the junction would operate within capacity, queuing levels would still be relatively high. The interaction of this junction with the Newport Road / Audley End Road junction would remain affected by the queuing back on London Road south.

Table 10b-LR-MM1-MM2-MM8: B1052 London Road / Borough Lane PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development & Link Rd		2031 PM with committed & ULP development, Link Rd & MM1		2031 PM with committed & ULP development, Link Rd & MM1 & MM2		2031 PM with committed & ULP development, Link Rd & MM1 & MM2 & MM8	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q	DoS	Q
B1052 London Rd N	1	0.89	7	0.95	11	0.91	7	0.69	2	46.0%	10
Borough Ln	1	0.54	1	0.59	1	0.58	1	1.27	80	109.6%	55
B1052 London Rd S	1	0.98	16	0.98	16	1.03	29	0.94	11	58.4%	14

Approach & Lane		2031 AM with committed & ULP development, Link Rd & MM1 & MM2 & MM8 + Further Measures #2		2031 AM with committed & ULP development, Link Rd & MM1 & MM2 & MM8 + Further Measures #3		2031 AM with committed & ULP development, Link Rd & MM1 & MM2 & MM8 + Further Measures #4	
		DoS	Q	DoS	Q	DoS	Q
B1052 London Rd N	1	58.3%	7	56.2%	7	65.9%	8
Borough Ln	1	91.0%	12	95.2%	14	58.5%	5
						81.2%	8
B1052 London Rd S	1	74.1%	10	71.4%	10	80.7%	11

Assessments of signalisation at the junction in the PM peak suggest that more balanced queuing could be achieved on the approaches with London Road south in particular seeing a large reduction. However, queuing levels would increase on London Road north and remain lengthy on Borough Lane and London Road south. Implementing the Further Measures #2 would significantly reduce queuing at the junction to manageable levels, although queuing back on London Road south would still impact on the Newport Road / Audley End Road junction. Introducing the right-turn ban as part of Further measures #3 would not provide any benefit over introducing a right-turn lane for vehicles turning into Borough Lane in the PM peak assessments, whilst the addition of two approach lanes in Further Measures #4 would again not offer any discernible benefit over Further Measures #2.

However, it is felt that the right-turn ban on London Road south and one-way system on Borough Lane included in Further Measures #4 would be the most feasible scheme to implement.

Measure 9: Mitigation Measure at Newport Road / Audley End Road / London Road junction

This three-arm mini-roundabout junction falls outside of our existing study area but is in close proximity to the studied London Road / Borough Lane junction and the two junctions can therefore influence one another.

The B1052 London Road to/from B1052 Newport Road is the priority route with Audley End Road being a local route of some importance but one subject to a 7.5 tonne weight restriction. Therefore, we have considered the idea of changing the junction layout to a priority junction arrangement to prioritise the flow between London Road and Newport Road while also allowing for any queues stretching back from the London Road / Borough Lane junction to be more suitably accommodated. This new layout has been tested and compared against the results for the existing mini-roundabout arrangement.

Junction 10b: B1052 Newport Road / Audley End Road

Table 10c: B1052 Newport Road / Audley End Road AM Peak

Approach & Lane		2031 AM with committed & ULP development		2031 AM with committed & ULP development + MM9	
		RFC	Q	RFC	Q
B1052 Newport Road	1	0.93	**65**	-	**-**
Audley End Road	1	0.62	**2**	0.71	**2**
	2			0.60	**1**
B1052 London Rd	1	1.17	**88**	1.06	**11**

Table 10d: B1052 Newport Road / Audley End Road PM Peak

Approach & Lane		2031 PM with committed & ULP development		2031 PM with committed & ULP development + MM9	
		RFC	Q	RFC	Q
B1052 Newport Road	1	0.79	**4**	-	**-**
Audley End Road	1	0.85	**5**	1.07	**21**
	2			1.02	**9**
B1052 London Rd	1	1.05	**35**	0.67	**2**

While it is clear that such a scheme would remove the queuing on the Newport Road approach to the junction, the results suggest that the change in layout would lead to London Road operating over capacity in the AM peak as a result of traffic waiting to turn right into Audley Road. Associated queuing could also stretch back to the Borough Lane junction. Furthermore, the analysis suggests that Audley End Road would be over capacity in the PM peak as the relatively large flow on the approach waits to enter the main carriageway.

4.2 Great Dunmow

Measure 10: New signalised gyratory at Chelmsford Road at B1256 / Chelmsford Road (Hoblongs) junction

The addition of ULP development traffic to the town would place this junction, which is already operating close to capacity, under significant pressure and lead to excessive queuing on the Chelmsford Road approach. Signalisation of the existing layout was considered and modelled, however this was shown to be inadequate in providing the necessary additional capacity required. Therefore a more radical layout has been devised. This involves creating a form of gyratory which allows B1256 northbound traffic from the A120 interchange to head directly into Chelmsford Road via a new stretch of road and also provides for two lanes to link in to the B1256 / A120 Interchange. The circulatory on the B1256 / A120 interchange roundabout would also be restored enabling u-turners from the B1256 to complete the movement at this roundabout and not be required to pass around the southern roundabout. Further information and a revised junction layout plan can be found in Section 8.3.1 and Section 8.3.2 of the October 2013 Highway Impact Report.

Assessments have been carried out to gauge the impact of this revised layout at the Hoblong's junction and at the B1256 / A120 interchange northern roundabout. The results are shown below in the tables alongside the 2018 and 2031 ULP flow scenario assessment results, and are noted down under the MM10 heading.

Junction 11: Hoblongs Junction - B1256 / Chelmsford Rd

Table 11a: B1256 / Chelmsford Road (Hoblongs Junction) AM Peak

Approach & Lane		2018 AM with committed & ULP development		2018 AM with committed & ULP development + MM10		2031 AM with committed & ULP development		2031 AM with committed & ULP development + MM10	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
Chelmsford Rd	1	0.39	**1**	0.49	**1**	1.30	**10**	0.58	**1**
	2	0.87	**5**			1.26	**39**		
B1256 (north)	1	0.30	**0**	0.31	**0**	0.37	**1**	0.38	**1**

The junction capacity assessment results show that the new layout would offer a significant improvement over the existing layout, with queues reduced to negligible amounts in both the AM and PM peak.

Table 11b: B1256 / Chelmsford Road (Hoblongs Junction) PM Peak

Approach & Lane		2018 PM with committed & ULP development		2018 PM with committed & ULP development + MM10		2031 PM with committed & ULP development		2031 PM with committed & ULP development + MM10	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
Chelmsford Rd	1	1.05	**7**	0.31	**0**	1.41	**22**	0.42	**1**
	2	1.04	**17**			1.45	**75**		
B1256 (north)	1	0.11	**0**	0.47	**1**	0.15	**0**	0.58	**1**

Junction 14: A120 / B1256 Interchange (north roundabout)

Table 12a: A120 eastbound off-slip / B1256 / B1008 Interchange (north roundabout) AM Peak

Approach & Lane	2018 AM with committed & ULP development		2018 AM with committed & ULP development + MM10		2031 AM with committed & ULP development		2031 AM with committed & ULP development + MM10	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1256 southbound	0.85	**5**	0.82	**4**	1.01	**26**	0.97	**18**
A120 eastbound off-slip	0.45	1	0.49	1	0.50	**1**	0.57	**1**

The results suggest that by implementing two lanes on the B1256 approach to the roundabout would result in reasonable junction performance in both AM and PM peaks in 2031 post development. However this is on the proviso that the two lane southbound approach has a minimum 6.5m approach road width.

Table 12b: A120 eastbound off-slip / B1256 / B1008 Interchange (north roundabout) PM Peak

Approach & Lane	2018 PM with committed & ULP development		2018 PM with committed & ULP development + MM10		2031 PM with committed & ULP development		2031 PM with committed & ULP development + MM10	
	RFC	Q	RFC	Q	RFC	Q	RFC	Q
B1256 southbound	0.78	**3**	0.70	2	1.00	**22**	0.89	**7**
A120 eastbound off-slip	0.61	**2**	0.64	2	0.73	**3**	0.77	**3**

4.3 M11 Junction 8

Measure: Removal of Services exit from Junction 8 to a new signalised junction with the A120, west of J8

The addition of future development traffic to the junction, which is already operating close to capacity, would lead to several of the approaches operating in excess of capacity and with resultant excessive queuing.

Two minor measures to improve capacity, as originally tested by WSP, were first considered, including switching the location of the flare on the M11 northbound approach from the inside lane to the outside lane in order to provide two full approach lanes on the inside of the approach to serve traffic headed to the A120 west and the motorway services. An alteration was also made to the lane markings at the Services junction to ensure that two circulatory carriageway lanes were dedicated to vehicles exiting the junction at the A120 westbound arm.

However, the apparent operational issues caused by the additional traffic in 2031 brought about a need to consider more developed measures to mitigate against the impact of the estimated future year traffic flows.

The following mitigation measures were considered and modelled:

- The removal of the Services exit and associated stop-lines on the circulatory carriageway from Junction 8 to a new signalised junction on the A120, west of Junction 8.
- The widening of the A120 eastbound approach from two lanes plus a flare to four lanes and the widening of the A120 eastbound carriageway to the west of the new signalised junction
- The widening of the A120 westbound carriageway from two lanes to three lanes up to the A120 / A1250 roundabout.

See Appendix E for a plan of the proposed mitigation measures.

The results of the assessments inclusive of the mitigation measures are shown below in the tables alongside the 2018 and 2031 ULP flow scenario assessment results, and are noted down under the Mitigation heading.

Table 13a: M11 Junction 8 AM Peak

Approach & Lane		2018 AM with committed & ULP development		2018 AM with committed & ULP development + Mitigation		2031 AM with committed & ULP development		2031 AM with committed & ULP development + Mitigation	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
M11 northbound off-slip	1	86.8%	**11**	87.9%	**11**	205.1%	**257**	204.7%	**127**
	2	17.5%	**2**	90.4%	**12**	46.9%	**3**	207.8%	**176**
Circulatory carriageway at intersection with M11 northbound off-slip	1	80.8%	**12**	81.4%	**10**	79.4%	**7**	67.3%	**2**
	2	74.2%	**14**	77.0%	**16**	63.2%	**9**	83.3%	**21**
	3	60.3%	**2**	51.4%	**1**	60.2%	**3**	40.6%	**0**
Services exit (via A120 in Mitigation scenario)	1	109.1%	**20**	64.1%	**4**	122.5%	**34**	66.7%	**5**
	2	100.0%	**12**	67.6%	**5**	112.1%	**23**	71.7%	**6**
	3	-	**-**	39.8%	**2**	-	**-**	36.2%	**2**
A120 westbound carriageway at new junction with services	1	-	**-**	58.9%	**6**	-	**-**	54.5%	**4**
	2	-	**-**	62.6%	**14**	-	**-**	59.2%	**5**
A120 eastbound carriageway at new junction with services exit	1	-	**-**	41.2%	**5**	-	**-**	55.0%	**8**
	2	-	**-**	46.4%	**6**	-	**-**	60.6%	**10**
	3	-	**-**	41.8%	**5**	-	**-**	54.5%	**8**
A120 eastbound	1	161.4%	**300**	49.8%	**7**	267.2%	**649**	59.7%	**9**
	2	77.2%	**13**	50.7%	**6**	109.2%	**53**	75.8%	**10**
	3	-	**-**	55.7%	**6**	-	**-**	73.7%	**8**
	4	-	**-**	71.7%	**9**	-	**-**	85.3%	**18**
Circulatory carriageway at intersection with A120 eastbound	1	44.9%	**6**	56.5%	**6**	49.0%	**6**	60.0%	**8**
	2	44.6%	**6**	56.3%	**6**	49.4%	**6**	68.8%	**9**
	3	12.8%	**2**	4.2%	**0**	11.8%	**2**	0.9%	**0**
	4	24.3%	**5**	19.2%	**3**	24.2%	**4**	9.9%	**2**
M11 southbound off-slip	1	87.0%	**9**	52.4%	**6**	182.2%	**194**	74.5%	**9**
	2	56.5%	**5**	19.9%	**2**	73.9%	**5**	26.4%	**3**
	3	80.5%	**8**	51.4%	**7**	188.8%	**115**	73.7%	**10**
Circulatory carriageway at intersection with M11 southbound off-slip	1	27.6%	**2**	54.0%	**3**	24.6%	**2**	70.0%	**2**
	2	34.2%	**2**	60.8%	**5**	28.9%	**1**	63.3%	**3**
	3	52.9%	**14**	68.8%	**3**	51.2%	**16**	72.7%	**2**
A120 westbound (Thremhall Avenue)	1	58.9%	**9**	72.1%	**13**	74.2%	**14**	92.2%	**25**
	2	59.9%	**10**	68.6%	**13**	73.6%	**15**	88.9%	**23**

Approach & Lane		2018 AM with committed & ULP development		2018 AM with committed & ULP development + Mitigation		2031 AM with committed & ULP development		2031 AM with committed & ULP development + Mitigation	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
Circulatory carriageway at intersection with A120 westbound	1	47.6%	4	43.7%	4	62.6%	4	49.2%	4
	2	47.9%	4	43.8%	4	62.7%	4	49.6%	4
B1256 Dunmow Road	1	77.8%	8	62.3%	6	108.3%	36	148.9%	100
	2	50.8%	5	46.8%	5	89.8%	9	134.7%	46
Circulatory carriageway at intersection with B1256 Dunmow Road	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0
	2	56.1%	1	63.6%	4	67.3%	5	65.2%	6
	3	61.2%	2	64.0%	4	70.9%	6	66.0%	12
Southbound hamburger cut-through at intersection with circulatory carriageway	1	76.5%	10	100.7%	20	92.2%	13	98.5%	19
	2	75.2%	11	99.8%	18	93.1%	14	97.9%	18
	3	48.1%	6	87.5%	5	45.7%	5	89.6%	13
Circulatory carriageway at intersection with cut-through	1	21.8%	0	20.1%	1	20.4%	5	15.8%	1
	2	84.4%	15	90.5%	22	95.9%	35	113.9%	110
	3	84.0%	14	90.0%	21	97.7%	39	115.1%	117

The AM peak assessment results provide the following key points:

- The mitigation measures would significantly reduce queuing on the A120 eastbound approach to Junction 8, with the four lanes providing sufficient additional capacity to accommodate the estimated 2031 with development flows.
- The removal of the Services exit and associated stop-lines would reduce overall delay at Junction 8, while the transfer of the Services exit to a new junction with the A120 would be unlikely to lead to any congestion issues in 2031 at the layout provided.
- The M11 northbound off-slip continues to operate with lengthy queuing in 2031 despite the mitigation measures. The transfer of the approach flare from the inside to the outside would result in sharing the extensive queue across two lanes instead of one, however the length of these queues modelled would remain likely to stretch back to the M11 northbound main carriageway.
- The modelling suggests that the presence of a lengthy queue on the M11 southbound carriageway in 2031 would be indirectly reduced by the mitigation layout being in place.
- The Dunmow Road approach and its associated circulatory carriageway would be likely to experience congestion in 2031 and the mitigation measures to the west of the junction may indirectly worsen its operation.
- Similarly, the intersection between the southbound hamburger cut-through link and the circulatory carriageway may be indirectly negatively impacted by the mitigation measures.

Table 13b: M11 Junction 8 PM Peak

Approach & Lane		2018 PM with committed & ULP development		2018 PM with committed & ULP development + Mitigation		2031 PM with committed & ULP development		2031 PM with committed & ULP development + Mitigation	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
M11 northbound off-slip	1	103.3%	**38**	148.0%	**92**	294.4%	424	262.6%	**194**
	2	21.1%	**2**	148.4%	**120**	60.8%	3	265.9%	**257**
Circulatory carriageway at intersection with M11 northbound off-slip	1	79.0%	**16**	71.7%	**7**	80.0%	10	73.0%	**8**
	2	72.8%	**11**	73.5%	**14**	78.4%	**15**	84.7%	**21**
	3	54.3%	**2**	36.3%	**1**	48.8%	**1**	30.8%	**1**
Services exit (via A120 in Mitigation scenario)	1	119.2%	**30**	64.4%	**5**	133.9%	**48**	71.8%	**5**
	2	100.0%	**12**	69.0%	**6**	112.5%	**24**	75.6%	**6**
	3	-	**-**	15.2%	**1**	-	**-**	35.5%	**2**
A120 westbound carriageway at new junction with services	1	-	**-**	55.7%	**5**	-	**-**	56.1%	**9**
	2	-	**-**	61.2%	**13**	-	**-**	58.6%	**11**
A120 eastbound carriageway at new junction with services exit	1	-	**-**	43.6%	**6**	-	**-**	50.8%	**7**
	2	-	**-**	47.6%	**7**	-	**-**	57.4%	**9**
	3	-	**-**	45.0%	**6**	-	**-**	53.7%	**7**
A120 eastbound	1	144.9%	**259**	40.2%	**7**	245.8%	**586**	52.2%	**4**
	2	62.9%	**10**	52.7%	**5**	94.5%	**20**	78.1%	**12**
	3	-	**-**	57.5%	**8**	-	**-**	80.9%	**11**
	4	-	**-**	59.6%	**6**	-	**-**	76.2%	**11**
Circulatory carriageway at intersection with A120 eastbound	1	49.2%	**6**	63.1%	**8**	48.8%	**6**	50.9%	**8**
	2	49.4%	**6**	62.9%	**8**	48.1%	**6**	51.6%	**8**
	3	16.7%	**2**	2.9%	**0**	13.0%	**1**	1.3%	**0**
	4	26.2%	**4**	16.8%	**1**	21.4%	**4**	8.9%	**1**
M11 southbound off-slip	1	70.8%	**8**	74.2%	**9**	79.8%	**11**	85.2%	**12**
	2	44.2%	**5**	46.0%	**5**	45.8%	**6**	51.9%	**7**
	3	44.0%	**5**	49.9%	**6**	48.6%	**7**	53.4%	**7**
Circulatory carriageway at intersection with M11 southbound off-slip	1	46.4%	**5**	59.2%	**6**	43.7%	**3**	81.7%	**14**
	2	52.5%	**5**	62.1%	**7**	47.8%	**5**	77.2%	**12**
	3	63.9%	**4**	60.9%	**5**	78.4%	**8**	73.3%	**11**
A120 westbound (Thremhall Avenue)	1	65.2%	**11**	76.4%	**14**	99.1%	**37**	127.5%	**157**

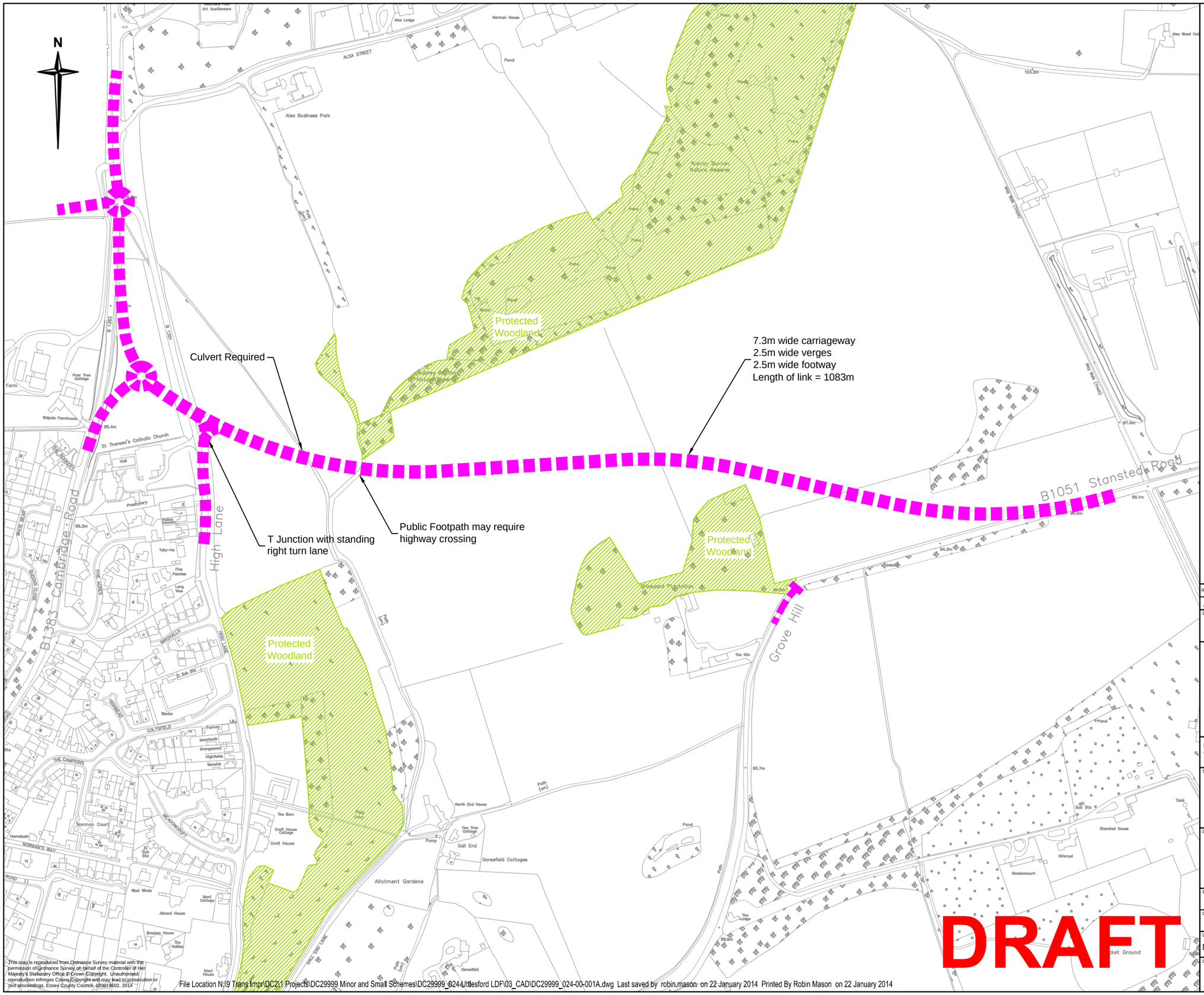
Approach & Lane		2018 PM with committed & ULP development		2018 PM with committed & ULP development + Mitigation		2031 PM with committed & ULP development		2031 PM with committed & ULP development + Mitigation	
		RFC	Q	RFC	Q	RFC	Q	RFC	Q
	2	69.1%	13	75.4%	14	99.3%	37	127.0%	146
Circulatory carriageway at intersection with A120 westbound	1	41.2%	4	41.2%	4	40.5%	4	38.8%	4
	2	41.3%	4	41.1%	4	40.6%	4	39.0%	4
B1256 Dunmow Road	1	89.8%	9	89.2%	8	111.6%	34	105.4%	30
	2	48.0%	3	79.1%	6	108.4%	18	112.6%	23
Circulatory carriageway at intersection with B1256 Dunmow Road	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0
	2	47.8%	2	48.1%	5	67.0%	8	53.0%	8
	3	52.8%	4	49.0%	5	68.5%	16	53.5%	10
Southbound hamburger cut-through at intersection with circulatory carriageway	1	69.7%	10	84.1%	10	88.5%	13	97.7%	18
	2	69.6%	7	82.5%	10	95.3%	17	96.9%	17
	3	34.8%	2	55.8%	7	54.7%	3	71.7%	8
Circulatory carriageway at intersection with cut-through	1	14.0%	3	13.4%	0	15.5%	0	15.8%	0
	2	82.1%	13	89.9%	15	97.7%	25	96.3%	29
	3	78.3%	7	89.0%	15	99.6%	37	96.9%	30

The PM peak assessment results provide the following key points:

- The mitigation measures would significantly reduce queuing on the A120 eastbound approach to Junction 8, with the four lanes providing sufficient additional capacity to accommodate the estimated 2031 with development flows.
- The removal of the Services exit and associated stop-lines would reduce overall delay at Junction 8, while the transfer of the Services exit to a new junction with the A120 would be unlikely to lead to any congestion issues in 2031 at the layout provided.
- The M11 northbound off-slip continues to operate with lengthy queuing in 2031 despite the mitigation measures. The transfer of the approach flare from the inside to the outside would result in sharing the extensive queue across two lanes instead of one, however the length of these queues modelled would remain likely to stretch back to the M11 northbound main carriageway.
- The A120 westbound approach and its associated circulatory carriageway would be likely to experience congestion in 2031 and the mitigation measures to the west of the junction may indirectly worsen its operation, possibly as a result of the measures releasing queuing traffic from the A120 eastbound approach through the junction.
- The Dunmow Road approach and its associated circulatory carriageway would be likely to experience congestion in 2031 and the mitigation measures to the west of the junction may indirectly worsen its operation.
- Similarly, the intersection between the southbound hamburger cut-through link and the circulatory carriageway may be indirectly negatively impacted by the mitigation measures.

Appendix D

B1051 – B1351 Link Road



Notes

1. Do not scale.
2. This proposal is based on a desktop study.

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED
A	01/13	Link extended to B1383	RDM	

DRAWING STATUS

FEASIBILITY

Essex Highways

Ringway Jacobs working in partnership with Essex County Council

Mark Rowe, Service Director, Essex Highways
County Hall, Chelmsford. CM1 1QH
Tel: 0845 6037631

SCHEME TITLE

UTTLESFORD LDF

DRAWING TITLE

B1051-B1351 LINK ROAD

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
RDM	RDM	PM	RDM	ME
DATE	DATE	DATE	DATE	DATE
JAN 14	JAN 14	JAN 14	JAN 14	JAN 14

DRAWING UNITS U.N.O.	SCALE AT A3 (420x297mm)
METRES	NTS

DRAWING No. **DC29999_024-00-001** REV. **A**

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Appendix E

M11 Junction 8 Mitigation Measures

N

Two lanes to be provided on approach.

Two lane exit from roundabout with merge into one lane.

Two lanes to be provided on approach.

A120

A 1250

CUTLINE A

CUTLINE A

Floodlight

Stand

Stand

Floodlight

Floodlight

Co Const Bdy CF

Football Ground

Floodlight

Floodlight

Co Const Bdy

Hotel

Notes

1. Do not scale.

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED

DRAWING STATUS

FEASIBILITY

Essex Highways

Ringway Jacobs working in partnership with Essex County Council

Mark Rowe, Service Director, Essex Highways
County Hall, Chelmsford. CM1 1QH
Tel: 0845 6037631

SCHEME TITLE

M11 JUNCTION 8

DRAWING TITLE

PROPOSED MITIGATION MEASURES SHEET 1 OF 2

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
JO	KJH	RDM	PM	
DATE JAN 14	DATE JAN 14	DATE FEB 14	DATE FEB 14	DATE

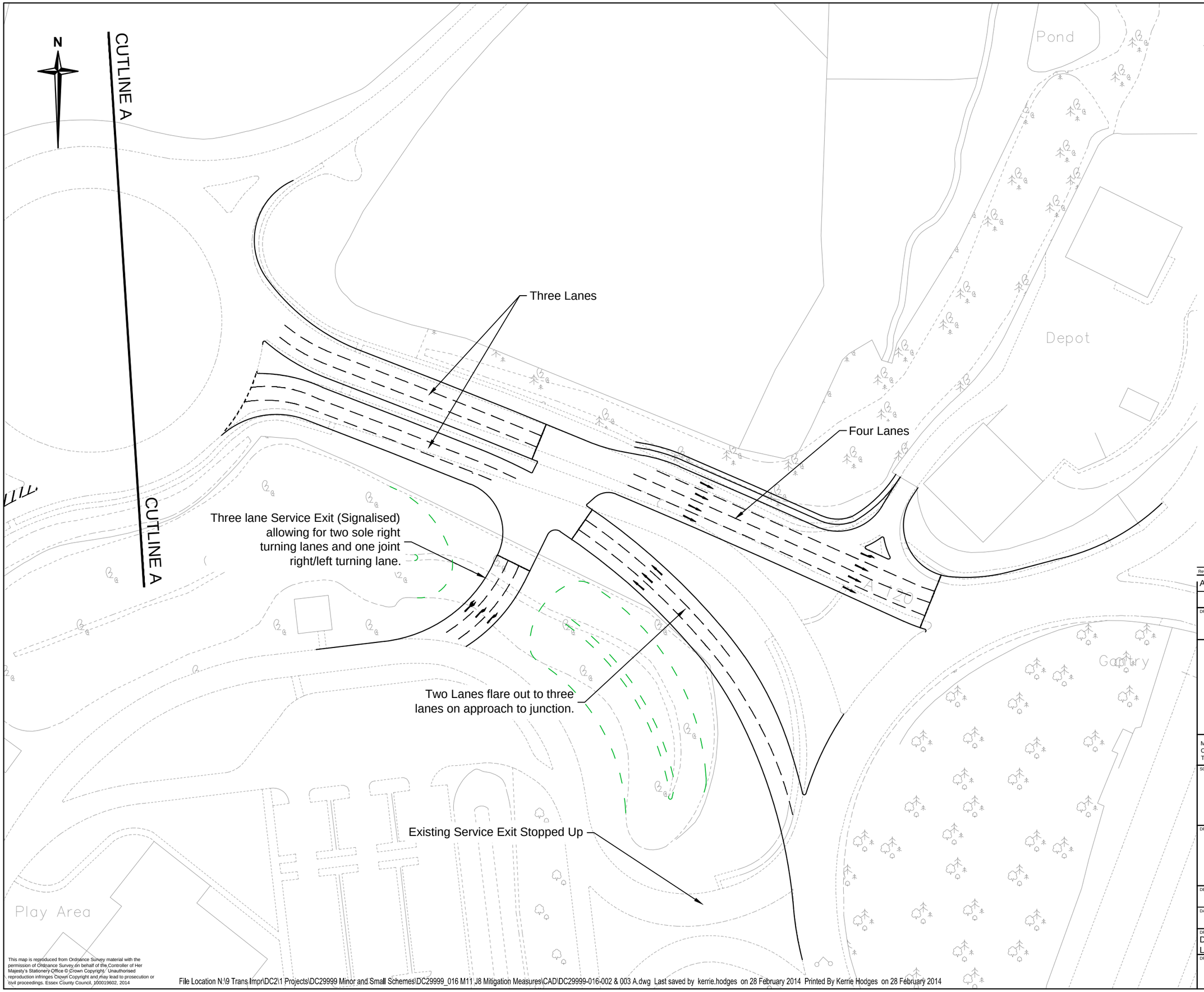
DRAWING UNITS U.N.O.
DIMENSIONS IN MILLIMETRES
LEVELS IN METRES

SCALE AT A3 (420x297mm)
1:1,000

DRAWING No.
DC29999-016-002

REV.
-

File Location N:\9 Trans Impr\DC2\1 Projects\DC29999 Minor and Small Schemes\DC29999_016 M11 J8 Mitigation Measures\CAD\DC29999-016-002 & 003.dwg Last saved by harry.casillas on 25 February 2014 Printed By Harry Casillas on 25 February 2014



Notes

1. Do not scale.

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
A	Feb 14	Alignment changes at J8	KJH	RDM	PM	

DRAWING STATUS

FEASIBILITY

Essex Highways

Ringway Jacobs working in partnership with Essex County Council

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SCHEME TITLE

M11 JUNCTION 8

DRAWING TITLE

PROPOSED MITIGATION MEASURES SHEET 2 OF 2

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
JO	KJH	RDM	PM	MY
DATE	DATE	DATE	DATE	DATE
JAN 14	JAN 14	FEB 14	FEB 14	FEB 14

DRAWING UNITS U.N.O.
DIMENSIONS IN MILLIMETRES
LEVELS IN METRES

SCALE AT A3 (420x297mm)
1:1,000

DRAWING No.
DC29999-016-003

REV.
A

File Location N:\9 Trans Impr\DC2\1 Projects\DC29999 Minor and Small Schemes\DC29999_016 M11 J8 Mitigation Measures\CAD\DC29999-016-002 & 003 A.dwg Last saved by kerrie.hodges on 28 February 2014 Printed By Kerrie Hodges on 28 February 2014

Appendix F

M11 Junction 8 Analysis Output Files

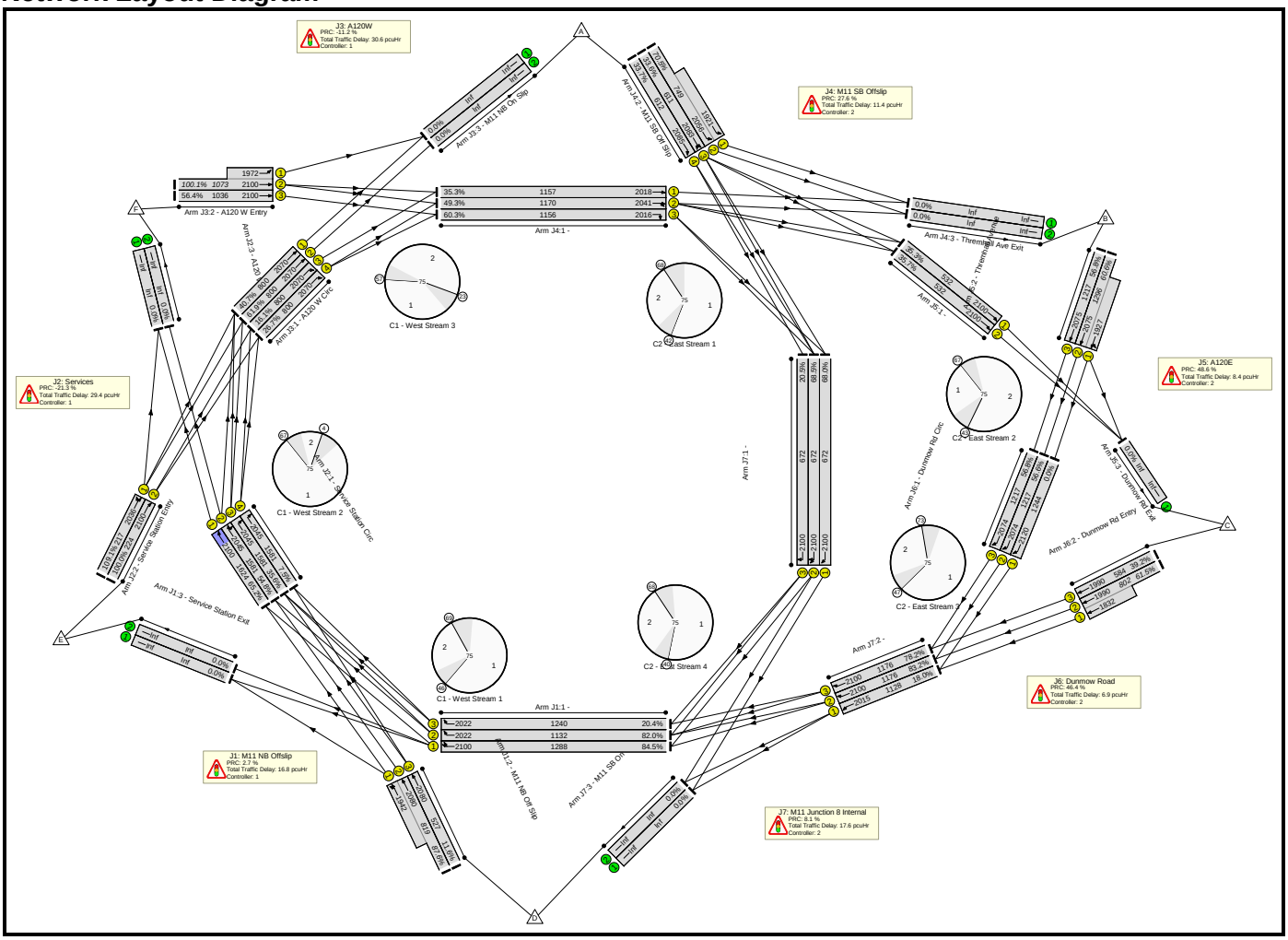
M11 J8 Existing Layout Linsig Assessment

User and Project Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model - Existing Layout**
Location:	M11 J8 Essex
File name:	M11 J8 Network - Existing Layout.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Based on May 2012 surveys.

Scenario 1: '2012 AM Existing' (FG1: '2012 AM Existing', Plan 1: 'AM Existing')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**109.1%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**87.6%**	-
1/1	Ahead Right	U	C1:A		1	45	-	1088	2100	1288	84.5%	12.0
1/2	Right	U	C1:A		1	45	-	929	2022	1132	82.0%	8.0
1/3	Right	U	C1:A		1	45	-	253	2022	1240	20.4%	0.5
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	18	-	718	2080:1942	819	87.6%	11.4
2/3	M11 NB Off Slip Ahead	U	C1:B		1	18	-	61	2080	527	11.6%	1.0
J2: Services	-	-	-		-	-	-	-	-	-	**109.1%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	1059	2100	1624	65.2%	7.6
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	867	2045	1581	54.8%	1.9
1/3	Service Station Circ Right	U	C1:C		1	57	-	563	2045	1581	35.6%	0.6
1/4	Service Station Circ Right	U	C1:C		1	57	-	119	2045	1581	7.5%	0.2
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	237	2036	217	109.1%	19.5
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	224	2100	224	100.0%	12.1
J3: A120W	-	-	-		-	-	-	-	-	-	**100.1%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	28	-	340	2070	800	40.7%	5.2
1/2	A120 W Circ Ahead	U	C1:E		1	28	-	497	2070	800	61.9%	5.6
1/3	A120 W Circ Right	U	C1:E		1	28	-	129	2070	800	16.1%	1.9
1/4	A120 W Circ Right	U	C1:E		1	28	-	214	2070	800	26.7%	4.6
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	36	-	1074	2100:1972	1073	100.1%	36.4
2/3	A120 W Entry Ahead	U	C1:F		1	36	-	584	2100	1036	56.4%	9.1
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**70.5%**	-

1/1	Ahead	U	C2:A		1	42	-	409	2018	1157	35.3%	2.3
1/2	Ahead Ahead2	U	C2:A		1	42	-	577	2041	1170	49.3%	2.4
1/3	Right	U	C2:A		1	42	-	697	2016	1156	60.3%	12.0
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	21	-	528	2056:1921	749	70.5%	8.3
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	21	-	205	2083	611	33.6%	3.6
2/4	M11 SB Off Slip Ahead	U	C2:B		1	21	-	206	2085	612	33.7%	3.6
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**60.6%**	**-**
1/1	Ahead	U	C2:C		1	18	-	188	2100	532	35.3%	3.8
1/2	Ahead	U	C2:C		1	18	-	190	2100	532	35.7%	3.9
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	46	-	785	2075:1927	1296	60.6%	9.6
2/3	Thremhall Avenue Ahead	U	C2:D		1	46	-	691	2075	1217	56.8%	9.5
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**61.5%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	43	-	0	2120	1244	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	43	-	689	2074	1217	56.6%	1.2
1/3	Dunmow Rd Circ Right	U	C2:E		1	43	-	691	2074	1217	56.8%	1.2
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	21	-	493	1990:1832	802	61.5%	5.8
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	21	-	229	1990	584	39.2%	4.1
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.2%**	**-**
1/1	Right	U	C2:H		1	23	-	457	2100	672	68.0%	10.5
1/2	Right Right2	U	C2:H		1	23	-	460	2100	672	68.5%	7.3
1/3	Right	U	C2:H		1	23	-	138	2100	672	20.5%	0.8
2/1	Ahead	U	C2:G		1	41	-	203	2015	1128	18.0%	4.1
2/2	Ahead	U	C2:G		1	41	-	979	2100	1176	83.2%	14.1
2/3	Ahead	U	C2:G		1	41	-	920	2100	1176	78.2%	10.1

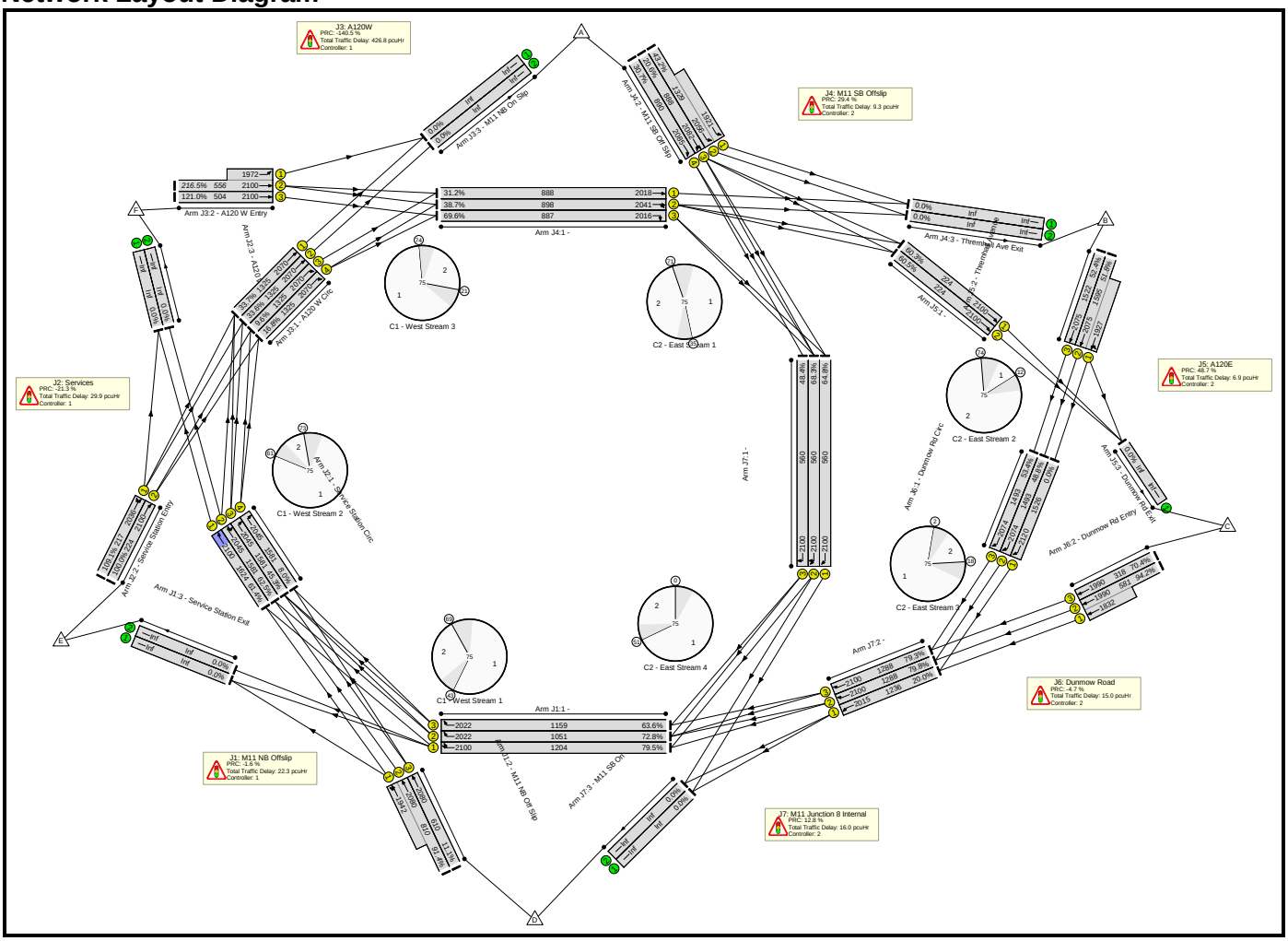
M11 J8 Existing Layout Linsig Assessment

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	2.7	Total Delay for Signalled Lanes (pcuHr):	16.80	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	-21.3	Total Delay for Signalled Lanes (pcuHr):	29.37	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	-11.2	Total Delay for Signalled Lanes (pcuHr):	30.61	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	27.6	Total Delay for Signalled Lanes (pcuHr):	11.40	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	48.6	Total Delay for Signalled Lanes (pcuHr):	8.37	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	46.4	Total Delay for Signalled Lanes (pcuHr):	6.94	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	8.1	Total Delay for Signalled Lanes (pcuHr):	17.64	Cycle Time (s):	75
		PRC Over All Lanes (%):	-21.3	Total Delay Over All Lanes(pcuHr):	121.12		

M11 J8 Existing Layout Linsig Assessment

Scenario 2: '2018 AM Base + Committed' (FG2: '2018 AM Base + Committed', Plan 1: 'AM Existing')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**216.5%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**91.4%**	-
1/1	Ahead Right	U	C1:A		1	42	-	959	2100	1204	79.5%	11.4
1/2	Right	U	C1:A		1	42	-	765	2022	1051	72.8%	13.8
1/3	Right	U	C1:A		1	42	-	737	2022	1159	63.6%	7.4
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	21	-	740	2080:1942	810	91.4%	14.3
2/3	M11 NB Off Slip Ahead	U	C1:B		1	21	-	68	2080	610	11.1%	1.1
J2: Services	-	-	-		-	-	-	-	-	-	**109.1%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	997	2100	1624	61.4%	6.8
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	988	2045	1581	62.5%	2.3
1/3	Service Station Circ Right	U	C1:C		1	57	-	716	2045	1581	45.3%	3.3
1/4	Service Station Circ Right	U	C1:C		1	57	-	126	2045	1581	8.0%	0.3
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	237	2036	217	109.1%	19.8
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	224	2100	224	100.0%	12.1
J3: A120W	-	-	-		-	-	-	-	-	-	**216.5%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	47	-	455	2070	1325	33.7%	5.7
1/2	A120 W Circ Ahead	U	C1:E		1	47	-	453	2070	1325	33.6%	5.7
1/3	A120 W Circ Right	U	C1:E		1	47	-	127	2070	1325	9.6%	1.2
1/4	A120 W Circ Right	U	C1:E		1	47	-	223	2070	1325	16.8%	2.6
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	17	-	1203	2100:1972	556	216.5%	365.9
2/3	A120 W Entry Ahead	U	C1:F		1	17	-	610	2100	504	121.0%	70.7
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**69.6%**	-

1/1	Ahead	U	C2:A		1	32	-	451	2018	888	31.2%	2.6
1/2	Ahead Ahead2	U	C2:A		1	32	-	624	2041	898	38.7%	2.6
1/3	Right	U	C2:A		1	32	-	723	2016	887	69.6%	4.6
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	31	-	574	2056:1921	1329	43.2%	4.5
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	31	-	183	2082	888	20.6%	2.5
2/4	M11 SB Off Slip Ahead	U	C2:B		1	31	-	273	2085	890	30.7%	3.9
J5: A120E	-	-	-		-	-	-	-	-	-	**60.5%**	-
1/1	Ahead	U	C2:C		1	7	-	198	2100	224	60.3%	2.8
1/2	Ahead	U	C2:C		1	7	-	198	2100	224	60.5%	2.8
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	57	-	826	2075:1927	1595	51.8%	6.6
2/3	Thremhall Avenue Ahead	U	C2:D		1	57	-	797	2075	1522	52.4%	7.6
J6: Dunmow Road	-	-	-		-	-	-	-	-	-	**94.2%**	-
1/1	Dunmow Rd Circ Right	U	C2:E		1	53	-	0	2120	1526	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	53	-	728	2074	1493	48.8%	1.2
1/3	Dunmow Rd Circ Right	U	C2:E		1	53	-	797	2074	1493	53.4%	1.3
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	11	-	547	1990:1832	581	94.2%	12.2
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	11	-	224	1990	318	70.4%	5.5
J7: M11 Junction 8 Internal	-	-	-		-	-	-	-	-	-	**79.8%**	-
1/1	Right	U	C2:H		1	19	-	422	2100	560	64.8%	8.5
1/2	Right Right2	U	C2:H		1	19	-	429	2100	560	68.3%	8.7
1/3	Right	U	C2:H		1	19	-	271	2100	560	48.4%	4.9
2/1	Ahead	U	C2:G		1	45	-	247	2015	1236	20.0%	0.1
2/2	Ahead	U	C2:G		1	45	-	1028	2100	1288	79.8%	14.9
2/3	Ahead	U	C2:G		1	45	-	1021	2100	1288	79.3%	14.2

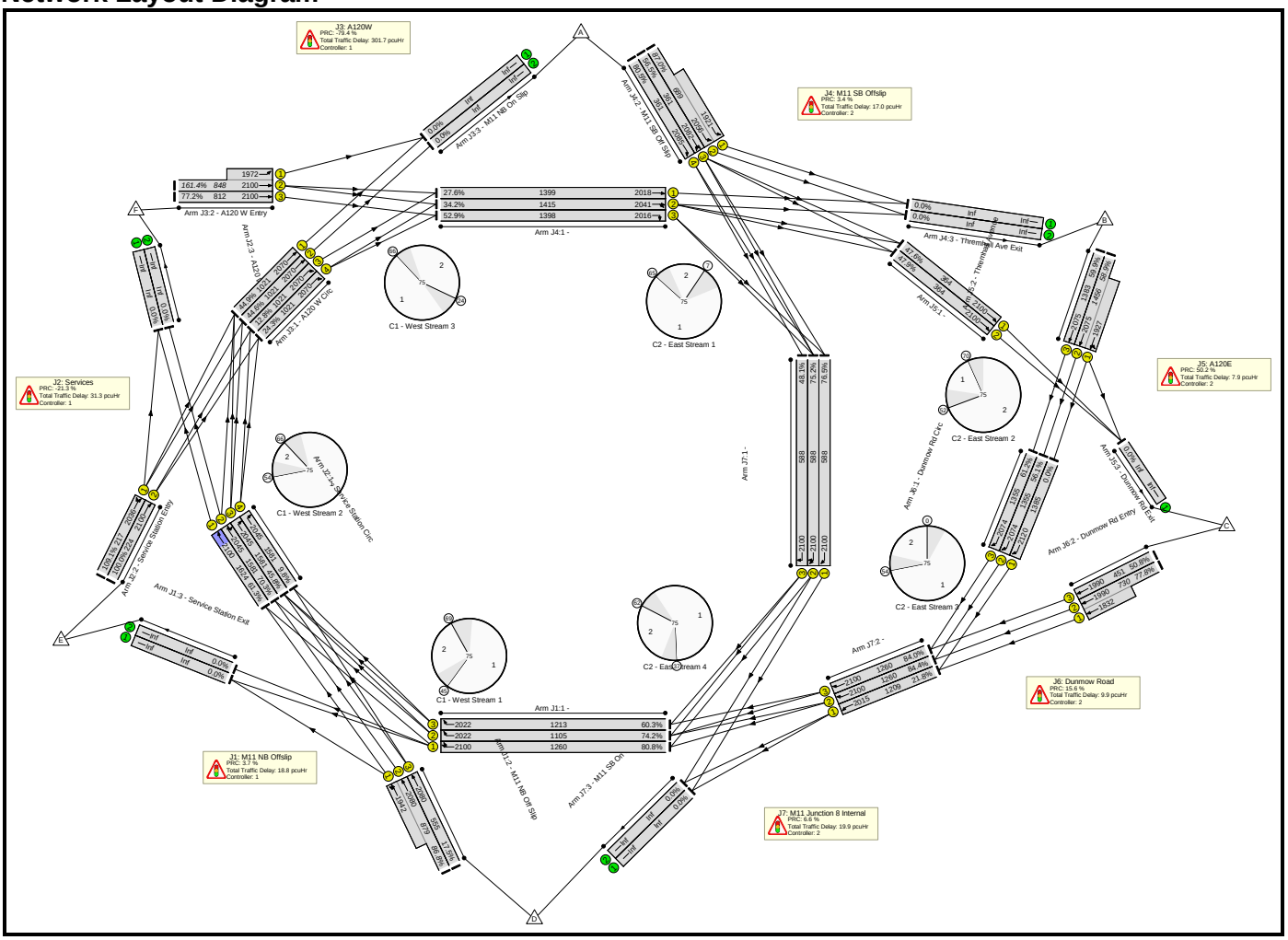
C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-1.6	Total Delay for Signalled Lanes (pcuHr):	22.29	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-21.3	Total Delay for Signalled Lanes (pcuHr):	29.86	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-140.5	Total Delay for Signalled Lanes (pcuHr):	426.76	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	29.4	Total Delay for Signalled Lanes (pcuHr):	9.31	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	48.7	Total Delay for Signalled Lanes (pcuHr):	6.94	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-4.7	Total Delay for Signalled Lanes (pcuHr):	15.03	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	12.8	Total Delay for Signalled Lanes (pcuHr):	16.04	Cycle Time (s):	75
	PRC Over All Lanes (%):	-140.5	Total Delay Over All Lanes(pcuHr):	526.22		

M11 J8 Existing Layout Linsig Assessment

M11 J8 Existing Layout Linsig Assessment

Scenario 3: '2018 AM Base + Committed + ULP' (FG3: '2018 AM Base + Committed + ULP', Plan 1: 'AM Existing')

Network Layout Diagram



M11 J8 Existing Layout Linsig Assessment

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**161.4%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**86.8%**	-
1/1	Ahead Right	U	C1:A		1	44	-	1018	2100	1260	80.8%	12.0
1/2	Right	U	C1:A		1	44	-	820	2022	1105	74.2%	13.6
1/3	Right	U	C1:A		1	44	-	732	2022	1213	60.3%	2.3
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	19	-	763	2080:1942	879	86.8%	11.3
2/3	M11 NB Off Slip Ahead	U	C1:B		1	19	-	97	2080	555	17.5%	1.6
J2: Services	-	-	-		-	-	-	-	-	-	**109.1%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	996	2100	1624	61.3%	5.4
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	1112	2045	1581	70.3%	8.4
1/3	Service Station Circ Right	U	C1:C		1	57	-	725	2045	1581	45.8%	0.5
1/4	Service Station Circ Right	U	C1:C		1	57	-	155	2045	1581	9.8%	2.0
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	237	2036	217	109.1%	19.5
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	224	2100	224	100.0%	12.1
J3: A120W	-	-	-		-	-	-	-	-	-	**161.4%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	36	-	466	2070	1021	44.9%	6.0
1/2	A120 W Circ Ahead	U	C1:E		1	36	-	463	2070	1021	44.6%	5.9
1/3	A120 W Circ Right	U	C1:E		1	36	-	131	2070	1021	12.8%	1.7
1/4	A120 W Circ Right	U	C1:E		1	36	-	248	2070	1021	24.3%	4.7
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	28	-	1369	2100:1972	848	161.4%	300.2
2/3	A120 W Entry Ahead	U	C1:F		1	28	-	627	2100	812	77.2%	13.0
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**87.0%**	-

1/1	Ahead	U	C2:A		1	51	-	544	2018	1399	27.6%	1.5
1/2	Ahead Ahead2	U	C2:A		1	51	-	699	2041	1415	34.2%	2.1
1/3	Right	U	C2:A		1	51	-	740	2016	1398	52.9%	13.7
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	12	-	600	2056:1921	689	87.0%	9.4
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	12	-	204	2082	361	56.5%	4.5
2/4	M11 SB Off Slip Ahead	U	C2:B		1	12	-	291	2085	361	80.5%	7.8
J5: A120E	-	-	-		-	-	-	-	-	-	**59.9%**	-
1/1	Ahead	U	C2:C		1	12	-	220	2100	364	47.6%	4.0
1/2	Ahead	U	C2:C		1	12	-	221	2100	364	47.9%	4.0
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	52	-	858	2075:1927	1456	58.9%	8.9
2/3	Thremhall Avenue Ahead	U	C2:D		1	52	-	829	2075	1383	59.9%	10.2
J6: Dunmow Road	-	-	-		-	-	-	-	-	-	**77.8%**	-
1/1	Dunmow Rd Circ Right	U	C2:E		1	48	-	0	2120	1385	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	48	-	760	2074	1355	56.1%	1.4
1/3	Dunmow Rd Circ Right	U	C2:E		1	48	-	829	2074	1355	61.2%	1.9
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	16	-	568	1990:1832	730	77.8%	7.5
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	16	-	229	1990	451	50.8%	4.6
J7: M11 Junction 8 Internal	-	-	-		-	-	-	-	-	-	**84.4%**	-
1/1	Right	U	C2:H		1	20	-	450	2100	588	76.5%	9.9
1/2	Right Right2	U	C2:H		1	20	-	442	2100	588	75.2%	10.5
1/3	Right	U	C2:H		1	20	-	283	2100	588	48.1%	6.4
2/1	Ahead	U	C2:G		1	44	-	264	2015	1209	21.8%	0.3
2/2	Ahead	U	C2:G		1	44	-	1064	2100	1260	84.4%	14.9
2/3	Ahead	U	C2:G		1	44	-	1058	2100	1260	84.0%	13.5

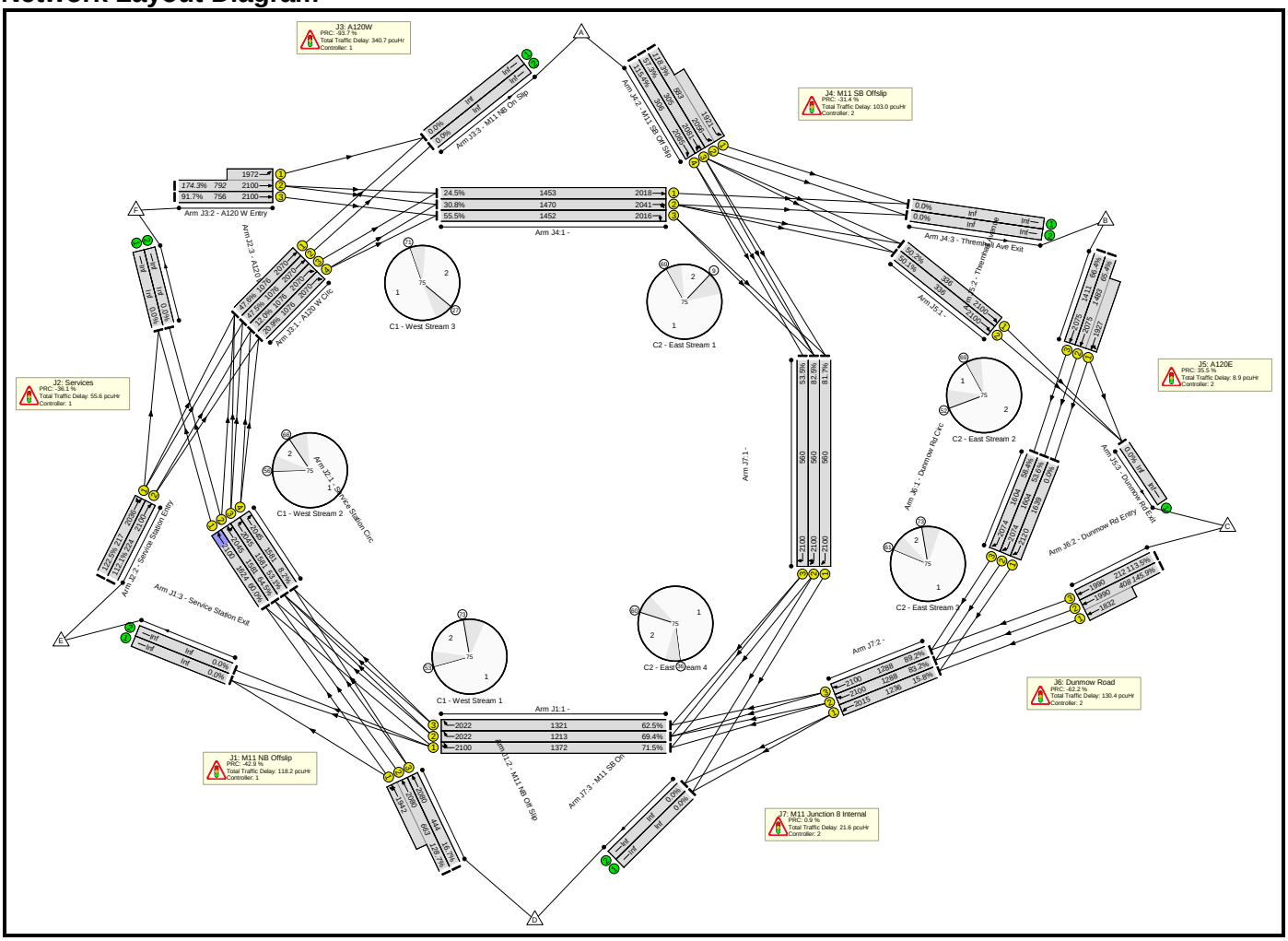
C1 - West	Stream: 1 PRC for Signalled Lanes (%):	3.7	Total Delay for Signalled Lanes (pcuHr):	18.81	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-21.3	Total Delay for Signalled Lanes (pcuHr):	31.33	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-79.4	Total Delay for Signalled Lanes (pcuHr):	301.69	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	3.4	Total Delay for Signalled Lanes (pcuHr):	16.99	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	50.2	Total Delay for Signalled Lanes (pcuHr):	7.94	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	15.6	Total Delay for Signalled Lanes (pcuHr):	9.92	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	6.6	Total Delay for Signalled Lanes (pcuHr):	19.87	Cycle Time (s): 75
	PRC Over All Lanes (%):	-79.4	Total Delay Over All Lanes(pcuHr):	406.55	

M11 J8 Existing Layout Linsig Assessment

M11 J8 Existing Layout Linsig Assessment

Scenario 4: '2031 AM Base + Committed' (FG4: '2031 AM Base + Committed', Plan 1: 'AM Existing')

Network Layout Diagram



M11 J8 Existing Layout Linsig Assessment

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**174.3%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**128.7%**	-
1/1	Ahead Right	U	C1:A		1	48	-	1090	2100	1372	71.5%	11.8
1/2	Right	U	C1:A		1	48	-	902	2022	1213	69.4%	13.0
1/3	Right	U	C1:A		1	48	-	844	2022	1321	62.5%	3.2
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	15	-	853	2080:1942	663	128.7%	115.7
2/3	M11 NB Off Slip Ahead	U	C1:B		1	15	-	74	2080	444	16.7%	1.4
J2: Services	-	-	-		-	-	-	-	-	-	**122.5%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	1130	2100	1624	60.0%	6.2
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	1149	2045	1581	64.5%	6.9
1/3	Service Station Circ Right	U	C1:C		1	57	-	853	2045	1581	53.1%	1.0
1/4	Service Station Circ Right	U	C1:C		1	57	-	138	2045	1581	8.2%	1.5
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	266	2036	217	122.5%	34.2
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	251	2100	224	112.1%	23.2
J3: A120W	-	-	-		-	-	-	-	-	-	**174.3%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	38	-	537	2070	1076	47.6%	6.2
1/2	A120 W Circ Ahead	U	C1:E		1	38	-	537	2070	1076	47.5%	6.2
1/3	A120 W Circ Right	U	C1:E		1	38	-	146	2070	1076	12.0%	1.3
1/4	A120 W Circ Right	U	C1:E		1	38	-	243	2070	1076	20.9%	3.1
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	26	-	1381	2100:1972	792	174.3%	335.7
2/3	A120 W Entry Ahead	U	C1:F		1	26	-	693	2100	756	91.7%	18.4
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**118.3%**	-

1/1	Ahead	U	C2:A		1	53	-	540	2018	1453	24.5%	1.4
1/2	Ahead Ahead2	U	C2:A		1	53	-	711	2041	1470	30.8%	1.0
1/3	Right	U	C2:A		1	53	-	819	2016	1452	55.5%	16.0
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	10	-	690	2056:1921	583	118.3%	65.0
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	10	-	175	2081	305	57.3%	4.0
2/4	M11 SB Off Slip Ahead	U	C2:B		1	10	-	353	2085	306	115.4%	35.2
J5: A120E	-	-	-		-	-	-	-	-	-	**66.4%**	-
1/1	Ahead	U	C2:C		1	11	-	230	2100	336	50.2%	3.9
1/2	Ahead	U	C2:C		1	11	-	229	2100	336	50.1%	3.9
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	53	-	969	2075:1927	1483	65.4%	10.5
2/3	Thremhall Avenue Ahead	U	C2:D		1	53	-	937	2075	1411	66.4%	12.2
J6: Dunmow Road	-	-	-		-	-	-	-	-	-	**145.9%**	-
1/1	Dunmow Rd Circ Right	U	C2:E		1	57	-	0	2120	1639	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	57	-	859	2074	1604	53.6%	1.7
1/3	Dunmow Rd Circ Right	U	C2:E		1	57	-	937	2074	1604	58.4%	3.6
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	7	-	595	1990:1832	408	145.9%	109.3
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	7	-	241	1990	212	113.5%	23.9
J7: M11 Junction 8 Internal	-	-	-		-	-	-	-	-	-	**89.2%**	-
1/1	Right	U	C2:H		1	19	-	469	2100	560	81.7%	10.4
1/2	Right Right2	U	C2:H		1	19	-	465	2100	560	82.5%	11.2
1/3	Right	U	C2:H		1	19	-	346	2100	560	53.5%	6.8
2/1	Ahead	U	C2:G		1	45	-	271	2015	1236	15.8%	0.1
2/2	Ahead	U	C2:G		1	45	-	1183	2100	1288	83.2%	14.4
2/3	Ahead	U	C2:G		1	45	-	1178	2100	1288	89.2%	16.6

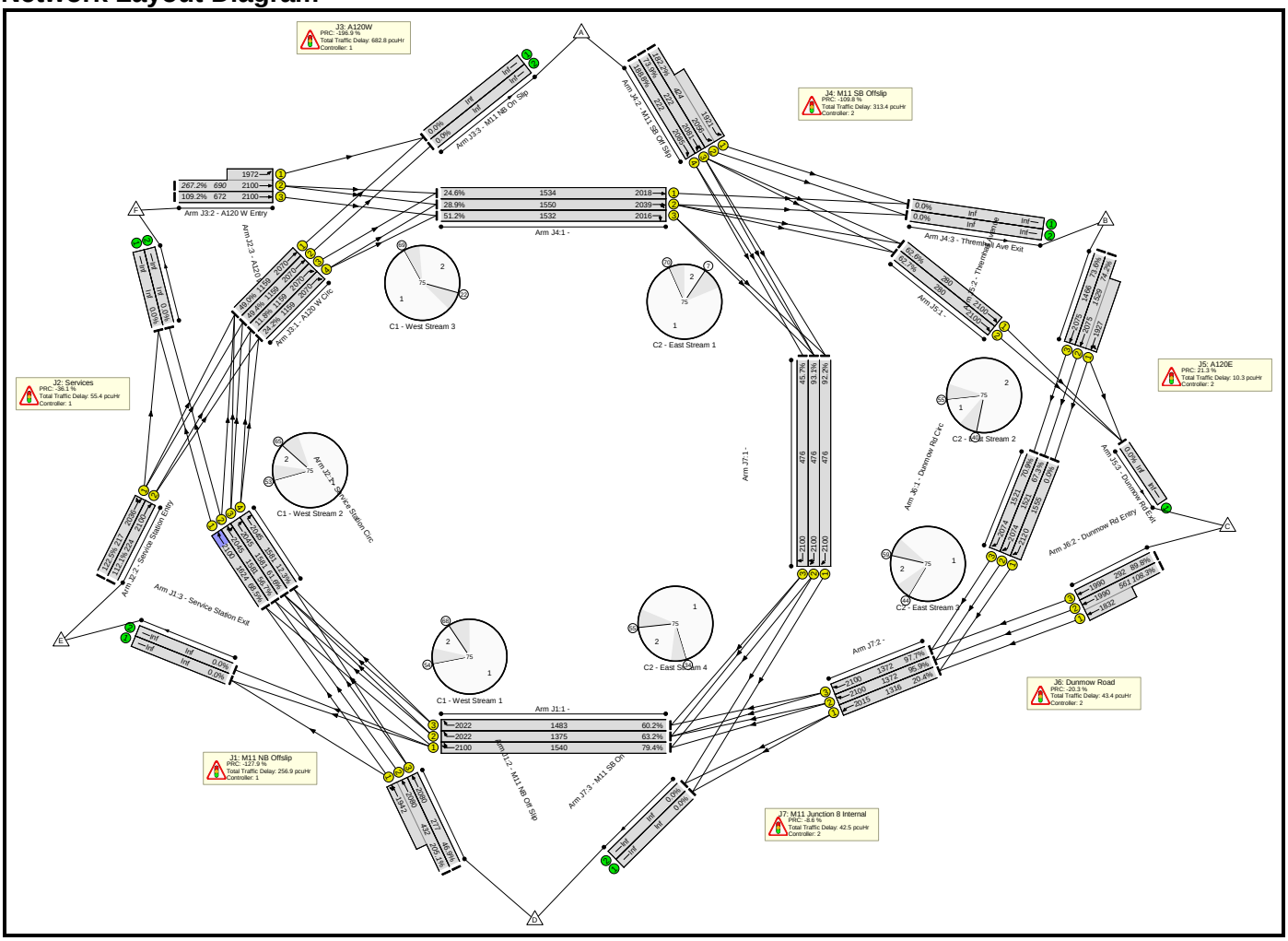
C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-42.9	Total Delay for Signalled Lanes (pcuHr):	118.17	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-36.1	Total Delay for Signalled Lanes (pcuHr):	55.62	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-93.7	Total Delay for Signalled Lanes (pcuHr):	340.69	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-31.4	Total Delay for Signalled Lanes (pcuHr):	103.01	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	35.5	Total Delay for Signalled Lanes (pcuHr):	8.87	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-62.2	Total Delay for Signalled Lanes (pcuHr):	130.36	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	0.9	Total Delay for Signalled Lanes (pcuHr):	21.64	Cycle Time (s):	75
	PRC Over All Lanes (%):	-93.7	Total Delay Over All Lanes(pcuHr):	778.35		

M11 J8 Existing Layout Linsig Assessment

M11 J8 Existing Layout Linsig Assessment

Scenario 5: '2031 AM Base + Committed + ULP' (FG5: '2031 AM Base + Committed + ULP', Plan 1: 'AM Existing')

Network Layout Diagram



M11 J8 Existing Layout Linsig Assessment

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**267.2%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**205.1%**	-
1/1	Ahead Right	U	C1:A		1	54	-	1251	2100	1540	79.4%	7.2
1/2	Right	U	C1:A		1	54	-	1064	2022	1375	63.2%	8.8
1/3	Right	U	C1:A		1	54	-	893	2022	1483	60.2%	2.5
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	9	-	885	2080:1942	432	205.1%	257.2
2/3	M11 NB Off Slip Ahead	U	C1:B		1	9	-	130	2080	277	46.9%	2.9
J2: Services	-	-	-		-	-	-	-	-	-	**122.5%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	1289	2100	1624	68.5%	5.0
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	1272	2045	1581	56.7%	6.5
1/3	Service Station Circ Right	U	C1:C		1	57	-	975	2045	1581	61.6%	1.5
1/4	Service Station Circ Right	U	C1:C		1	57	-	194	2045	1581	12.3%	2.7
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	266	2036	217	122.5%	33.9
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	251	2100	224	112.1%	23.0
J3: A120W	-	-	-		-	-	-	-	-	-	**267.2%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	41	-	589	2070	1159	49.0%	6.2
1/2	A120 W Circ Ahead	U	C1:E		1	41	-	590	2070	1159	49.4%	6.3
1/3	A120 W Circ Right	U	C1:E		1	41	-	146	2070	1159	11.8%	1.5
1/4	A120 W Circ Right	U	C1:E		1	41	-	299	2070	1159	24.2%	3.9
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	23	-	1843	2100:1972	690	267.2%	649.0
2/3	A120 W Entry Ahead	U	C1:F		1	23	-	734	2100	672	109.2%	52.7
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**188.8%**	-

1/1	Ahead	U	C2:A		1	56	-	786	2018	1534	24.6%	1.6
1/2	Ahead Ahead2	U	C2:A		1	56	-	921	2039	1550	28.9%	1.1
1/3	Right	U	C2:A		1	56	-	860	2016	1532	51.2%	16.3
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	7	-	773	2056:1921	424	182.2%	194.3
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	7	-	164	2081	222	73.9%	4.6
2/4	M11 SB Off Slip Ahead	U	C2:B		1	7	-	420	2085	222	188.8%	115.7
J5: A120E	-	-	-		-	-	-	-	-	-	**74.2%**	-
1/1	Ahead	U	C2:C		1	9	-	271	2100	280	62.6%	4.0
1/2	Ahead	U	C2:C		1	9	-	271	2100	280	62.7%	4.0
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	55	-	1134	2075:1927	1529	74.2%	13.9
2/3	Thremhall Avenue Ahead	U	C2:D		1	55	-	1079	2075	1466	73.6%	14.9
J6: Dunmow Road	-	-	-		-	-	-	-	-	-	**108.3%**	-
1/1	Dunmow Rd Circ Right	U	C2:E		1	54	-	0	2120	1555	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	54	-	1024	2074	1521	67.3%	5.1
1/3	Dunmow Rd Circ Right	U	C2:E		1	54	-	1079	2074	1521	70.9%	6.4
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	10	-	607	1990:1832	561	108.3%	36.4
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	10	-	262	1990	292	89.8%	8.9
J7: M11 Junction 8 Internal	-	-	-		-	-	-	-	-	-	**97.7%**	-
1/1	Right	U	C2:H		1	16	-	482	2100	476	92.2%	13.2
1/2	Right Right2	U	C2:H		1	16	-	480	2100	476	93.1%	14.0
1/3	Right	U	C2:H		1	16	-	411	2100	476	45.7%	5.0
2/1	Ahead	U	C2:G		1	48	-	291	2015	1316	20.4%	4.7
2/2	Ahead	U	C2:G		1	48	-	1340	2100	1372	95.9%	34.8
2/3	Ahead	U	C2:G		1	48	-	1341	2100	1372	97.7%	39.1

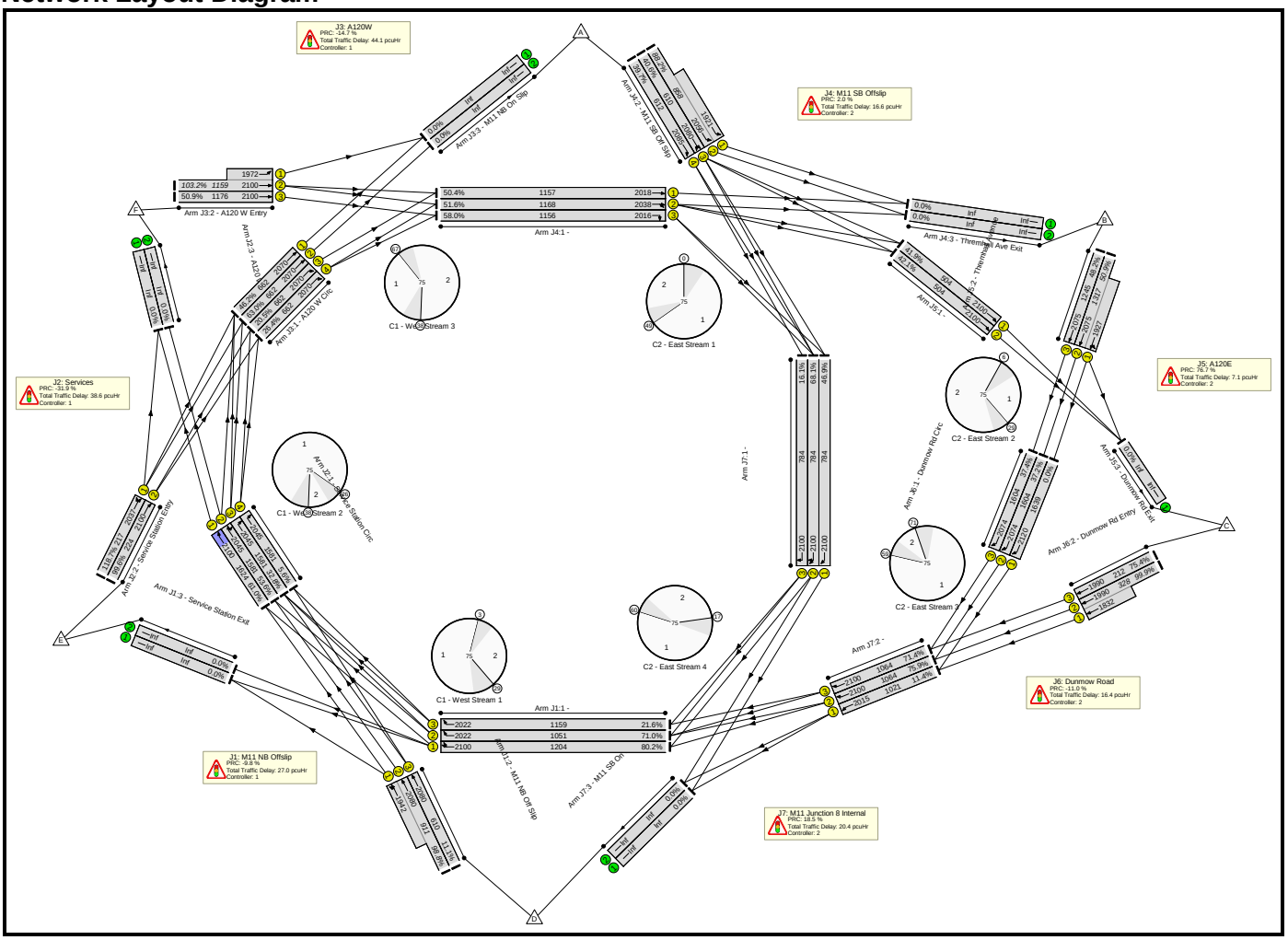
C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-127.9	Total Delay for Signalled Lanes (pcuHr):	256.91	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-36.1	Total Delay for Signalled Lanes (pcuHr):	55.43	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-196.9	Total Delay for Signalled Lanes (pcuHr):	682.85	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-109.8	Total Delay for Signalled Lanes (pcuHr):	313.44	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	21.3	Total Delay for Signalled Lanes (pcuHr):	10.31	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-20.3	Total Delay for Signalled Lanes (pcuHr):	43.42	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-8.6	Total Delay for Signalled Lanes (pcuHr):	42.46	Cycle Time (s): 75
	PRC Over All Lanes (%):	-196.9	Total Delay Over All Lanes(pcuHr):	1404.82	

M11 J8 Existing Layout Linsig Assessment

M11 J8 Existing Layout Linsig Assessment

Scenario 6: '2012 PM Existing' (FG6: '2012 PM Existing', Plan 2: 'PM Existing')

Network Layout Diagram



M11 J8 Existing Layout Linsig Assessment

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**118.7%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**98.8%**	-
1/1	Ahead Right	U	C1:A		1	42	-	966	2100	1204	80.2%	18.5
1/2	Right	U	C1:A		1	42	-	746	2022	1051	71.0%	12.0
1/3	Right	U	C1:A		1	42	-	250	2022	1159	21.6%	0.4
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	21	-	900	2080:1942	911	98.8%	24.3
2/3	M11 NB Off Slip Ahead	U	C1:B		1	21	-	68	2080	610	11.1%	1.1
J2: Services	-	-	-		-	-	-	-	-	-	**118.7%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	990	2100	1624	61.0%	4.6
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	848	2045	1581	53.6%	3.5
1/3	Service Station Circ Right	U	C1:C		1	57	-	519	2045	1581	32.8%	0.7
1/4	Service Station Circ Right	U	C1:C		1	57	-	88	2045	1581	5.6%	0.2
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	258	2037	217	118.7%	29.4
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	223	2100	224	99.6%	11.8
J3: A120W	-	-	-		-	-	-	-	-	-	**103.2%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	23	-	340	2070	662	46.2%	5.7
1/2	A120 W Circ Ahead	U	C1:E		1	23	-	417	2070	662	63.0%	5.9
1/3	A120 W Circ Right	U	C1:E		1	23	-	136	2070	662	20.5%	2.5
1/4	A120 W Circ Right	U	C1:E		1	23	-	175	2070	662	26.4%	3.7
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	41	-	1196	2100:1972	1159	103.2%	54.5
2/3	A120 W Entry Ahead	U	C1:F		1	41	-	599	2100	1176	50.9%	8.2
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**88.2%**	-

1/1	Ahead	U	C2:A		1	42	-	597	2018	1157	50.4%	4.4
1/2	Ahead Ahead2	U	C2:A		1	42	-	619	2038	1168	51.6%	3.6
1/3	Right	U	C2:A		1	42	-	670	2016	1156	58.0%	9.1
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	21	-	757	2056:1921	858	88.2%	12.8
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	21	-	248	2080	610	40.6%	4.5
2/4	M11 SB Off Slip Ahead	U	C2:B		1	21	-	243	2085	612	39.7%	4.3
J5: A120E	-	-	-		-	-	-	-	-	-	**50.9%**	-
1/1	Ahead	U	C2:C		1	17	-	214	2100	504	41.9%	4.0
1/2	Ahead	U	C2:C		1	17	-	215	2100	504	42.1%	4.0
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	47	-	671	2075:1927	1317	50.9%	7.5
2/3	Thremhall Avenue Ahead	U	C2:D		1	47	-	600	2075	1245	48.2%	7.5
J6: Dunmow Road	-	-	-		-	-	-	-	-	-	**99.9%**	-
1/1	Dunmow Rd Circ Right	U	C2:E		1	57	-	0	2120	1639	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	57	-	596	2074	1604	37.2%	4.1
1/3	Dunmow Rd Circ Right	U	C2:E		1	57	-	600	2074	1604	37.4%	4.1
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	7	-	328	1990:1832	328	99.9%	13.3
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	7	-	160	1990	212	75.4%	4.7
J7: M11 Junction 8 Internal	-	-	-		-	-	-	-	-	-	**75.9%**	-
1/1	Right	U	C2:H		1	27	-	368	2100	784	46.9%	8.1
1/2	Right Right2	U	C2:H		1	27	-	534	2100	784	68.1%	11.6
1/3	Right	U	C2:H		1	27	-	126	2100	784	16.1%	0.2
2/1	Ahead	U	C2:G		1	37	-	116	2015	1021	11.4%	2.5
2/2	Ahead	U	C2:G		1	37	-	808	2100	1064	75.9%	13.8
2/3	Ahead	U	C2:G		1	37	-	760	2100	1064	71.4%	11.8

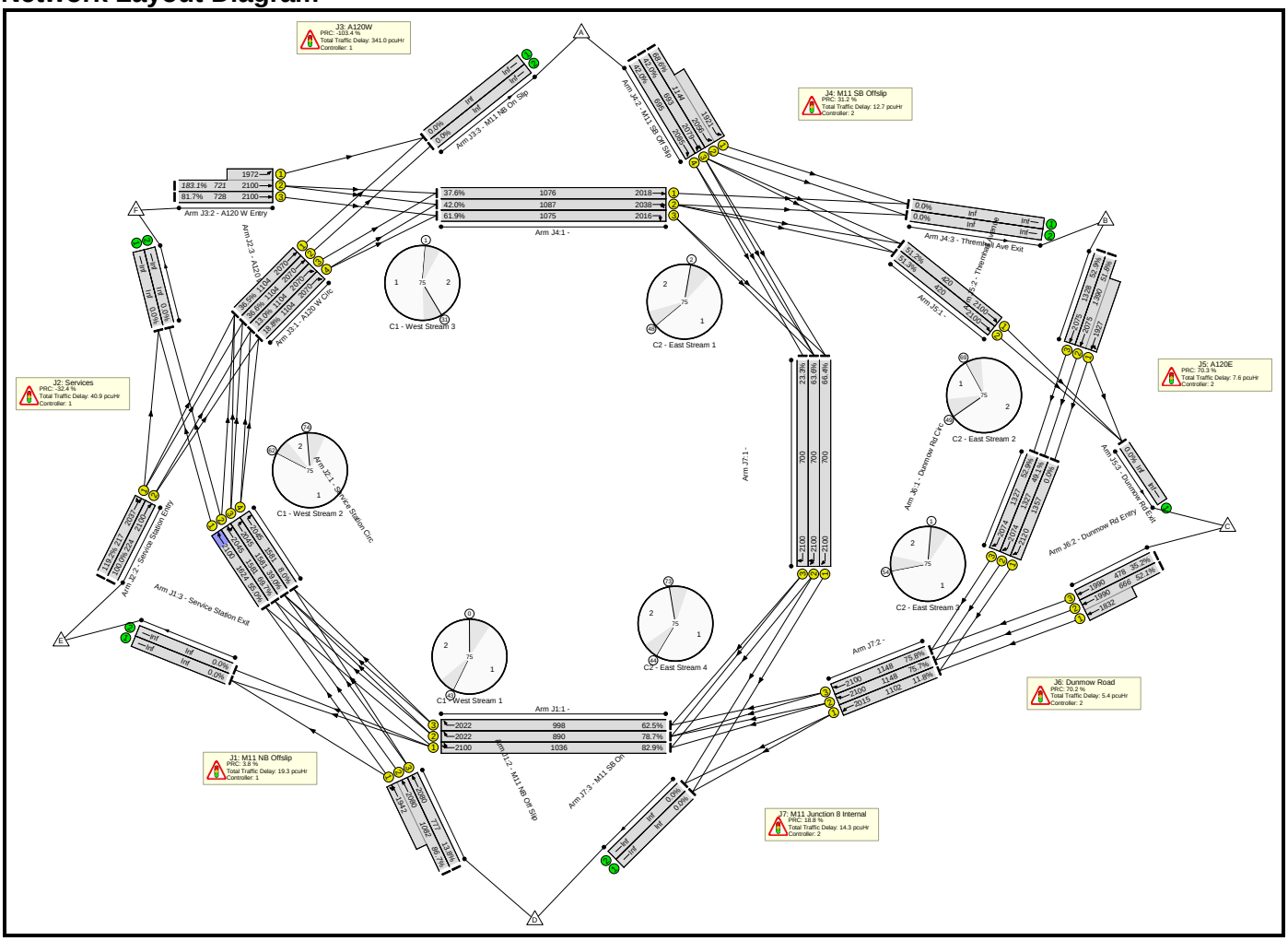
C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-9.8	Total Delay for Signalled Lanes (pcuHr):	27.00	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-31.9	Total Delay for Signalled Lanes (pcuHr):	38.61	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-14.7	Total Delay for Signalled Lanes (pcuHr):	44.10	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	2.0	Total Delay for Signalled Lanes (pcuHr):	16.62	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	76.7	Total Delay for Signalled Lanes (pcuHr):	7.09	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-11.0	Total Delay for Signalled Lanes (pcuHr):	16.36	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	18.5	Total Delay for Signalled Lanes (pcuHr):	20.43	Cycle Time (s):	75
	PRC Over All Lanes (%):	-31.9	Total Delay Over All Lanes(pcuHr):	170.21		

M11 J8 Existing Layout Linsig Assessment

M11 J8 Existing Layout Linsig Assessment

Scenario 7: '2018 PM Base + Committed' (FG7: '2018 PM Base + Committed', Plan 2: 'PM Existing')

Network Layout Diagram



M11 J8 Existing Layout Linsig Assessment

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**183.1%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**86.7%**	-
1/1	Ahead Right	U	C1:A		1	36	-	859	2100	1036	82.9%	13.5
1/2	Right	U	C1:A		1	36	-	700	2022	890	78.7%	11.0
1/3	Right	U	C1:A		1	36	-	623	2022	998	62.5%	3.7
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	27	-	938	2080:1942	1082	86.7%	12.6
2/3	M11 NB Off Slip Ahead	U	C1:B		1	27	-	107	2080	777	13.8%	1.5
J2: Services	-	-	-		-	-	-	-	-	-	**119.2%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	894	2100	1624	55.0%	4.4
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	1102	2045	1581	69.7%	5.0
1/3	Service Station Circ Right	U	C1:C		1	57	-	616	2045	1581	39.0%	0.3
1/4	Service Station Circ Right	U	C1:C		1	57	-	127	2045	1581	8.0%	0.6
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	259	2037	217	119.2%	30.6
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	224	2100	224	100.0%	12.1
J3: A120W	-	-	-		-	-	-	-	-	-	**183.1%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	39	-	422	2070	1104	36.5%	5.6
1/2	A120 W Circ Ahead	U	C1:E		1	39	-	421	2070	1104	36.6%	5.7
1/3	A120 W Circ Right	U	C1:E		1	39	-	143	2070	1104	13.0%	1.7
1/4	A120 W Circ Right	U	C1:E		1	39	-	208	2070	1104	18.8%	1.9
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	25	-	1319	2100:1972	721	183.1%	340.3
2/3	A120 W Entry Ahead	U	C1:F		1	25	-	595	2100	728	81.7%	13.4
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**68.6%**	-

1/1	Ahead	U	C2:A		1	39	-	622	2018	1076	37.6%	2.6
1/2	Ahead Ahead2	U	C2:A		1	39	-	721	2038	1087	42.0%	3.1
1/3	Right	U	C2:A		1	39	-	666	2016	1075	61.9%	5.3
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	24	-	785	2056:1921	1144	68.6%	8.1
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	24	-	291	2079	693	42.0%	5.0
2/4	M11 SB Off Slip Ahead	U	C2:B		1	24	-	292	2085	695	42.0%	5.1
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**52.9%**	**-**
1/1	Ahead	U	C2:C		1	14	-	264	2100	420	51.2%	3.7
1/2	Ahead	U	C2:C		1	14	-	264	2100	420	51.3%	3.7
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	50	-	720	2075:1927	1390	51.8%	7.6
2/3	Thremhall Avenue Ahead	U	C2:D		1	50	-	702	2075	1328	52.9%	8.4
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**52.9%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	47	-	0	2120	1357	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	47	-	652	2074	1327	49.1%	2.2
1/3	Dunmow Rd Circ Right	U	C2:E		1	47	-	702	2074	1327	52.9%	2.3
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	17	-	347	1990:1832	666	52.1%	4.3
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	17	-	168	1990	478	35.2%	3.2
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.8%**	**-**
1/1	Right	U	C2:H		1	24	-	465	2100	700	66.4%	10.5
1/2	Right Right2	U	C2:H		1	24	-	445	2100	700	63.6%	7.0
1/3	Right	U	C2:H		1	24	-	163	2100	700	23.3%	1.3
2/1	Ahead	U	C2:G		1	40	-	130	2015	1102	11.8%	2.6
2/2	Ahead	U	C2:G		1	40	-	869	2100	1148	75.7%	15.0
2/3	Ahead	U	C2:G		1	40	-	870	2100	1148	75.8%	11.5

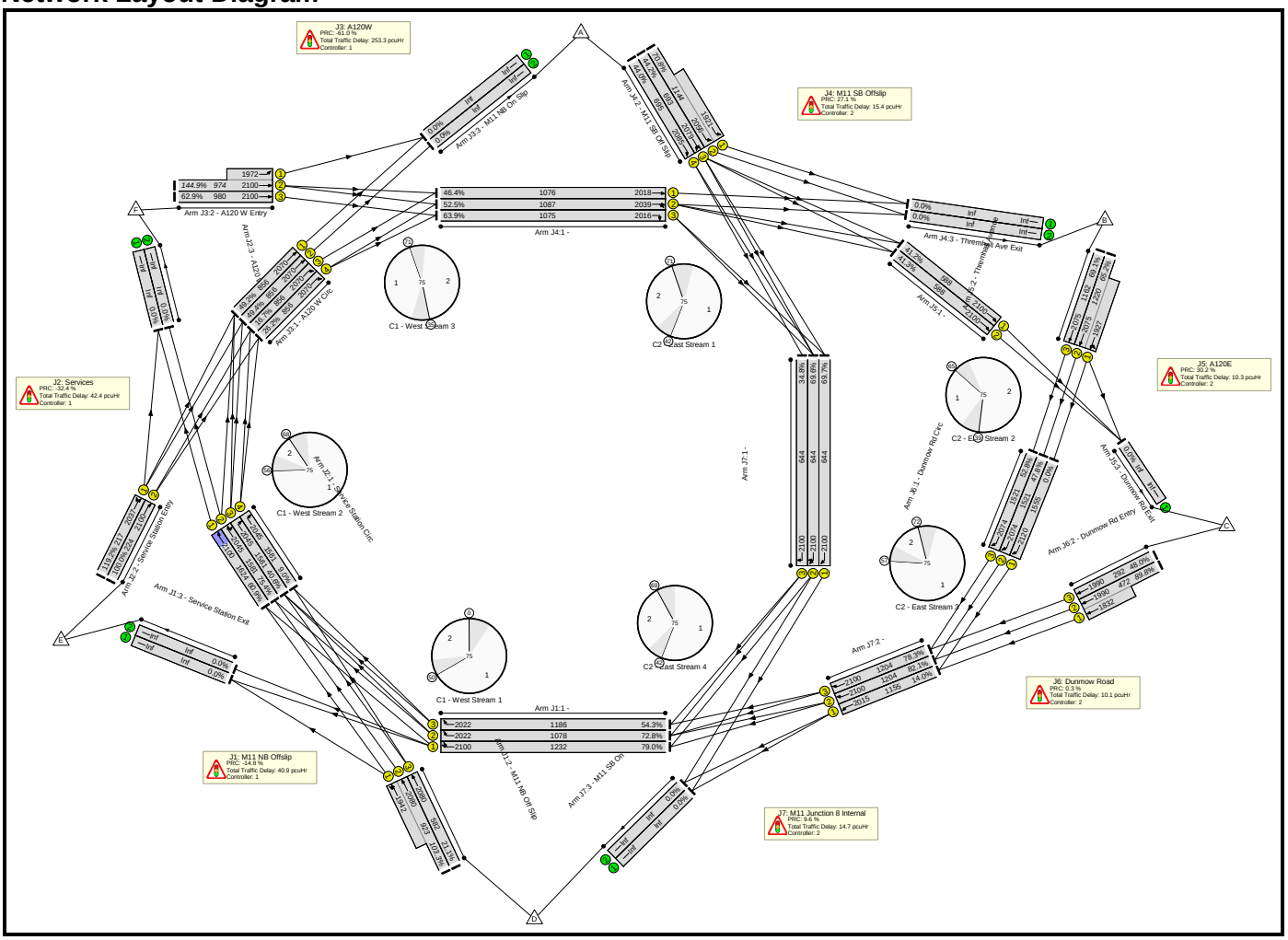
C1 - West	Stream: 1 PRC for Signalled Lanes (%):	3.8	Total Delay for Signalled Lanes (pcuHr):	19.32	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-32.4	Total Delay for Signalled Lanes (pcuHr):	40.91	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-103.4	Total Delay for Signalled Lanes (pcuHr):	341.04	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	31.2	Total Delay for Signalled Lanes (pcuHr):	12.66	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	70.3	Total Delay for Signalled Lanes (pcuHr):	7.58	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	70.2	Total Delay for Signalled Lanes (pcuHr):	5.39	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	18.8	Total Delay for Signalled Lanes (pcuHr):	14.32	Cycle Time (s): 75
	PRC Over All Lanes (%):	-103.4	Total Delay Over All Lanes(pcuHr):	441.22	

M11 J8 Existing Layout Linsig Assessment

M11 J8 Existing Layout Linsig Assessment

Scenario 8: '2018 PM Base + Committed + ULP' (FG8: '2018 PM Base + Committed + ULP', Plan 2: 'PM Existing')

Network Layout Diagram



M11 J8 Existing Layout Linsig Assessment

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**144.9%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**103.3%**	-
1/1	Ahead Right	U	C1:A		1	43	-	973	2100	1232	79.0%	15.9
1/2	Right	U	C1:A		1	43	-	785	2022	1078	72.8%	10.6
1/3	Right	U	C1:A		1	43	-	644	2022	1186	54.3%	1.7
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	20	-	954	2080:1942	923	103.3%	37.6
2/3	M11 NB Off Slip Ahead	U	C1:B		1	20	-	123	2080	582	21.1%	2.1
J2: Services	-	-	-		-	-	-	-	-	-	**119.2%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	999	2100	1624	60.9%	7.0
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	1207	2045	1581	75.4%	10.6
1/3	Service Station Circ Right	U	C1:C		1	57	-	642	2045	1581	40.6%	0.6
1/4	Service Station Circ Right	U	C1:C		1	57	-	143	2045	1581	9.0%	2.4
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	259	2037	217	119.2%	30.4
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	224	2100	224	100.0%	12.1
J3: A120W	-	-	-		-	-	-	-	-	-	**144.9%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	30	-	439	2070	856	49.2%	5.9
1/2	A120 W Circ Ahead	U	C1:E		1	30	-	440	2070	856	49.4%	5.9
1/3	A120 W Circ Right	U	C1:E		1	30	-	143	2070	856	16.7%	1.7
1/4	A120 W Circ Right	U	C1:E		1	30	-	224	2070	856	26.2%	3.7
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	34	-	1411	2100:1972	974	144.9%	258.6
2/3	A120 W Entry Ahead	U	C1:F		1	34	-	616	2100	980	62.9%	10.4
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**70.8%**	-

1/1	Ahead	U	C2:A		1	39	-	660	2018	1076	46.4%	4.5
1/2	Ahead Ahead2	U	C2:A		1	39	-	758	2039	1087	52.5%	5.3
1/3	Right	U	C2:A		1	39	-	687	2016	1075	63.9%	3.7
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	24	-	810	2056:1921	1144	70.8%	8.4
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	24	-	306	2079	693	44.2%	5.3
2/4	M11 SB Off Slip Ahead	U	C2:B		1	24	-	306	2085	695	44.0%	5.3
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**69.1%**	**-**
1/1	Ahead	U	C2:C		1	20	-	277	2100	588	41.2%	3.9
1/2	Ahead	U	C2:C		1	20	-	277	2100	588	41.3%	3.9
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	44	-	795	2075:1927	1220	65.2%	11.0
2/3	Thremhall Avenue Ahead	U	C2:D		1	44	-	803	2075	1162	69.1%	12.9
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.8%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	54	-	0	2120	1555	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	54	-	727	2074	1521	47.8%	2.2
1/3	Dunmow Rd Circ Right	U	C2:E		1	54	-	803	2074	1521	52.8%	4.0
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	10	-	424	1990:1832	472	89.8%	9.1
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	10	-	140	1990	292	48.0%	3.1
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.1%**	**-**
1/1	Right	U	C2:H		1	22	-	449	2100	644	69.7%	10.4
1/2	Right Right2	U	C2:H		1	22	-	448	2100	644	69.6%	7.4
1/3	Right	U	C2:H		1	22	-	224	2100	644	34.8%	1.6
2/1	Ahead	U	C2:G		1	42	-	162	2015	1155	14.0%	2.9
2/2	Ahead	U	C2:G		1	42	-	989	2100	1204	82.1%	13.3
2/3	Ahead	U	C2:G		1	42	-	943	2100	1204	78.3%	7.3

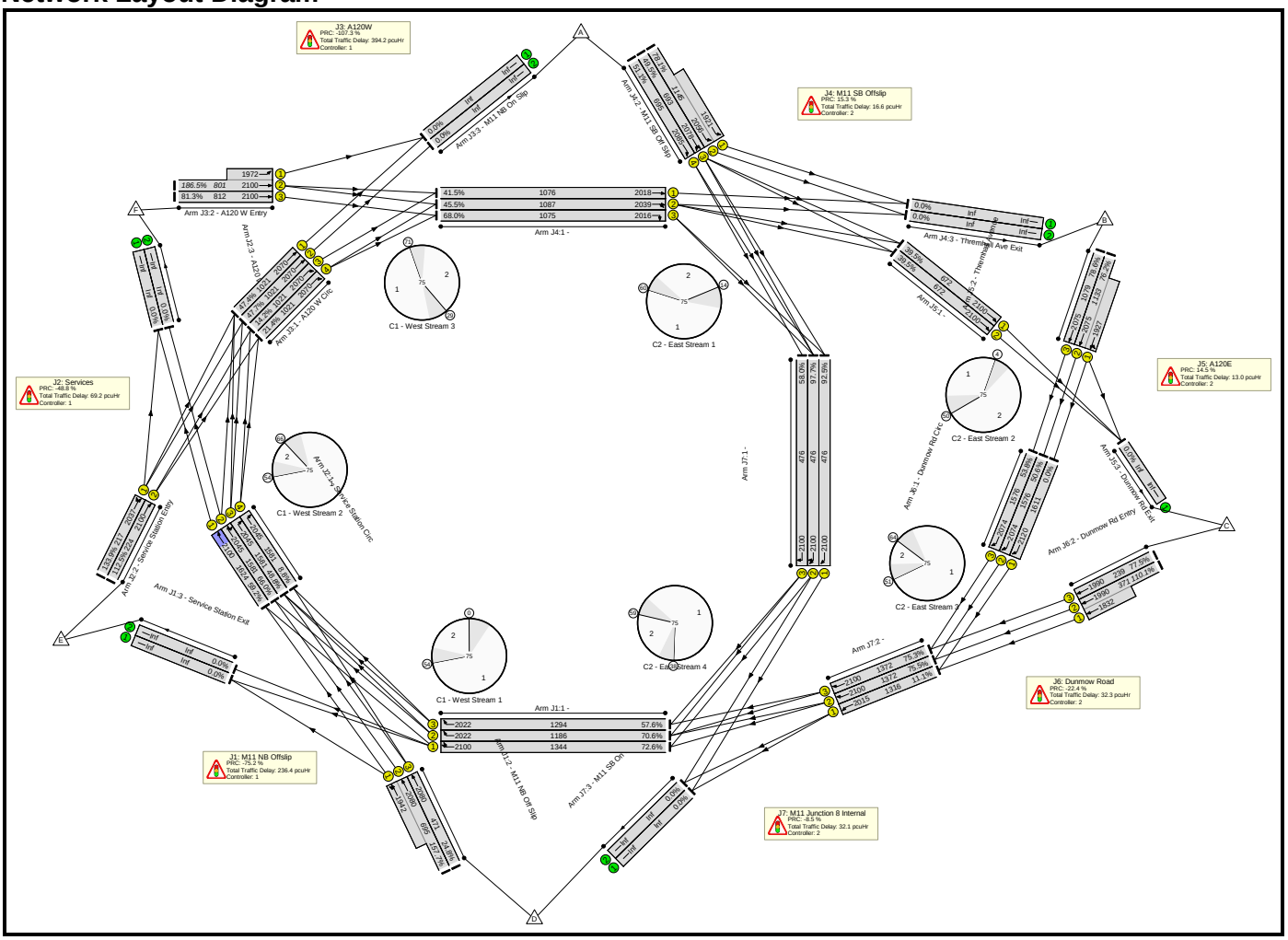
C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-14.8	Total Delay for Signalled Lanes (pcuHr):	40.88	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-32.4	Total Delay for Signalled Lanes (pcuHr):	42.43	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-61.0	Total Delay for Signalled Lanes (pcuHr):	253.30	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	27.1	Total Delay for Signalled Lanes (pcuHr):	15.44	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	30.2	Total Delay for Signalled Lanes (pcuHr):	10.32	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	0.3	Total Delay for Signalled Lanes (pcuHr):	10.05	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	9.6	Total Delay for Signalled Lanes (pcuHr):	14.74	Cycle Time (s): 75
	PRC Over All Lanes (%):	-61.0	Total Delay Over All Lanes(pcuHr):	387.17	

M11 J8 Existing Layout Linsig Assessment

M11 J8 Existing Layout Linsig Assessment

Scenario 9: '2031 PM Base + Committed' (FG9: '2031 PM Base + Committed', Plan 2: 'PM Existing')

Network Layout Diagram



M11 J8 Existing Layout Linsig Assessment

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**186.5%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**157.7%**	-
1/1	Ahead Right	U	C1:A		1	47	-	998	2100	1344	72.6%	17.3
1/2	Right	U	C1:A		1	47	-	839	2022	1186	70.6%	14.9
1/3	Right	U	C1:A		1	47	-	746	2022	1294	57.6%	8.6
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	16	-	1095	2080:1942	695	157.7%	233.6
2/3	M11 NB Off Slip Ahead	U	C1:B		1	16	-	117	2080	471	24.8%	2.1
J2: Services	-	-	-		-	-	-	-	-	-	**133.9%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	1146	2100	1624	59.2%	7.9
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	1193	2045	1581	66.0%	7.4
1/3	Service Station Circ Right	U	C1:C		1	57	-	771	2045	1581	48.8%	2.0
1/4	Service Station Circ Right	U	C1:C		1	57	-	139	2045	1581	8.8%	2.2
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	291	2037	217	133.9%	47.4
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	252	2100	224	112.5%	23.6
J3: A120W	-	-	-		-	-	-	-	-	-	**186.5%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	36	-	516	2070	1021	47.4%	6.9
1/2	A120 W Circ Ahead	U	C1:E		1	36	-	518	2070	1021	47.7%	6.9
1/3	A120 W Circ Right	U	C1:E		1	36	-	160	2070	1021	14.2%	0.9
1/4	A120 W Circ Right	U	C1:E		1	36	-	231	2070	1021	21.4%	3.0
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	28	-	1495	2100:1972	801	186.5%	393.7
2/3	A120 W Entry Ahead	U	C1:F		1	28	-	660	2100	812	81.3%	14.4
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**78.1%**	-

1/1	Ahead	U	C2:A		1	39	-	723	2018	1076	41.5%	5.7
1/2	Ahead Ahead2	U	C2:A		1	39	-	800	2039	1087	45.5%	4.0
1/3	Right	U	C2:A		1	39	-	740	2016	1075	68.0%	16.0
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	24	-	894	2056:1921	1145	78.1%	10.0
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	24	-	343	2078	693	49.5%	6.1
2/4	M11 SB Off Slip Ahead	U	C2:B		1	24	-	355	2085	695	51.1%	6.4
J5: A120E	-	-	-		-	-	-	-	-	-	**78.6%**	-
1/1	Ahead	U	C2:C		1	23	-	326	2100	672	39.5%	4.0
1/2	Ahead	U	C2:C		1	23	-	326	2100	672	39.5%	4.0
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	41	-	863	2075:1927	1133	76.2%	14.8
2/3	Thremhall Avenue Ahead	U	C2:D		1	41	-	848	2075	1079	78.6%	15.9
J6: Dunmow Road	-	-	-		-	-	-	-	-	-	**110.1%**	-
1/1	Dunmow Rd Circ Right	U	C2:E		1	56	-	0	2120	1611	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	56	-	797	2074	1576	50.6%	5.1
1/3	Dunmow Rd Circ Right	U	C2:E		1	56	-	848	2074	1576	53.8%	6.3
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	8	-	409	1990:1832	371	110.1%	29.2
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	8	-	185	1990	239	77.5%	5.3
J7: M11 Junction 8 Internal	-	-	-		-	-	-	-	-	-	**97.7%**	-
1/1	Right	U	C2:H		1	16	-	448	2100	476	92.5%	13.1
1/2	Right Right2	U	C2:H		1	16	-	466	2100	476	97.7%	17.9
1/3	Right	U	C2:H		1	16	-	276	2100	476	58.0%	6.4
2/1	Ahead	U	C2:G		1	48	-	146	2015	1316	11.1%	0.2
2/2	Ahead	U	C2:G		1	48	-	1060	2100	1372	75.5%	16.8
2/3	Ahead	U	C2:G		1	48	-	1033	2100	1372	75.3%	16.0

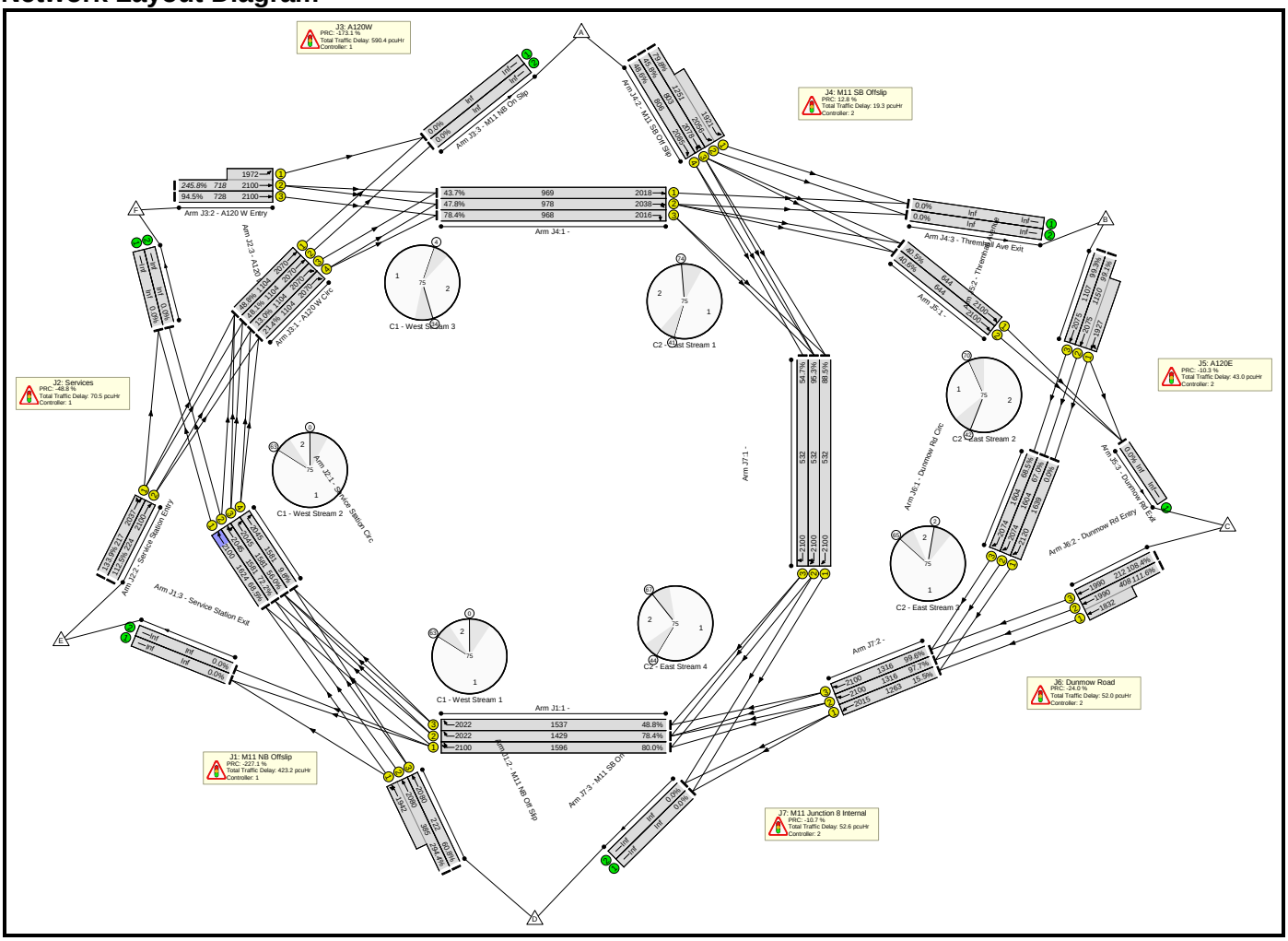
C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-75.2	Total Delay for Signalled Lanes (pcuHr):	236.43	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-48.8	Total Delay for Signalled Lanes (pcuHr):	69.23	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-107.3	Total Delay for Signalled Lanes (pcuHr):	394.25	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	15.3	Total Delay for Signalled Lanes (pcuHr):	16.59	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	14.5	Total Delay for Signalled Lanes (pcuHr):	12.96	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-22.4	Total Delay for Signalled Lanes (pcuHr):	32.30	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-8.5	Total Delay for Signalled Lanes (pcuHr):	32.08	Cycle Time (s): 75
	PRC Over All Lanes (%):	-107.3	Total Delay Over All Lanes(pcuHr):	793.84	

M11 J8 Existing Layout Linsig Assessment

M11 J8 Existing Layout Linsig Assessment

Scenario 10: '2031 PM Base + Committed + ULP' (FG10: '2031 PM Base + Committed + ULP', Plan 2: 'PM Existing')

Network Layout Diagram



M11 J8 Existing Layout Linsig Assessment

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**294.4%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**294.4%**	-
1/1	Ahead Right	U	C1:A		1	56	-	1312	2100	1596	80.0%	9.7
1/2	Right	U	C1:A		1	56	-	1133	2022	1429	78.4%	15.4
1/3	Right	U	C1:A		1	56	-	757	2022	1537	48.8%	0.6
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	7	-	1134	2080:1942	385	294.4%	424.0
2/3	M11 NB Off Slip Ahead	U	C1:B		1	7	-	135	2080	222	60.8%	3.4
J2: Services	-	-	-		-	-	-	-	-	-	**133.9%**	-
1/1	Service Station Circ Ahead	U	C1:C		1	57	-	1462	2100	1624	68.5%	5.3
1/2	Service Station Circ Ahead Right	U	C1:C		1	57	-	1415	2045	1581	72.2%	6.9
1/3	Service Station Circ Right	U	C1:C		1	57	-	891	2045	1581	56.0%	1.5
1/4	Service Station Circ Right	U	C1:C		1	57	-	157	2045	1581	9.8%	2.8
2/1	Service Station Entry Ahead Ahead2	U	C1:D		1	7	-	291	2037	217	133.9%	47.6
2/2	Service Station Entry Ahead	U	C1:D		1	7	-	252	2100	224	112.5%	23.8
J3: A120W	-	-	-		-	-	-	-	-	-	**245.8%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	39	-	569	2070	1104	48.8%	6.0
1/2	A120 W Circ Ahead	U	C1:E		1	39	-	567	2070	1104	48.1%	5.8
1/3	A120 W Circ Right	U	C1:E		1	39	-	160	2070	1104	13.0%	1.2
1/4	A120 W Circ Right	U	C1:E		1	39	-	249	2070	1104	21.4%	3.7
2/2+2/1	A120 W Entry Ahead Ahead2	U	C1:F		1	25	-	1765	2100:1972	718	245.8%	586.4
2/3	A120 W Entry Ahead	U	C1:F		1	25	-	688	2100	728	94.5%	20.3
J4: M11 SB Offslip	-	-	-		-	-	-	-	-	-	**79.8%**	-

1/1	Ahead	U	C2:A		1	35	-	849	2018	969	43.7%	3.3
1/2	Ahead Ahead2	U	C2:A		1	35	-	913	2038	978	47.8%	5.3
1/3	Right	U	C2:A		1	35	-	768	2016	968	78.4%	8.1
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	28	-	998	2056:1921	1251	79.8%	10.7
2/3	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	28	-	368	2078	803	45.8%	6.0
2/4	M11 SB Off Slip Ahead	U	C2:B		1	28	-	392	2085	806	48.6%	6.6
J5: A120E	-	-	-		-	-	-	-	-	-	**99.3%**	-
1/1	Ahead	U	C2:C		1	22	-	341	2100	644	40.5%	3.9
1/2	Ahead	U	C2:C		1	22	-	341	2100	644	40.6%	3.9
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	42	-	1140	2075:1927	1150	99.1%	37.3
2/3	Thremhall Avenue Ahead	U	C2:D		1	42	-	1099	2075	1107	99.3%	37.4
J6: Dunmow Road	-	-	-		-	-	-	-	-	-	**111.6%**	-
1/1	Dunmow Rd Circ Right	U	C2:E		1	57	-	0	2120	1639	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	57	-	1074	2074	1604	67.0%	7.9
1/3	Dunmow Rd Circ Right	U	C2:E		1	57	-	1099	2074	1604	68.5%	15.5
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	7	-	455	1990:1832	408	111.6%	34.1
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	7	-	230	1990	212	108.4%	18.4
J7: M11 Junction 8 Internal	-	-	-		-	-	-	-	-	-	**99.6%**	-
1/1	Right	U	C2:H		1	18	-	479	2100	532	88.5%	13.2
1/2	Right Right2	U	C2:H		1	18	-	508	2100	532	95.3%	16.6
1/3	Right	U	C2:H		1	18	-	291	2100	532	54.7%	3.1
2/1	Ahead	U	C2:G		1	46	-	206	2015	1263	15.5%	0.1
2/2	Ahead	U	C2:G		1	46	-	1323	2100	1316	97.7%	24.9
2/3	Ahead	U	C2:G		1	46	-	1329	2100	1316	99.6%	36.8

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-227.1	Total Delay for Signalled Lanes (pcuHr):	423.18	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-48.8	Total Delay for Signalled Lanes (pcuHr):	70.48	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-173.1	Total Delay for Signalled Lanes (pcuHr):	590.37	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	12.8	Total Delay for Signalled Lanes (pcuHr):	19.33	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	-10.3	Total Delay for Signalled Lanes (pcuHr):	43.03	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-24.0	Total Delay for Signalled Lanes (pcuHr):	51.97	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-10.7	Total Delay for Signalled Lanes (pcuHr):	52.56	Cycle Time (s): 75
	PRC Over All Lanes (%):	-227.1	Total Delay Over All Lanes(pcuHr):	1250.92	

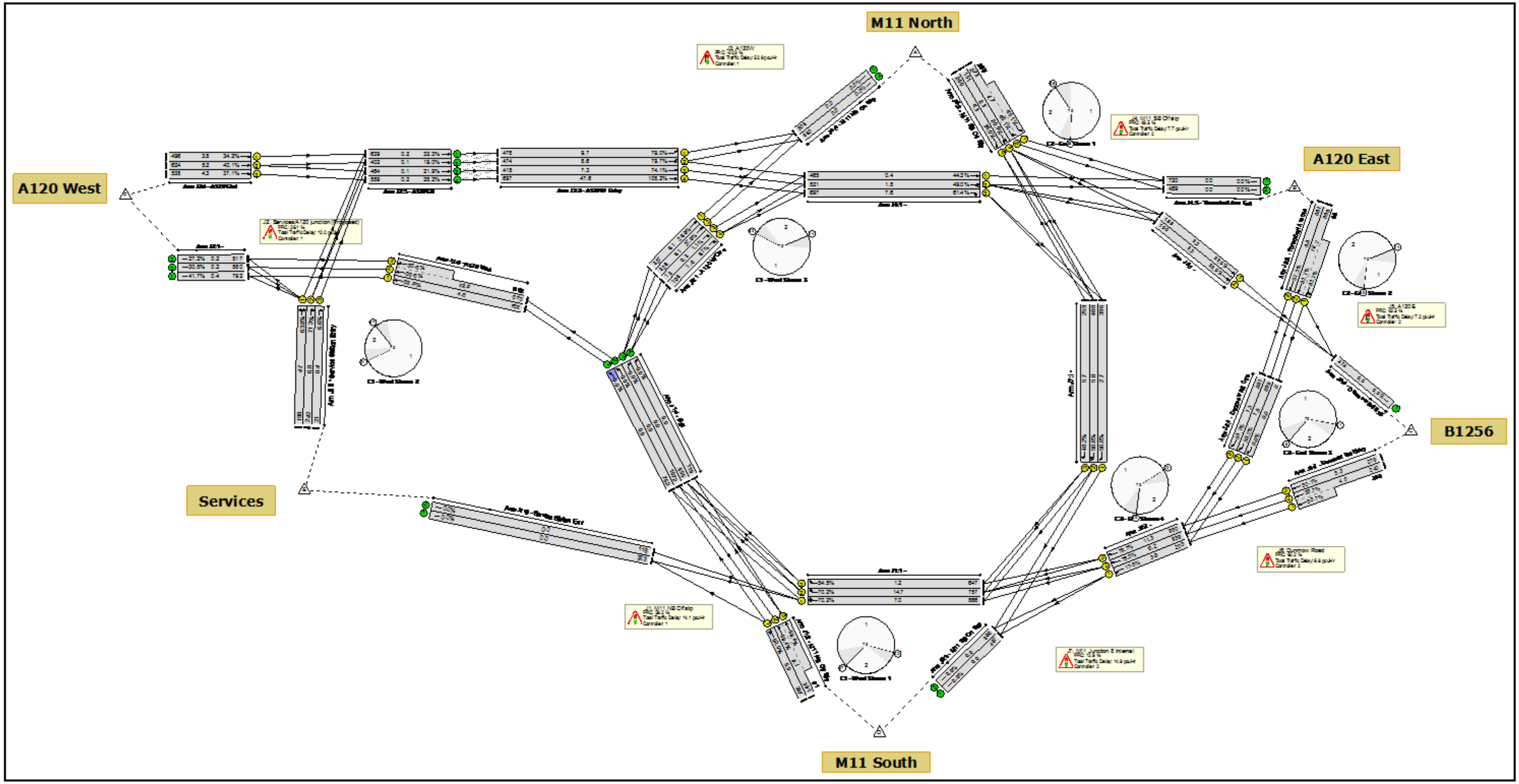
M11 J8 Existing Layout Linsig Assessment

M11 J8 & New Services Junction on A120 LinSig Assessment

Scenario 1: '2012 Base AM' (FG1: '2012 Base AM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

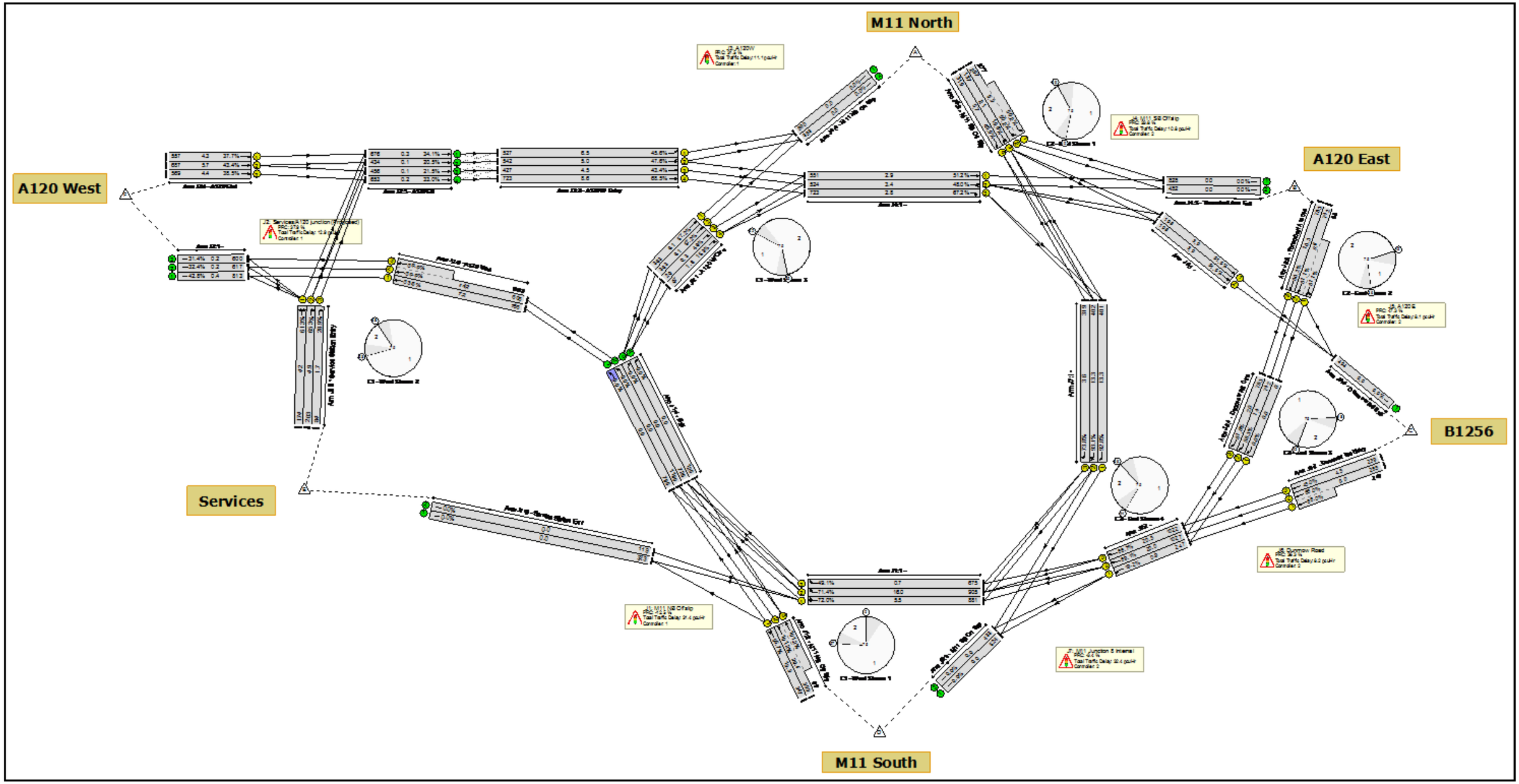
Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	866	70.2%	2.4	9.9
J1:1/2	Right	757	70.2%	3.9	18.8
J1:1/3	Right	647	54.5%	0.8	4.6
J1:2/1	M11 NB Off Slip Left Ahead	337	62.0%	3.0	32.2
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	442	68.4 : 68.4%	3.9	32.0
J2:1/1		792	41.7%	0.4	1.6
J2:1/2		580	30.5%	0.2	1.4
J2:1/3		517	27.2%	0.2	1.3
J2:2/1	Service Station Entry Left Right	198	63.8%	2.5	45.2
J2:2/2	Service Station Entry Right	242	71.3%	3.2	47.9
J2:2/3	Service Station Entry Right	21	6.6%	0.2	33.0
J2:3/1	A120 Wbd Ahead	762	52.9%	0.8	4.0
J2:3/2+J2:3/3	A120 Wbd Ahead	1072	55.6 : 55.6%	1.2	4.0
J2:4/1	A120 Ebd Ahead	496	34.2%	0.8	5.4
J2:4/2	A120 Ebd Ahead	624	40.1%	1.0	5.7
J2:4/3	A120 Ebd Ahead	538	37.1%	0.8	5.6
J2:5/1	A120 EB Ahead	639	32.3%	0.2	1.3
J2:5/2	A120 EB Ahead	402	19.0%	0.1	1.0
J2:5/3	A120 EB Ahead	464	21.9%	0.1	1.1
J2:5/4	A120 EB Ahead	559	28.2%	0.2	1.3
J3:1/1	A120 W Circ Ahead	327	26.9%	1.1	12.4
J3:1/2	A120 W Circ Ahead	328	27.0%	1.1	12.5
J3:1/3	A120 W Circ Right	13	1.1%	0.0	13.8
J3:1/4	A120 W Circ Right	106	8.7%	0.2	7.1
J3:2/1	A120 W Entry Ahead	478	79.0%	4.0	30.1
J3:2/2	A120 W Entry Ahead Ahead2	474	79.7%	4.4	33.6
J3:2/3	A120 W Entry Ahead	415	74.1%	3.8	33.3
J3:2/4	A120 W Entry Ahead	697	108.2%	38.1	197.0
J4:1/1	Ahead	465	44.3%	0.4	3.2
J4:1/2	Ahead Ahead2	521	49.0%	0.9	5.9
J4:1/3	Right	697	61.4%	0.8	4.6
J4:2/2+J4:2/1	M11 SB Off Slip Left	528	45.1 : 45.1%	3.1	21.3
J4:2/3	M11 SB Off Slip Ahead Ahead2	151	20.9%	0.9	20.4
J4:2/4	M11 SB Off Slip Ahead	260	36.0%	1.6	22.2
J5:1/1	Ahead	188	33.6%	0.8	15.0
J5:1/2	Ahead	190	33.9%	0.8	15.3
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	795	62.7 : 62.7%	3.0	13.6
J5:2/3	Thremhall Avenue Ahead	681	57.2%	2.6	13.7
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	699	56.2%	0.7	3.4
J6:1/3	Dunmow Rd Circ Right	681	54.7%	0.6	3.3
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	443	53.7 : 53.7%	3.3	26.7
J6:2/3	Dunmow Rd Entry Ahead	279	50.1%	2.3	29.1
J7:1/1	Right	396	56.8%	1.5	14.8
J7:1/2	Right Right2	400	58.6%	2.3	21.7
J7:1/3	Right	259	40.2%	2.7	38.0
J7:2/1	Ahead	203	17.6%	0.5	8.8
J7:2/2	Ahead	939	78.0%	3.8	14.7
J7:2/3	Ahead	960	79.7%	4.1	15.4

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	28.2	Total Delay for Signalled Lanes (pcuHr):	14.08	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	26.1	Total Delay for Signalled Lanes (pcuHr):	10.52	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-20.3	Total Delay for Signalled Lanes (pcuHr):	52.92	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	46.5	Total Delay for Signalled Lanes (pcuHr):	7.68	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	43.5	Total Delay for Signalled Lanes (pcuHr):	7.18	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	60.2	Total Delay for Signalled Lanes (pcuHr):	6.83	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	12.9	Total Delay for Signalled Lanes (pcuHr):	14.94	Cycle Time (s):	75
	PRC Over All Lanes (%):	-20.3	Total Delay Over All Lanes(pcuHr):	115.60		

Scenario 2: '2018 Base (includes Committed + G1) AM' (FG2: '2018 Base (includes Committed + G1) AM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

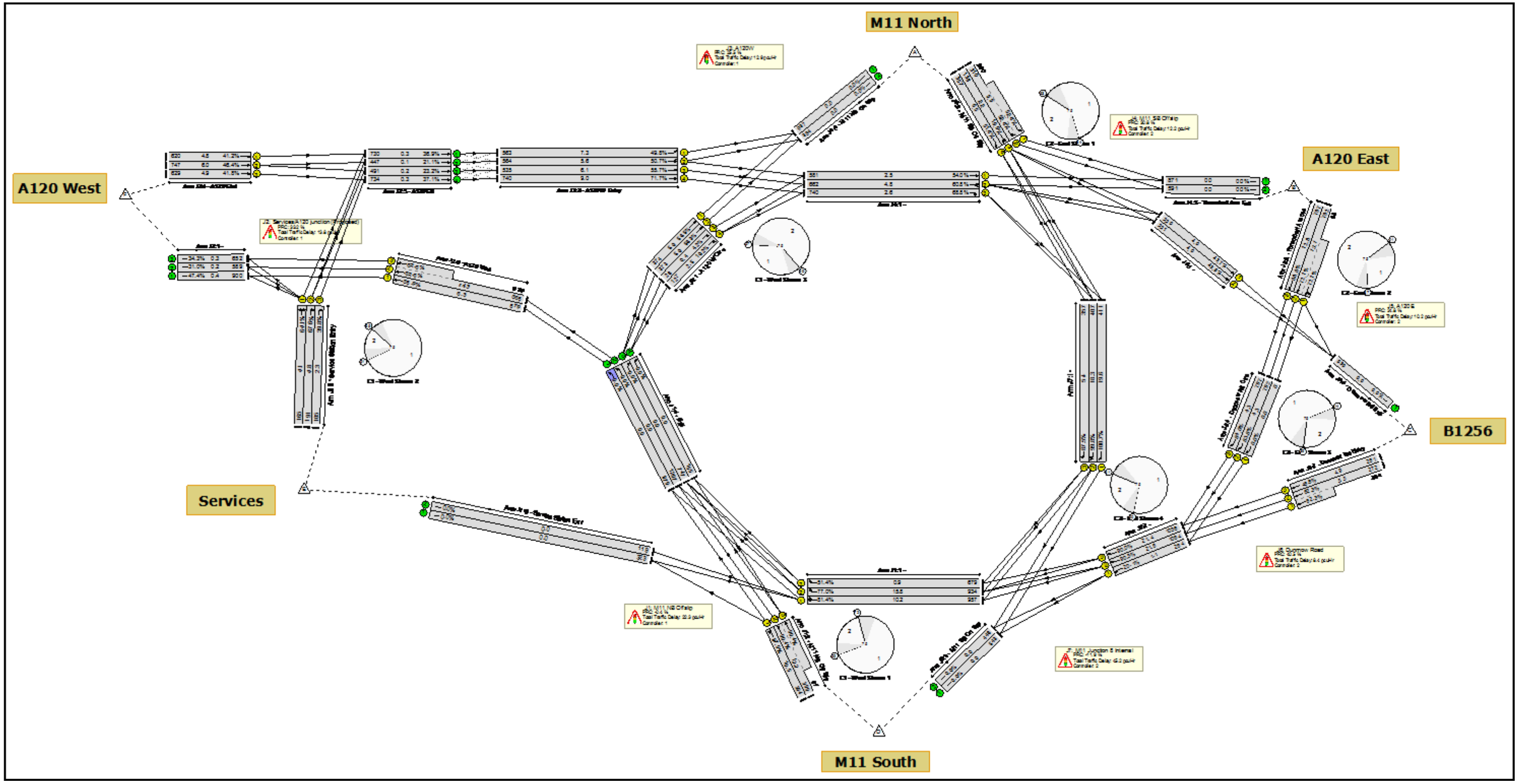
Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	881	72.0%	1.8	7.5
J1:1/2	Right	905	71.4%	3.8	15.2
J1:1/3	Right	675	49.1%	0.5	2.9
J1:2/1	M11 NB Off Slip Left Ahead	347	95.7%	9.1	94.7
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	461	101.2 : 101.2%	16.1	126.0
J2:1/1		813	42.8%	0.4	1.7
J2:1/2		617	32.4%	0.2	1.4
J2:1/3		600	31.4%	0.2	1.4
J2:2/1	Service Station Entry Left Right	174	61.3%	2.2	46.2
J2:2/2	Service Station Entry Right	203	65.3%	2.6	46.6
J2:2/3	Service Station Entry Right	84	28.9%	0.9	37.2
J2:3/1	A120 Wbd Ahead	786	53.6%	1.5	6.9
J2:3/2+J2:3/3	A120 Wbd Ahead	1189	59.9 : 59.9%	1.3	3.9
J2:4/1	A120 Ebd Ahead	557	37.7%	0.8	5.3
J2:4/2	A120 Ebd Ahead	687	43.4%	1.1	5.6
J2:4/3	A120 Ebd Ahead	569	38.5%	0.8	5.4
J2:5/1	A120 EB Ahead	676	34.1%	0.3	1.4
J2:5/2	A120 EB Ahead	434	20.5%	0.1	1.1
J2:5/3	A120 EB Ahead	456	21.5%	0.1	1.1
J2:5/4	A120 EB Ahead	653	33.0%	0.2	1.4
J3:1/1	A120 W Circ Ahead	363	57.2%	1.5	15.2
J3:1/2	A120 W Circ Ahead	363	57.2%	1.5	14.9
J3:1/3	A120 W Circ Right	29	4.6%	0.2	23.4
J3:1/4	A120 W Circ Right	97	15.3%	1.0	36.9
J3:2/1	A120 W Entry Ahead	527	45.6%	1.4	9.3
J3:2/2	A120 W Entry Ahead Ahead2	542	47.6%	1.5	10.1
J3:2/3	A120 W Entry Ahead	427	43.4%	1.3	11.3
J3:2/4	A120 W Entry Ahead	723	68.5%	2.7	13.4
J4:1/1	Ahead	551	51.2%	1.1	7.4
J4:1/2	Ahead Ahead2	524	48.0%	1.4	9.6
J4:1/3	Right	723	67.2%	1.6	8.1
J4:2/2+J4:2/1	M11 SB Off Slip Left	574	50.2 : 50.2%	3.6	22.6
J4:2/3	M11 SB Off Slip Ahead Ahead2	137	19.8%	0.8	21.1
J4:2/4	M11 SB Off Slip Ahead	319	45.9%	2.2	24.5
J5:1/1	Ahead	198	51.6%	1.5	26.5
J5:1/2	Ahead	198	51.6%	1.5	26.7
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	840	61.1 : 61.1%	2.6	11.1
J5:2/3	Thremhall Avenue Ahead	783	60.2%	2.6	11.9
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	742	58.3%	0.9	4.3
J6:1/3	Dunmow Rd Circ Right	783	61.6%	1.0	4.6
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	532	66.0 : 66.0%	4.4	30.0
J6:2/3	Dunmow Rd Entry Ahead	239	45.0%	1.9	29.1
J7:1/1	Right	401	92.8%	7.7	68.7
J7:1/2	Right Right2	402	93.1%	7.6	67.7
J7:1/3	Right	319	73.8%	2.9	32.6
J7:2/1	Ahead	247	19.2%	0.4	5.4
J7:2/2	Ahead	1027	89.1%	6.9	24.1
J7:2/3	Ahead	1022	88.7%	7.0	24.7

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	-12.5	Total Delay for Signalled Lanes (pcuHr):	31.44	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	37.9	Total Delay for Signalled Lanes (pcuHr):	11.25	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	31.5	Total Delay for Signalled Lanes (pcuHr):	11.15	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	33.8	Total Delay for Signalled Lanes (pcuHr):	10.75	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	47.3	Total Delay for Signalled Lanes (pcuHr):	8.09	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	36.3	Total Delay for Signalled Lanes (pcuHr):	8.23	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	-3.4	Total Delay for Signalled Lanes (pcuHr):	32.37	Cycle Time (s):	75
		PRC Over All Lanes (%):	-12.5	Total Delay Over All Lanes(pcuHr):	114.89		

Scenario 3: '2018 Base plus ULP AM' (FG3: '2018 Base plus ULP AM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

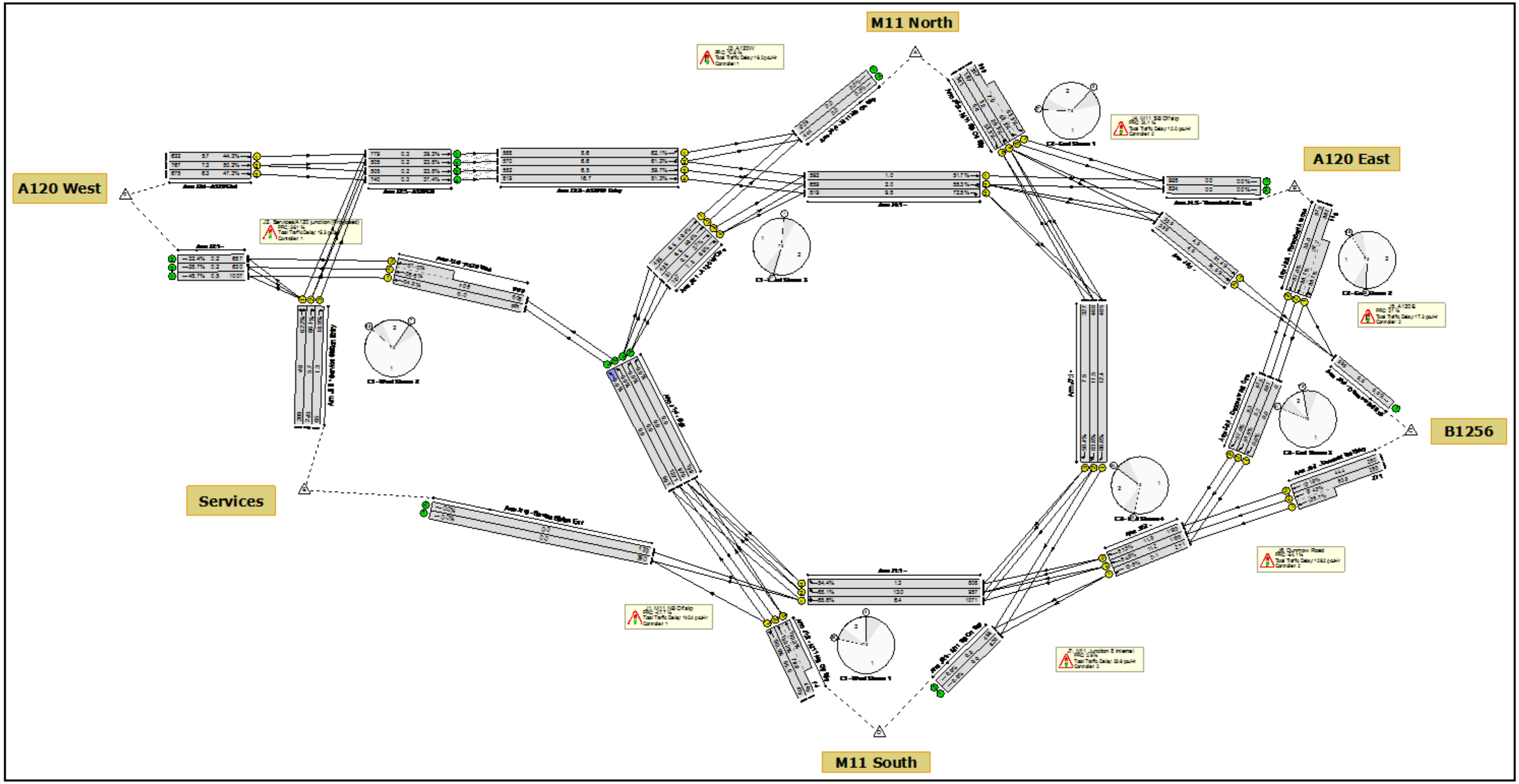
Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	957	81.4%	2.8	10.4
J1:1/2	Right	934	77.0%	4.9	19.0
J1:1/3	Right	679	51.4%	0.6	3.2
J1:2/1	M11 NB Off Slip Left Ahead	364	87.9%	6.1	60.3
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	496	90.4 : 90.4%	7.9	57.3
J2:1/1		900	47.4%	0.4	1.8
J2:1/2		589	31.0%	0.2	1.4
J2:1/3		652	34.3%	0.3	1.4
J2:2/1	Service Station Entry Left Right	165	64.1%	2.3	49.9
J2:2/2	Service Station Entry Right	191	67.6%	2.7	50.2
J2:2/3	Service Station Entry Right	105	39.8%	1.2	41.0
J2:3/1	A120 Wbd Ahead	879	58.9%	1.5	6.0
J2:3/2+J2:3/3	A120 Wbd Ahead	1207	62.6 : 62.6%	1.5	4.3
J2:4/1	A120 Ebd Ahead	620	41.2%	0.9	5.2
J2:4/2	A120 Ebd Ahead	747	46.4%	1.1	5.4
J2:4/3	A120 Ebd Ahead	629	41.8%	0.9	5.2
J2:5/1	A120 EB Ahead	730	36.9%	0.3	1.4
J2:5/2	A120 EB Ahead	447	21.1%	0.1	1.1
J2:5/3	A120 EB Ahead	491	23.2%	0.2	1.1
J2:5/4	A120 EB Ahead	734	37.1%	0.3	1.4
J3:1/1	A120 W Circ Ahead	374	56.5%	1.5	14.3
J3:1/2	A120 W Circ Ahead	373	56.3%	1.5	14.2
J3:1/3	A120 W Circ Right	28	4.2%	0.2	25.3
J3:1/4	A120 W Circ Right	127	19.2%	1.3	37.7
J3:2/1	A120 W Entry Ahead	563	49.8%	1.5	9.9
J3:2/2	A120 W Entry Ahead Ahead2	564	50.7%	1.8	11.3
J3:2/3	A120 W Entry Ahead	535	55.7%	2.0	13.4
J3:2/4	A120 W Entry Ahead	740	71.7%	3.1	14.8
J4:1/1	Ahead	581	54.0%	1.3	7.7
J4:1/2	Ahead Ahead2	662	60.8%	2.0	11.1
J4:1/3	Right	740	68.8%	1.7	8.5
J4:2/2+J4:2/1	M11 SB Off Slip Left	600	52.4 : 52.4%	3.8	22.9
J4:2/3	M11 SB Off Slip Ahead Ahead2	138	19.9%	0.8	21.1
J4:2/4	M11 SB Off Slip Ahead	357	51.4%	2.5	25.4
J5:1/1	Ahead	220	43.7%	1.2	20.3
J5:1/2	Ahead	221	43.8%	1.2	20.3
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	890	72.1 : 72.1%	4.0	16.4
J5:2/3	Thremhall Avenue Ahead	797	68.6%	3.7	16.7
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	792	63.6%	1.1	4.9
J6:1/3	Dunmow Rd Circ Right	797	64.0%	1.1	4.9
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	536	62.3 : 62.3%	4.2	28.1
J6:2/3	Dunmow Rd Entry Ahead	261	46.8%	2.1	28.4
J7:1/1	Right	411	100.7%	14.0	122.4
J7:1/2	Right Right2	407	99.8%	12.5	110.8
J7:1/3	Right	357	87.5%	4.8	48.2
J7:2/1	Ahead	264	20.1%	0.4	5.6
J7:2/2	Ahead	1064	90.5%	6.8	23.0
J7:2/3	Ahead	1058	90.0%	6.7	22.8

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	-0.4	Total Delay for Signalled Lanes (pcuHr):	22.30	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	33.2	Total Delay for Signalled Lanes (pcuHr):	12.00	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	25.5	Total Delay for Signalled Lanes (pcuHr):	12.85	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	30.8	Total Delay for Signalled Lanes (pcuHr):	12.19	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	24.8	Total Delay for Signalled Lanes (pcuHr):	10.23	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	40.5	Total Delay for Signalled Lanes (pcuHr):	8.42	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	-11.9	Total Delay for Signalled Lanes (pcuHr):	45.18	Cycle Time (s):	75
		PRC Over All Lanes (%):	-11.9	Total Delay Over All Lanes(pcuHr):	124.97		

Scenario 4: '2031 Base (includes Committed + G1 + BSN) AM' (FG4: '2031 Base (includes committed + G1 + BSN) AM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

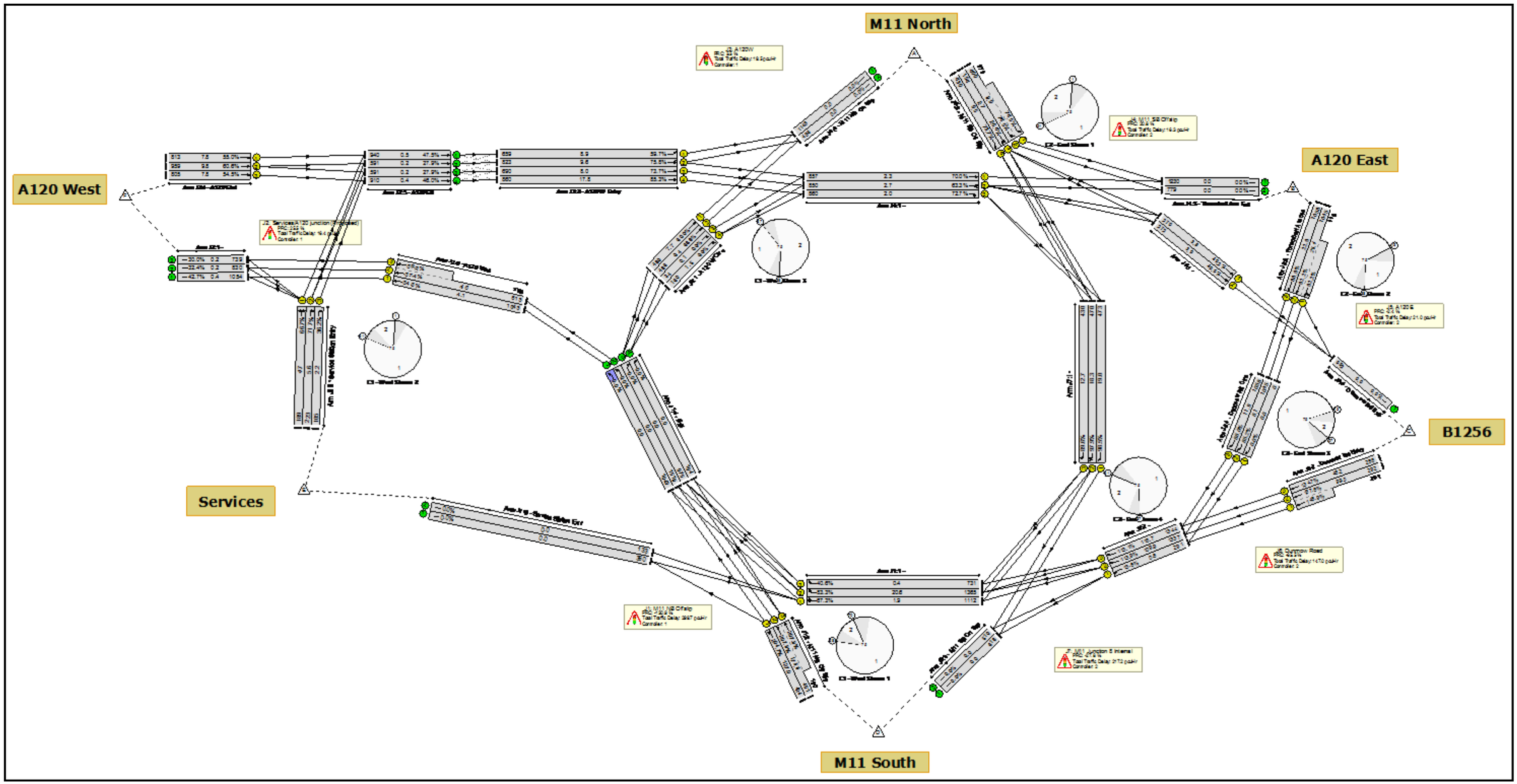
Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	1071	68.6%	1.7	6.1
J1:1/2	Right	957	68.1%	3.5	14.1
J1:1/3	Right	808	54.4%	0.6	3.0
J1:2/1	M11 NB Off Slip Left Ahead	413	132.9%	61.1	532.2
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	514	132.2 : 132.2%	73.4	514.2
J2:1/1		1007	48.7%	0.5	1.8
J2:1/2		630	28.7%	0.2	1.3
J2:1/3		687	32.4%	0.2	1.4
J2:2/1	Service Station Entry Left Right	209	62.2%	2.5	42.8
J2:2/2	Service Station Entry Right	243	66.1%	2.9	43.2
J2:2/3	Service Station Entry Right	65	18.9%	0.6	33.0
J2:3/1	A120 Wbd Ahead	991	64.2%	1.7	6.9
J2:3/2+J2:3/3	A120 Wbd Ahead	1271	58.8 : 61.0%	1.8	5.9
J2:4/1	A120 Ebd Ahead	632	44.3%	1.2	6.6
J2:4/2	A120 Ebd Ahead	767	50.2%	1.5	7.0
J2:4/3	A120 Ebd Ahead	675	47.3%	1.3	6.9
J2:5/1	A120 EB Ahead	779	39.3%	0.3	1.5
J2:5/2	A120 EB Ahead	505	23.8%	0.2	1.1
J2:5/3	A120 EB Ahead	505	23.8%	0.2	1.1
J2:5/4	A120 EB Ahead	740	37.4%	0.3	1.5
J3:1/1	A120 W Circ Ahead	435	49.4%	1.4	12.2
J3:1/2	A120 W Circ Ahead	435	49.4%	1.4	12.2
J3:1/3	A120 W Circ Right	31	2.7%	0.1	15.0
J3:1/4	A120 W Circ Right	107	9.5%	0.6	24.5
J3:2/1	A120 W Entry Ahead	588	62.1%	2.5	15.4
J3:2/2	A120 W Entry Ahead Ahead2	570	61.2%	2.6	16.2
J3:2/3	A120 W Entry Ahead	552	59.7%	2.7	17.3
J3:2/4	A120 W Entry Ahead	819	81.3%	4.9	21.6
J4:1/1	Ahead	592	51.7%	0.7	4.3
J4:1/2	Ahead Ahead2	659	55.3%	1.0	6.0
J4:1/3	Right	819	72.5%	1.4	6.1
J4:2/2+J4:2/1	M11 SB Off Slip Left	690	63.3 : 63.3%	5.0	26.3
J4:2/3	M11 SB Off Slip Ahead Ahead2	187	29.3%	1.2	23.8
J4:2/4	M11 SB Off Slip Ahead	341	53.3%	2.6	27.6
J5:1/1	Ahead	229	31.4%	1.1	17.8
J5:1/2	Ahead	230	31.6%	1.1	17.9
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	991	88.1 : 88.1%	7.7	28.1
J5:2/3	Thremhall Avenue Ahead	915	87.0%	7.4	28.9
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	881	54.9%	0.6	2.5
J6:1/3	Dunmow Rd Circ Right	915	57.0%	0.7	2.6
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	556	134.3 : 138.7%	86.6	561.0
J6:2/3	Dunmow Rd Entry Ahead	280	131.9%	41.3	531.2
J7:1/1	Right	485	86.6%	4.4	32.5
J7:1/2	Right Right2	468	83.6%	5.1	39.0
J7:1/3	Right	327	58.4%	4.6	51.0
J7:2/1	Ahead	271	15.8%	0.1	1.7
J7:2/2	Ahead	1166	84.9%	4.5	14.9
J7:2/3	Ahead	1195	87.5%	5.2	16.5

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	-47.7	Total Delay for Signalled Lanes (pcuHr):	140.36	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	36.1	Total Delay for Signalled Lanes (pcuHr):	13.49	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	10.8	Total Delay for Signalled Lanes (pcuHr):	16.16	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	24.1	Total Delay for Signalled Lanes (pcuHr):	12.03	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	2.1	Total Delay for Signalled Lanes (pcuHr):	17.27	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	-54.1	Total Delay for Signalled Lanes (pcuHr):	129.23	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	2.8	Total Delay for Signalled Lanes (pcuHr):	23.85	Cycle Time (s):	75
		PRC Over All Lanes (%):	-54.1	Total Delay Over All Lanes(pcuHr):	354.24		

Scenario 5: '2031 Base plus ULP AM' (FG5: '2031 Base plus All ULP AM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

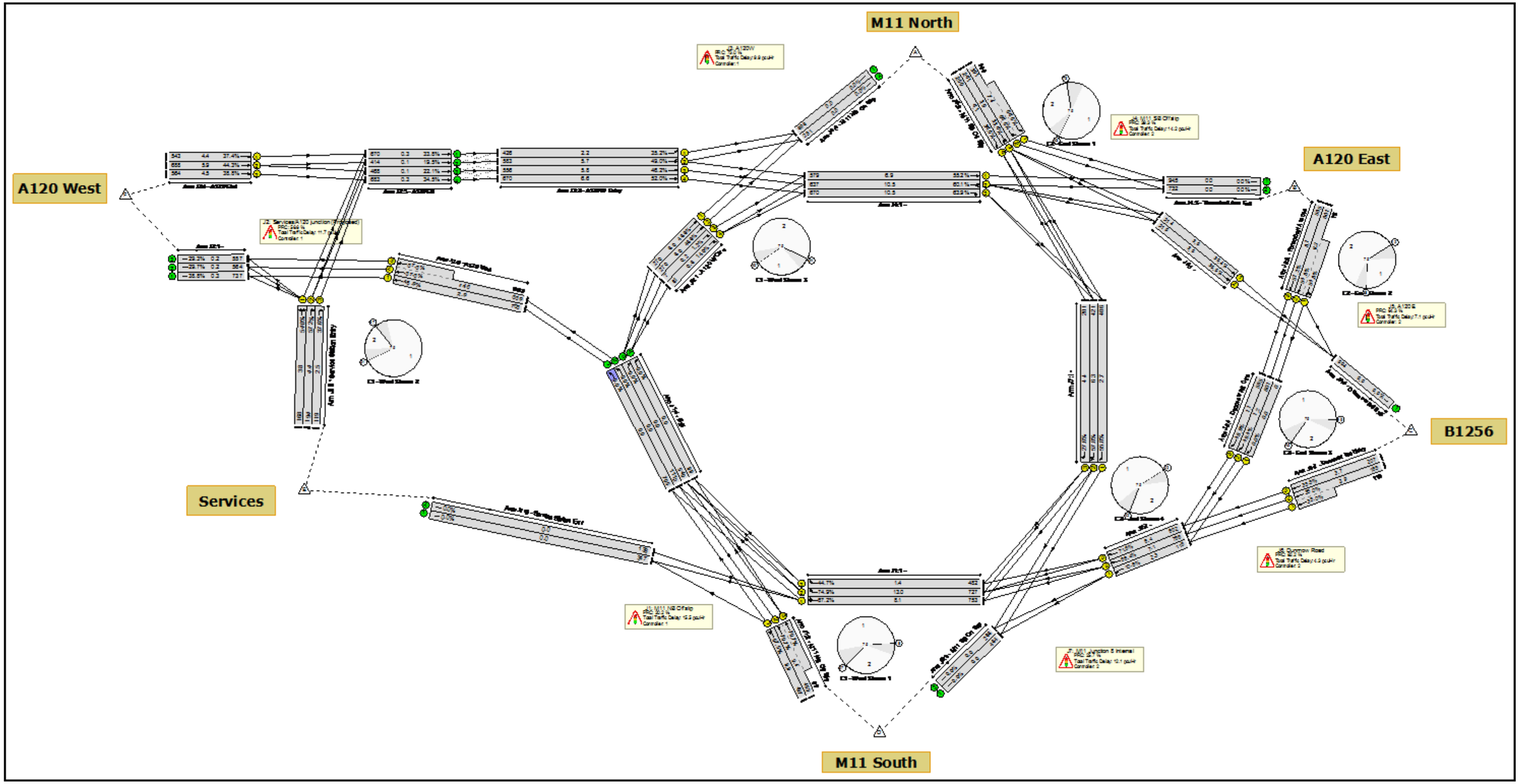
Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	1112	67.3%	1.2	4.7
J1:1/2	Right	1365	83.3%	5.4	16.2
J1:1/3	Right	731	40.6%	0.4	2.0
J1:2/1	M11 NB Off Slip Left Ahead	424	204.7%	122.5	1040.4
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	591	207.8 : 207.8%	170.3	1037.1
J2:1/1		1054	42.7%	0.4	1.7
J2:1/2		830	32.4%	0.2	1.4
J2:1/3		739	30.0%	0.2	1.4
J2:2/1	Service Station Entry Left Right	189	66.7%	2.6	49.0
J2:2/2	Service Station Entry Right	223	71.7%	3.1	50.4
J2:2/3	Service Station Entry Right	105	36.2%	1.1	38.5
J2:3/1	A120 Wbd Ahead	1043	54.5%	1.1	4.9
J2:3/2+J2:3/3	A120 Wbd Ahead	1518	57.4 : 59.2%	1.4	4.5
J2:4/1	A120 Ebd Ahead	813	55.0%	1.5	6.8
J2:4/2	A120 Ebd Ahead	959	60.6%	1.9	7.3
J2:4/3	A120 Ebd Ahead	805	54.5%	1.5	6.7
J2:5/1	A120 EB Ahead	940	47.5%	0.5	1.7
J2:5/2	A120 EB Ahead	591	27.9%	0.2	1.2
J2:5/3	A120 EB Ahead	591	27.9%	0.2	1.2
J2:5/4	A120 EB Ahead	910	46.0%	0.4	1.7
J3:1/1	A120 W Circ Ahead	489	60.0%	1.9	16.9
J3:1/2	A120 W Circ Ahead	486	68.8%	2.2	16.5
J3:1/3	A120 W Circ Right	34	0.9%	0.0	20.2
J3:1/4	A120 W Circ Right	160	9.9%	0.8	42.6
J3:2/1	A120 W Entry Ahead	659	59.7%	2.1	11.6
J3:2/2	A120 W Entry Ahead Ahead2	823	75.8%	3.7	16.2
J3:2/3	A120 W Entry Ahead	690	73.7%	3.4	18.0
J3:2/4	A120 W Entry Ahead	860	85.3%	5.2	21.8
J4:1/1	Ahead	857	70.0%	1.4	5.9
J4:1/2	Ahead Ahead2	850	63.3%	1.5	7.1
J4:1/3	Right	860	72.7%	1.5	6.1
J4:2/2+J4:2/1	M11 SB Off Slip Left	773	74.5 : 74.5%	6.6	30.9
J4:2/3	M11 SB Off Slip Ahead Ahead2	154	26.4%	1.1	25.2
J4:2/4	M11 SB Off Slip Ahead	430	73.7%	4.3	36.0
J5:1/1	Ahead	270	49.2%	1.7	26.1
J5:1/2	Ahead	272	49.6%	1.7	26.2
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	1155	92.2 : 92.2%	9.6	30.0
J5:2/3	Thremhall Avenue Ahead	1058	88.9%	7.9	26.9
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	1045	65.2%	1.1	3.9
J6:1/3	Dunmow Rd Circ Right	1058	66.0%	1.2	4.0
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	583	137.6 : 148.9%	100.8	622.3
J6:2/3	Dunmow Rd Entry Ahead	286	134.7%	43.9	552.9
J7:1/1	Right	473	98.5%	11.0	83.8
J7:1/2	Right Right2	470	97.9%	11.3	86.3
J7:1/3	Right	430	89.6%	9.5	79.8
J7:2/1	Ahead	291	15.8%	0.3	6.3
J7:2/2	Ahead	1337	113.9%	89.1	255.0
J7:2/3	Ahead	1344	115.1%	96.0	272.0

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	-130.9	Total Delay for Signalled Lanes (pcuHr):	299.70	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	25.5	Total Delay for Signalled Lanes (pcuHr):	14.31	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	5.5	Total Delay for Signalled Lanes (pcuHr):	19.45	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	20.8	Total Delay for Signalled Lanes (pcuHr):	16.31	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	-2.4	Total Delay for Signalled Lanes (pcuHr):	20.97	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	-65.5	Total Delay for Signalled Lanes (pcuHr):	147.02	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	-27.8	Total Delay for Signalled Lanes (pcuHr):	217.20	Cycle Time (s):	75
		PRC Over All Lanes (%):	-130.9	Total Delay Over All Lanes(pcuHr):	737.05		

Scenario 6: '2012 Base PM' (FG6: '2012 Base PM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

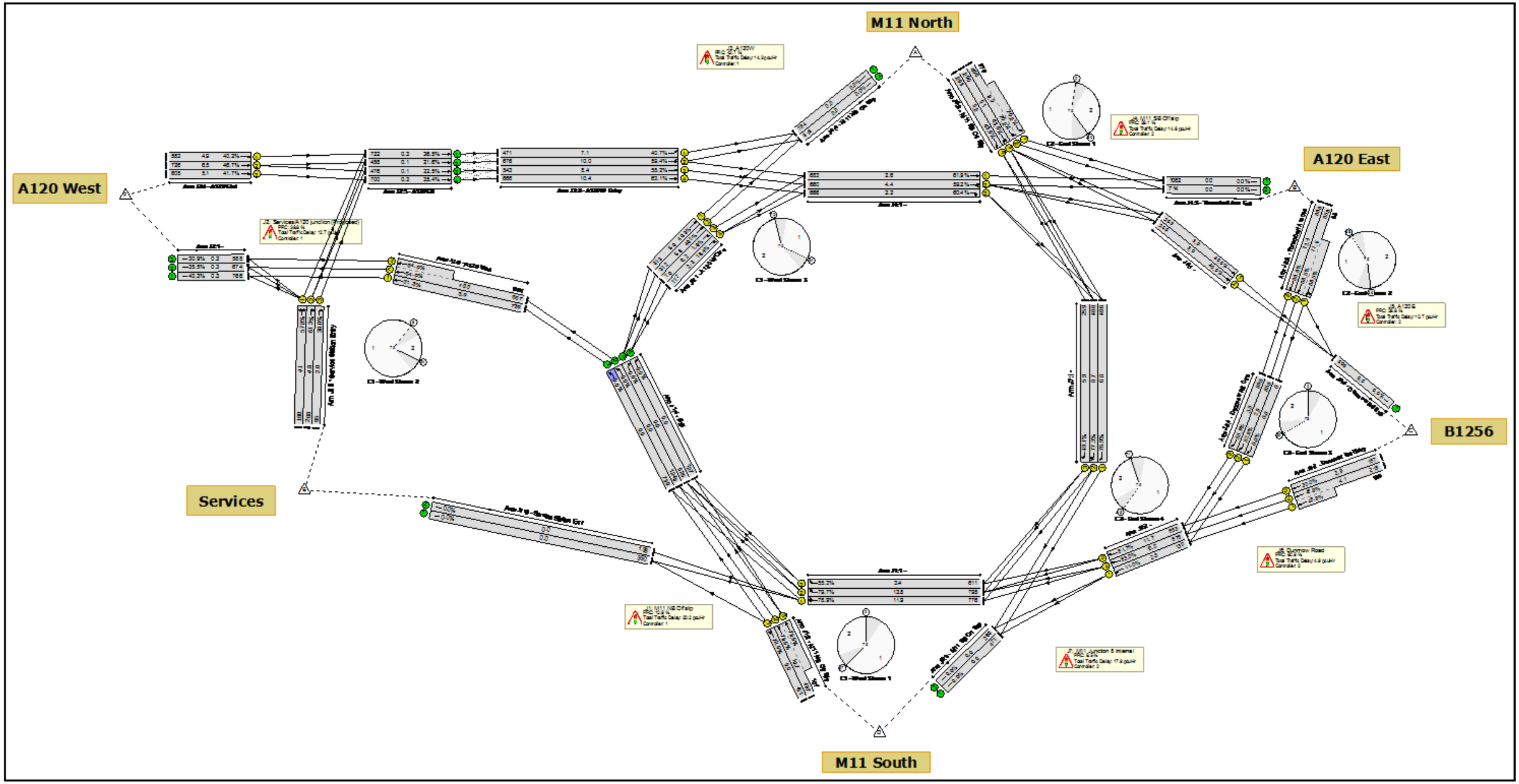
Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	753	67.2%	2.9	13.8
J1:1/2	Right	727	74.9%	3.8	19.0
J1:1/3	Right	482	44.7%	0.8	6.1
J1:2/1	M11 NB Off Slip Left Ahead	437	67.5%	3.6	30.0
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	531	70.7 : 70.7%	4.3	29.0
J2:1/1		737	38.8%	0.3	1.5
J2:1/2		564	29.7%	0.2	1.3
J2:1/3		557	29.3%	0.2	1.3
J2:2/1	Service Station Entry Left Right	168	54.0%	1.9	41.4
J2:2/2	Service Station Entry Right	194	57.2%	2.2	41.4
J2:2/3	Service Station Entry Right	119	37.6%	1.2	37.2
J2:3/1	A120 Wbd Ahead	705	48.9%	0.8	4.0
J2:3/2+J2:3/3	A120 Wbd Ahead	1112	57.5 : 57.5%	1.1	3.6
J2:4/1	A120 Ebd Ahead	543	37.4%	0.9	5.7
J2:4/2	A120 Ebd Ahead	688	44.3%	1.2	6.0
J2:4/3	A120 Ebd Ahead	564	38.8%	0.9	5.8
J2:5/1	A120 EB Ahead	670	33.8%	0.3	1.4
J2:5/2	A120 EB Ahead	414	19.5%	0.1	1.1
J2:5/3	A120 EB Ahead	468	22.1%	0.1	1.1
J2:5/4	A120 EB Ahead	683	34.5%	0.3	1.4
J3:1/1	A120 W Circ Ahead	270	46.6%	2.0	26.4
J3:1/2	A120 W Circ Ahead	270	46.6%	2.0	26.4
J3:1/3	A120 W Circ Right	7	1.2%	0.0	24.8
J3:1/4	A120 W Circ Right	81	14.0%	0.3	13.4
J3:2/1	A120 W Entry Ahead	426	35.2%	0.7	5.6
J3:2/2	A120 W Entry Ahead Ahead2	583	49.0%	1.6	10.0
J3:2/3	A120 W Entry Ahead	556	46.2%	1.5	9.6
J3:2/4	A120 W Entry Ahead	670	52.0%	1.8	9.8
J4:1/1	Ahead	579	55.2%	1.6	10.1
J4:1/2	Ahead Ahead2	637	60.1%	2.4	13.5
J4:1/3	Right	670	63.9%	2.2	11.6
J4:2/2+J4:2/1	M11 SB Off Slip Left	757	64.6 : 64.6%	5.1	24.1
J4:2/3	M11 SB Off Slip Ahead Ahead2	241	33.4%	1.5	21.9
J4:2/4	M11 SB Off Slip Ahead	250	34.6%	1.5	22.0
J5:1/1	Ahead	214	36.4%	1.2	20.4
J5:1/2	Ahead	215	36.6%	1.2	20.5
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	676	54.8 : 54.8%	2.4	13.0
J5:2/3	Thremhall Avenue Ahead	595	51.2%	2.2	13.4
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	601	49.4%	0.5	3.1
J6:1/3	Dunmow Rd Circ Right	595	48.9%	0.5	3.0
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	281	35.0 : 35.0%	1.9	23.7
J6:2/3	Dunmow Rd Entry Ahead	207	35.5%	1.5	25.7
J7:1/1	Right	406	55.8%	1.5	13.3
J7:1/2	Right Right2	421	57.8%	2.4	20.9
J7:1/3	Right	201	27.6%	1.7	30.8
J7:2/1	Ahead	116	10.8%	0.4	12.9
J7:2/2	Ahead	766	68.4%	2.8	13.3
J7:2/3	Ahead	802	71.6%	3.2	14.3

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	20.2	Total Delay for Signalled Lanes (pcuHr):	15.46	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	56.6	Total Delay for Signalled Lanes (pcuHr):	10.20	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	73.0	Total Delay for Signalled Lanes (pcuHr):	9.88	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	39.3	Total Delay for Signalled Lanes (pcuHr):	14.24	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	64.3	Total Delay for Signalled Lanes (pcuHr):	7.09	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	82.2	Total Delay for Signalled Lanes (pcuHr):	4.34	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	25.7	Total Delay for Signalled Lanes (pcuHr):	12.11	Cycle Time (s):	75
		PRC Over All Lanes (%):	20.2	Total Delay Over All Lanes(pcuHr):	74.82		

Scenario 7: '2018 Base (includes Committed + G1) PM' (FG7: '2018 Base (includes Committed + G1) PM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

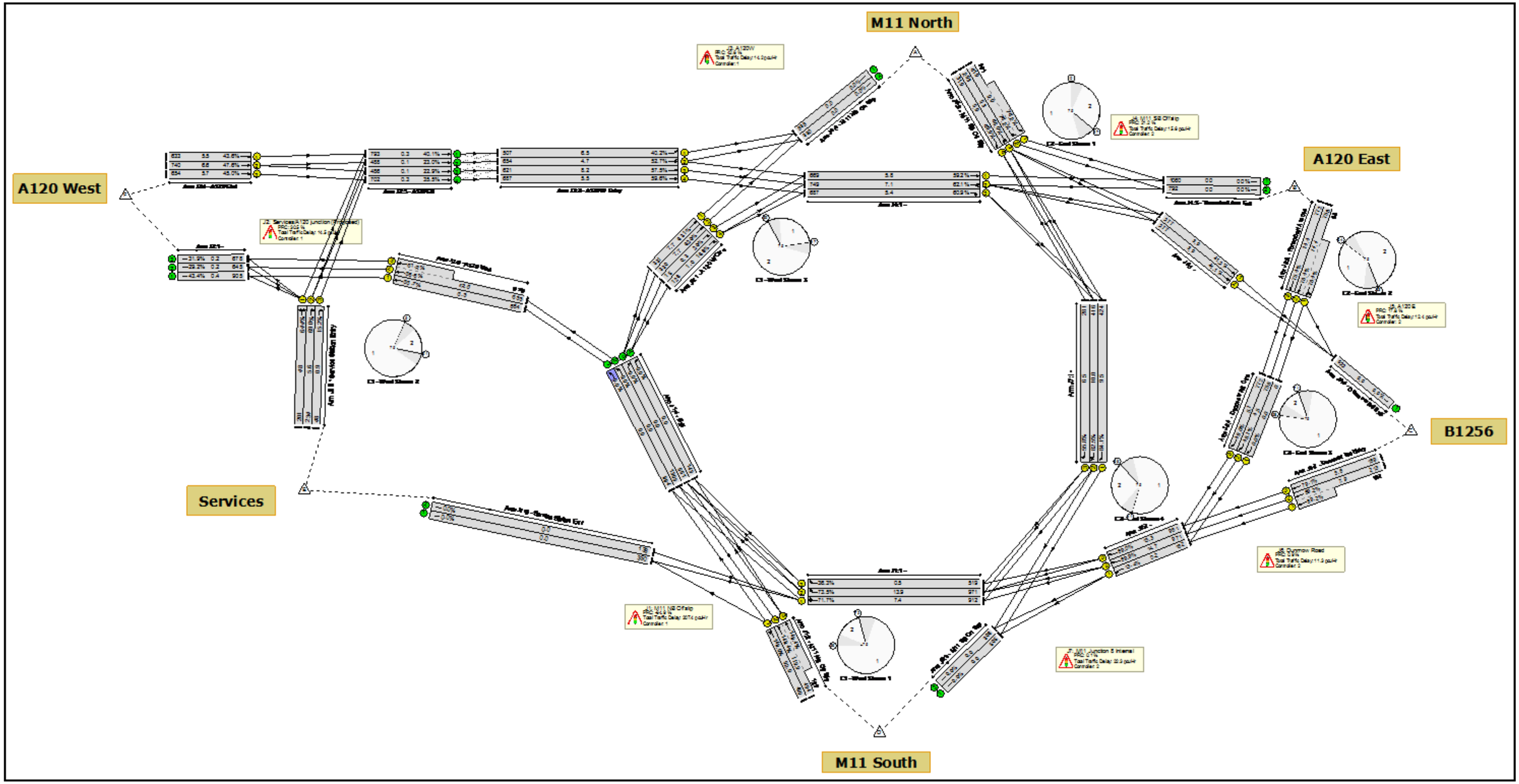
Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	776	78.9%	3.9	18.0
J1:1/2	Right	795	79.7%	5.0	22.8
J1:1/3	Right	611	55.3%	1.7	10.3
J1:2/1	M11 NB Off Slip Left Ahead	451	72.6%	4.1	33.0
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	594	78.6 : 78.6%	5.4	32.7
J2:1/1		766	40.3%	0.3	1.6
J2:1/2		674	35.5%	0.3	1.5
J2:1/3		588	30.9%	0.2	1.4
J2:2/1	Service Station Entry Left Right	180	57.8%	2.1	42.7
J2:2/2	Service Station Entry Right	208	61.3%	2.5	42.9
J2:2/3	Service Station Entry Right	95	30.0%	0.9	35.9
J2:3/1	A120 Wbd Ahead	739	51.3%	0.9	4.3
J2:3/2+J2:3/3	A120 Wbd Ahead	1248	64.9 : 64.9%	1.3	3.8
J2:4/1	A120 Ebd Ahead	583	40.2%	0.9	5.9
J2:4/2	A120 Ebd Ahead	726	46.7%	1.3	6.2
J2:4/3	A120 Ebd Ahead	605	41.7%	1.0	6.0
J2:5/1	A120 EB Ahead	722	36.5%	0.3	1.4
J2:5/2	A120 EB Ahead	458	21.6%	0.1	1.1
J2:5/3	A120 EB Ahead	476	22.5%	0.1	1.1
J2:5/4	A120 EB Ahead	700	35.4%	0.3	1.4
J3:1/1	A120 W Circ Ahead	313	49.3%	3.0	34.6
J3:1/2	A120 W Circ Ahead	312	49.1%	3.0	34.5
J3:1/3	A120 W Circ Right	10	1.6%	0.1	45.4
J3:1/4	A120 W Circ Right	117	18.4%	0.5	15.8
J3:2/1	A120 W Entry Ahead	471	40.7%	1.4	10.8
J3:2/2	A120 W Entry Ahead Ahead2	676	59.4%	2.1	11.0
J3:2/3	A120 W Entry Ahead	543	55.2%	1.9	12.8
J3:2/4	A120 W Entry Ahead	666	63.1%	2.2	12.0
J4:1/1	Ahead	683	61.9%	1.4	7.6
J4:1/2	Ahead Ahead2	660	59.2%	1.9	10.4
J4:1/3	Right	666	60.4%	1.3	7.2
J4:2/2+J4:2/1	M11 SB Off Slip Left	785	70.2 : 70.2%	5.9	27.0
J4:2/3	M11 SB Off Slip Ahead Ahead2	290	43.6%	2.0	24.9
J4:2/4	M11 SB Off Slip Ahead	293	43.9%	2.0	25.0
J5:1/1	Ahead	263	40.6%	1.3	17.7
J5:1/2	Ahead	265	40.9%	1.3	17.7
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	726	68.5 : 68.5%	4.0	19.7
J5:2/3	Thremhall Avenue Ahead	696	69.9%	4.1	21.2
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	658	52.9%	0.6	3.1
J6:1/3	Dunmow Rd Circ Right	696	55.9%	0.6	3.3
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	348	46.9 : 46.9%	2.5	26.1
J6:2/3	Dunmow Rd Entry Ahead	167	30.0%	1.2	25.8
J7:1/1	Right	406	76.9%	3.7	32.7
J7:1/2	Right Right2	408	77.3%	4.2	37.0
J7:1/3	Right	259	49.1%	2.5	34.9
J7:2/1	Ahead	130	11.0%	0.4	11.2
J7:2/2	Ahead	876	83.0%	3.7	15.3
J7:2/3	Ahead	863	81.7%	3.3	13.9

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	12.9	Total Delay for Signalled Lanes (pcuHr):	20.20	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	38.8	Total Delay for Signalled Lanes (pcuHr):	10.98	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	42.7	Total Delay for Signalled Lanes (pcuHr):	14.27	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	28.1	Total Delay for Signalled Lanes (pcuHr):	14.61	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	28.8	Total Delay for Signalled Lanes (pcuHr):	10.67	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	60.9	Total Delay for Signalled Lanes (pcuHr):	4.92	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	8.5	Total Delay for Signalled Lanes (pcuHr):	17.86	Cycle Time (s):	75
		PRC Over All Lanes (%):	8.5	Total Delay Over All Lanes(pcuHr):	95.19		

Scenario 8: '2018 Base plus ULP PM' (FG8: '2018 Base plus ULP PM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

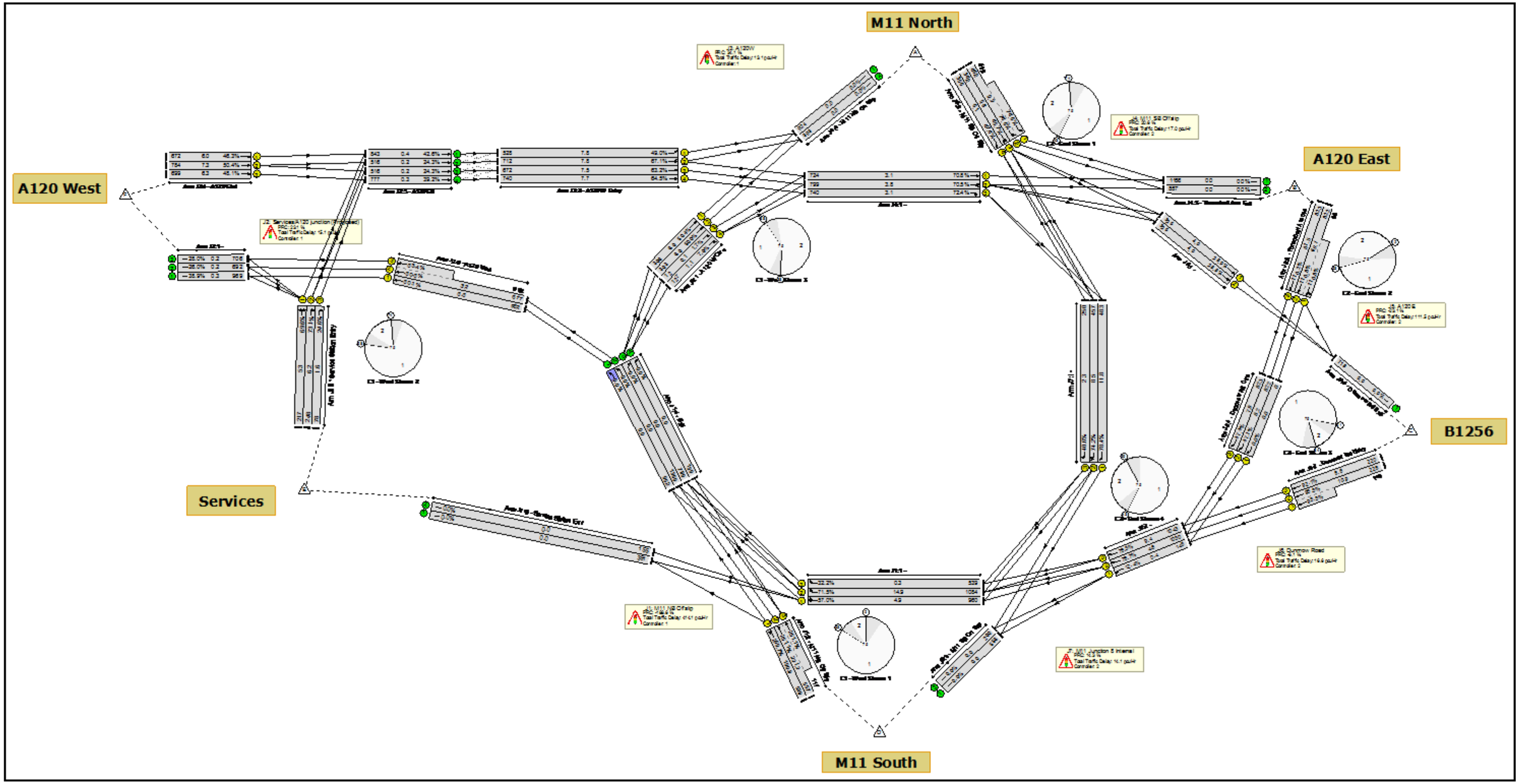
Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	912	71.7%	2.2	8.9
J1:1/2	Right	971	73.5%	3.7	13.6
J1:1/3	Right	519	36.3%	0.3	2.3
J1:2/1	M11 NB Off Slip Left Ahead	460	148.0%	86.7	678.2
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	617	148.4 : 148.4%	114.5	667.8
J2:1/1		905	43.4%	0.4	1.7
J2:1/2		645	29.2%	0.2	1.3
J2:1/3		678	31.9%	0.2	1.4
J2:2/1	Service Station Entry Left Right	201	64.4%	2.5	45.5
J2:2/2	Service Station Entry Right	234	69.0%	3.0	46.5
J2:2/3	Service Station Entry Right	48	15.2%	0.5	33.9
J2:3/1	A120 Wbd Ahead	884	55.7%	1.2	5.5
J2:3/2+J2:3/3	A120 Wbd Ahead	1303	58.8 : 61.2%	2.1	6.5
J2:4/1	A120 Ebd Ahead	633	43.6%	1.1	6.1
J2:4/2	A120 Ebd Ahead	740	47.6%	1.3	6.3
J2:4/3	A120 Ebd Ahead	654	45.0%	1.1	6.2
J2:5/1	A120 EB Ahead	793	40.1%	0.3	1.5
J2:5/2	A120 EB Ahead	488	23.0%	0.1	1.1
J2:5/3	A120 EB Ahead	486	22.9%	0.1	1.1
J2:5/4	A120 EB Ahead	702	35.5%	0.3	1.4
J3:1/1	A120 W Circ Ahead	331	63.1%	3.8	40.9
J3:1/2	A120 W Circ Ahead	330	62.9%	3.7	40.7
J3:1/3	A120 W Circ Right	15	2.9%	0.2	46.9
J3:1/4	A120 W Circ Right	128	16.8%	0.2	7.3
J3:2/1	A120 W Entry Ahead	507	40.2%	1.1	8.0
J3:2/2	A120 W Entry Ahead Ahead2	654	52.7%	1.5	8.3
J3:2/3	A120 W Entry Ahead	621	57.5%	1.9	10.9
J3:2/4	A120 W Entry Ahead	687	59.6%	1.8	9.4
J4:1/1	Ahead	669	59.2%	1.4	7.6
J4:1/2	Ahead Ahead2	749	62.1%	1.8	9.3
J4:1/3	Right	687	60.9%	1.3	7.0
J4:2/2+J4:2/1	M11 SB Off Slip Left	810	74.2 : 74.2%	6.5	29.0
J4:2/3	M11 SB Off Slip Ahead Ahead2	293	46.0%	2.1	26.2
J4:2/4	M11 SB Off Slip Ahead	319	49.9%	2.4	26.9
J5:1/1	Ahead	277	41.2%	1.3	18.7
J5:1/2	Ahead	277	41.1%	1.3	18.6
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	826	76.4 : 76.4%	5.0	21.6
J5:2/3	Thremhall Avenue Ahead	772	75.4%	4.8	22.4
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	758	48.1%	0.5	2.2
J6:1/3	Dunmow Rd Circ Right	772	49.0%	0.5	2.3
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	375	89.2 : 89.2%	6.9	66.5
J6:2/3	Dunmow Rd Entry Ahead	189	79.1%	3.5	65.8
J7:1/1	Right	424	84.1%	4.9	41.8
J7:1/2	Right Right2	416	82.5%	4.9	42.6
J7:1/3	Right	281	55.8%	2.7	34.6
J7:2/1	Ahead	162	13.4%	0.1	1.8
J7:2/2	Ahead	971	89.9%	5.1	18.7
J7:2/3	Ahead	961	89.0%	4.7	17.4

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	-64.9	Total Delay for Signalled Lanes (pcuHr):	207.37	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	30.5	Total Delay for Signalled Lanes (pcuHr):	12.82	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	42.6	Total Delay for Signalled Lanes (pcuHr):	14.18	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	21.2	Total Delay for Signalled Lanes (pcuHr):	15.64	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	17.8	Total Delay for Signalled Lanes (pcuHr):	12.43	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	0.9	Total Delay for Signalled Lanes (pcuHr):	11.33	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	0.1	Total Delay for Signalled Lanes (pcuHr):	22.32	Cycle Time (s):	75
		PRC Over All Lanes (%):	-64.9	Total Delay Over All Lanes(pcuHr):	297.83		

Scenario 9: '2031 Base (includes Committed + G1 + BSN) PM' (FG9: '2031 Base (includes committed + G1 + BSN) PM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

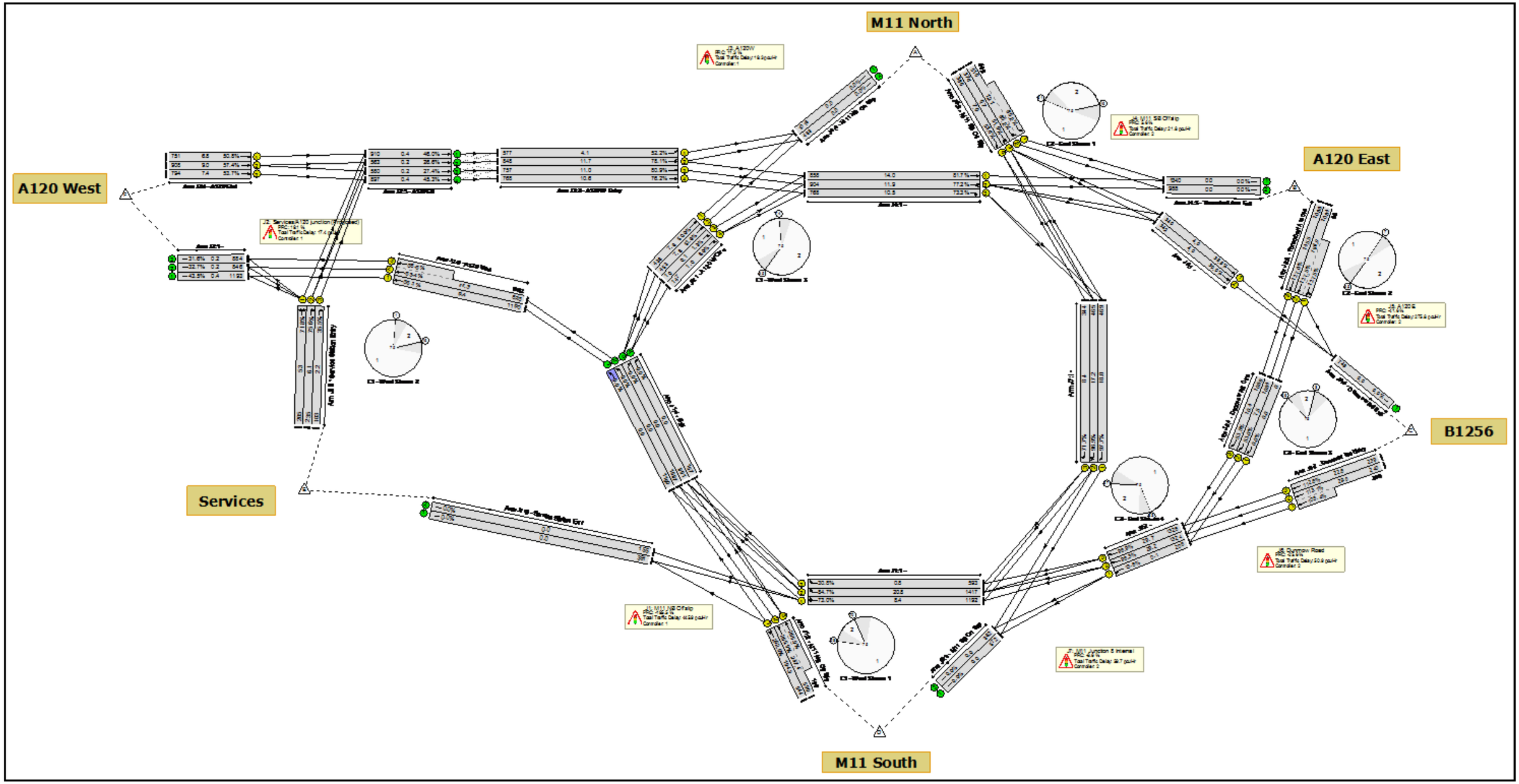
Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	960	57.0%	1.2	4.7
J1:1/2	Right	1084	71.5%	2.3	8.0
J1:1/3	Right	539	32.2%	0.2	1.8
J1:2/1	M11 NB Off Slip Left Ahead	538	259.7%	185.2	1239.0
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	674	251.1 : 251.1%	225.2	1202.7
J2:1/1		969	38.9%	0.3	1.5
J2:1/2		692	26.0%	0.2	1.3
J2:1/3		706	28.0%	0.2	1.3
J2:2/1	Service Station Entry Left Right	217	69.6%	2.9	48.3
J2:2/2	Service Station Entry Right	248	73.1%	3.4	49.2
J2:2/3	Service Station Entry Right	78	24.6%	0.8	35.1
J2:3/1	A120 Wbd Ahead	952	50.1%	1.2	5.9
J2:3/2+J2:3/3	A120 Wbd Ahead	1369	50.5 : 53.4%	1.2	4.5
J2:4/1	A120 Ebd Ahead	672	46.3%	1.2	6.3
J2:4/2	A120 Ebd Ahead	784	50.4%	1.4	6.6
J2:4/3	A120 Ebd Ahead	699	48.1%	1.3	6.5
J2:5/1	A120 EB Ahead	843	42.6%	0.4	1.6
J2:5/2	A120 EB Ahead	516	24.3%	0.2	1.1
J2:5/3	A120 EB Ahead	516	24.3%	0.2	1.1
J2:5/4	A120 EB Ahead	777	39.2%	0.3	1.5
J3:1/1	A120 W Circ Ahead	396	50.4%	1.3	13.1
J3:1/2	A120 W Circ Ahead	393	50.0%	1.3	12.8
J3:1/3	A120 W Circ Right	12	1.7%	0.0	13.7
J3:1/4	A120 W Circ Right	127	7.9%	0.5	34.8
J3:2/1	A120 W Entry Ahead	528	49.0%	1.6	10.6
J3:2/2	A120 W Entry Ahead Ahead2	712	67.1%	2.8	14.1
J3:2/3	A120 W Entry Ahead	672	63.2%	2.8	14.8
J3:2/4	A120 W Entry Ahead	740	64.5%	2.8	13.4
J4:1/1	Ahead	724	70.8%	1.9	9.6
J4:1/2	Ahead Ahead2	799	70.5%	2.2	11.0
J4:1/3	Right	740	72.4%	2.0	9.9
J4:2/2+J4:2/1	M11 SB Off Slip Left	894	74.6 : 74.6%	6.4	25.7
J4:2/3	M11 SB Off Slip Ahead Ahead2	342	45.7%	2.2	22.8
J4:2/4	M11 SB Off Slip Ahead	356	47.4%	2.3	23.1
J5:1/1	Ahead	326	28.9%	1.4	17.1
J5:1/2	Ahead	326	28.8%	1.4	17.2
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	888	110.8 : 110.8%	57.3	232.4
J5:2/3	Thremhall Avenue Ahead	823	110.2%	51.4	225.0
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	822	47.1%	0.5	2.2
J6:1/3	Dunmow Rd Circ Right	823	47.4%	0.5	2.2
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	374	95.5 : 95.5%	9.6	92.1
J6:2/3	Dunmow Rd Entry Ahead	220	92.1%	6.1	99.4
J7:1/1	Right	483	78.4%	4.3	32.0
J7:1/2	Right Right2	457	74.2%	3.8	29.9
J7:1/3	Right	250	40.6%	1.5	22.1
J7:2/1	Ahead	146	12.4%	0.2	5.2
J7:2/2	Ahead	1050	78.7%	2.2	8.3
J7:2/3	Ahead	1043	78.5%	2.1	7.7

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	-188.6	Total Delay for Signalled Lanes (pcuHr):	414.06	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	23.1	Total Delay for Signalled Lanes (pcuHr):	13.36	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	34.1	Total Delay for Signalled Lanes (pcuHr):	13.06	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	20.6	Total Delay for Signalled Lanes (pcuHr):	17.04	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	-23.1	Total Delay for Signalled Lanes (pcuHr):	111.52	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	-6.1	Total Delay for Signalled Lanes (pcuHr):	16.56	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	14.3	Total Delay for Signalled Lanes (pcuHr):	14.13	Cycle Time (s):	75
		PRC Over All Lanes (%):	-188.6	Total Delay Over All Lanes(pcuHr):	601.42		

Scenario 10: '2031 Base plus ULP PM' (FG10: '2031 Base plus All ULP PM', Plan 1: 'AM & PM Existing')

Project and User Details

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model**
Location:	M11 J8 Essex
File name:	M11 J8 Network + New Services Junction on A120 (2031) - MLR checked.lsg3x
Author:	Mark Scroggs
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	Services exit removed from J8 roundabout and relocated on A120 west of J8 via a new signalised junction. A120 also widened to west of Junction 8 in both eastbound and westbound directions.
Linsig Version:	3, 2, 16, 0


M11 North
A120 West
A120 East
B1256
Services
M11 South

Network Results

Item	Lane Description	Demand Flow (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)
J1:1/1	Ahead Right	1192	73.0%	2.0	7.1
J1:1/2	Right	1417	84.7%	4.6	13.7
J1:1/3	Right	593	30.8%	0.2	1.8
J1:2/1	M11 NB Off Slip Left Ahead	544	262.6%	188.6	1248.3
J1:2/2+J1:2/3	M11 NB Off Slip Ahead	725	265.9 : 265.9%	250.5	1243.8
J2:1/1		1193	43.5%	0.4	1.7
J2:1/2		846	32.7%	0.2	1.4
J2:1/3		884	31.6%	0.2	1.4
J2:2/1	Service Station Entry Left Right	205	71.8%	3.0	52.2
J2:2/2	Service Station Entry Right	235	75.6%	3.5	53.5
J2:2/3	Service Station Entry Right	103	35.5%	1.1	38.4
J2:3/1	A120 Wbd Ahead	1190	56.1%	1.4	5.9
J2:3/2+J2:3/3	A120 Wbd Ahead	1687	63.4 : 58.6%	1.9	5.8
J2:4/1	A120 Ebd Ahead	751	50.8%	1.3	6.4
J2:4/2	A120 Ebd Ahead	908	57.4%	1.7	6.9
J2:4/3	A120 Ebd Ahead	794	53.7%	1.5	6.6
J2:5/1	A120 EB Ahead	910	46.0%	0.4	1.7
J2:5/2	A120 EB Ahead	563	26.6%	0.2	1.2
J2:5/3	A120 EB Ahead	580	27.4%	0.2	1.2
J2:5/4	A120 EB Ahead	897	45.3%	0.4	1.7
J3:1/1	A120 W Circ Ahead	438	50.9%	2.4	25.0
J3:1/2	A120 W Circ Ahead	453	51.6%	2.4	24.5
J3:1/3	A120 W Circ Right	10	1.3%	0.0	5.2
J3:1/4	A120 W Circ Right	147	8.9%	0.6	33.8
J3:2/1	A120 W Entry Ahead	577	52.2%	1.4	8.5
J3:2/2	A120 W Entry Ahead Ahead2	848	78.1%	4.1	17.5
J3:2/3	A120 W Entry Ahead	757	80.9%	4.6	21.8
J3:2/4	A120 W Entry Ahead	768	76.2%	3.8	17.6
J4:1/1	Ahead	858	81.7%	3.2	13.3
J4:1/2	Ahead Ahead2	904	77.2%	2.6	11.4
J4:1/3	Right	768	73.3%	2.1	9.7
J4:2/2+J4:2/1	M11 SB Off Slip Left	998	85.2 : 85.2%	8.7	31.5
J4:2/3	M11 SB Off Slip Ahead Ahead2	374	51.9%	2.6	24.7
J4:2/4	M11 SB Off Slip Ahead	386	53.4%	2.7	25.0
J5:1/1	Ahead	340	38.8%	1.2	14.5
J5:1/2	Ahead	342	39.0%	1.2	14.5
J5:2/2+J5:2/1	Thremhall Avenue Left Ahead	1150	127.5 : 127.5%	141.2	442.0
J5:2/3	Thremhall Avenue Ahead	1089	127.0%	132.2	437.1
J6:1/1	Dunmow Rd Circ Right	0	0.0%	0.0	0.0
J6:1/2	Dunmow Rd Circ Right	1084	53.0%	0.6	2.4
J6:1/3	Dunmow Rd Circ Right	1089	53.5%	0.6	2.4
J6:2/2+J6:2/1	Dunmow Rd Entry Ahead	446	113.1 : 105.4%	29.5	238.2
J6:2/3	Dunmow Rd Entry Ahead	239	112.6%	20.2	304.7
J7:1/1	Right	469	97.7%	11.2	85.7
J7:1/2	Right Right2	465	96.9%	11.0	85.3
J7:1/3	Right	344	71.7%	4.4	45.5
J7:2/1	Ahead	206	15.8%	0.1	1.7
J7:2/2	Ahead	1324	96.3%	16.1	54.5
J7:2/3	Ahead	1328	96.9%	16.9	57.0

C1 - West	Stream: 1	PRC for Signalled Lanes (%):	-195.5	Total Delay for Signalled Lanes (pcuHr):	445.93	Cycle Time (s):	75
C1 - West	Stream: 2	PRC for Signalled Lanes (%):	19.1	Total Delay for Signalled Lanes (pcuHr):	15.33	Cycle Time (s):	75
C1 - West	Stream: 3	PRC for Signalled Lanes (%):	11.3	Total Delay for Signalled Lanes (pcuHr):	19.28	Cycle Time (s):	75
C2 - East	Stream: 1	PRC for Signalled Lanes (%):	5.6	Total Delay for Signalled Lanes (pcuHr):	21.79	Cycle Time (s):	75
C2 - East	Stream: 2	PRC for Signalled Lanes (%):	-41.6	Total Delay for Signalled Lanes (pcuHr):	275.81	Cycle Time (s):	75
C2 - East	Stream: 3	PRC for Signalled Lanes (%):	-25.6	Total Delay for Signalled Lanes (pcuHr):	50.88	Cycle Time (s):	75
C2 - East	Stream: 4	PRC for Signalled Lanes (%):	-8.6	Total Delay for Signalled Lanes (pcuHr):	59.66	Cycle Time (s):	75
		PRC Over All Lanes (%):	-195.5	Total Delay Over All Lanes(pcuHr):	890.74		