

URGENT UPDATE 15/509251 – Land North of Bicknor Wood**Additional Transport / Highway Information**

Additional highway information was requested by members at the Planning Committee Meeting on 7 July 2016. This note sets out the view of Maidstone Borough Council's independent transport consultant Mott MacDonald on the highway work carried out by the applicant and KCC's responses to the proposals.

This paper also covers bus prioritisation measures as well as proposing additional conditions and heads of terms.

KCC provided detailed comments on 25 January 2016 in relation to the original Transport Assessment dated November 2015. In their response, they requested more detailed assessments of the key junctions. A revised Transport Note was submitted by the applicant on 17 May 2016 which contains the assessments requested by KCC. No further response has been received from KCC acknowledging the Transport Note. With regards to their January response, except for positively acknowledging the traffic generation assumed by the applicant, no mention is made of either flows or traffic distribution. It is therefore concluded that KCC accept the traffic flow, generation and distribution assumptions that underpin the assessments carried out in the TA.

Discussion of VISUM Modelling*Executive Summary*

The Maidstone VISUM transport model has been used to test the strategic implications of Local Plan growth over the period to 2031 and the package of transport interventions identified in the Integrated Transport Strategy (ITS). **As a strategic model, it is unsuited to considering the local level transport impacts of individual planning applications. Despite this, however, KCC has relied upon the VISUM model outputs in making its objections to these applications.** It is standard practice to assess the local transport impacts of individual planning applications by undertaking detailed junction modelling using the LinSig, ARCADY and PICADY modelling software packages.

The VISUM model covers the Maidstone urban area only. It does not model in detail the rural areas of the Borough nor the M20 junctions and main motorway carriageway. The key data on which the model is based is 15 years old. For these reasons Highways England (HE), the highway authority for England's strategic motorway and trunk road network, has indicated that the VISUM model is unsuitable for use as a tool for assessing the impacts of the Local Plan on the motorway network.

VISUM cannot model the impacts of junction capacity improvements in detail. It can, however, assess how mitigation measures can reassign traffic across the highway network and their effect on travel time delay. In terms of the latter, VISUM predicts an increase in inbound travel time on the A274 Sutton Road corridor of just 1 minute 20 seconds in the year 2031 compared with the existing situation. This cannot be regarded as significant in the context of the variations in traffic conditions that can typically be expected to occur on a day to day basis.

Traffic flows on the A274 Sutton Road in the year 2031 Do Something scenarios are predicted to increase by 400 vehicles during the AM peak relative to the existing situation, an increase of 38%. However, this increase cannot be attributed solely to the traffic generated by the application sites in south east Maidstone – it represents the cumulative impact of the full Local Plan objectively assessed housing need of

18,560 units, together with background traffic growth not associated with the Local Plan. **A comprehensive package of improvements to highway capacity, improvements to the already frequent and high quality bus services and the provision of comprehensive walking and cycling facilities connecting directly with existing routes has been proposed to mitigate the transport impacts of the application sites.**

Detailed junction capacity assessments using LinSig, ARCADY and PICADY conclusively demonstrate that the traffic impacts of proposed development in south east Maidstone can be mitigated to a situation where congestion is **lower** than if the developments were **not** built and if the mitigation was **not** implemented. The transport improvements proposed by the applicants will provide benefits to existing transport users on the corridor as well as mitigating the impact of proposed development.

VISUM model runs were also undertaken for the year 2022, including **all development identified for the South East Maidstone Strategic Development Location to the end of the Local Plan period.** In their original report to the 22 February 2016 JTB, KCC noted that the model results *“demonstrate a level of impact on the highway network that cannot be regarded as severe in the context of the National Planning Policy Framework”* (paragraph 5.1).

Overview

The Maidstone VISUM transport model has been used to test the strategic implications of Local Plan growth over the period to 2031 and the package of transport interventions identified in the Integrated Transport Strategy (ITS). Paragraph 3.6 of the joint KCC/MBC report to the Joint Transportation Board (JTB) on 7 December 2015 noted that *“VISUM does not model the impacts of local junction mitigation... It provides a strategic overview of movement patterns on the road network and the context for more detailed modelling at a local level”*.

Only those ITS interventions within the Maidstone urban area have been tested by VISUM. Interventions specific to the Rural Service Centres and Larger Villages have not been tested as they fall outside the outer model cordon. This is shown in the figure below, taken from the *Maidstone Multi Modal Transport Model – Local Model Validation Report* (Jacobs, February 2011). The only trips from the Rural Service Centres and Larger Villages which will have been accounted for in the VISUM model will be those trips to the Maidstone urban area.

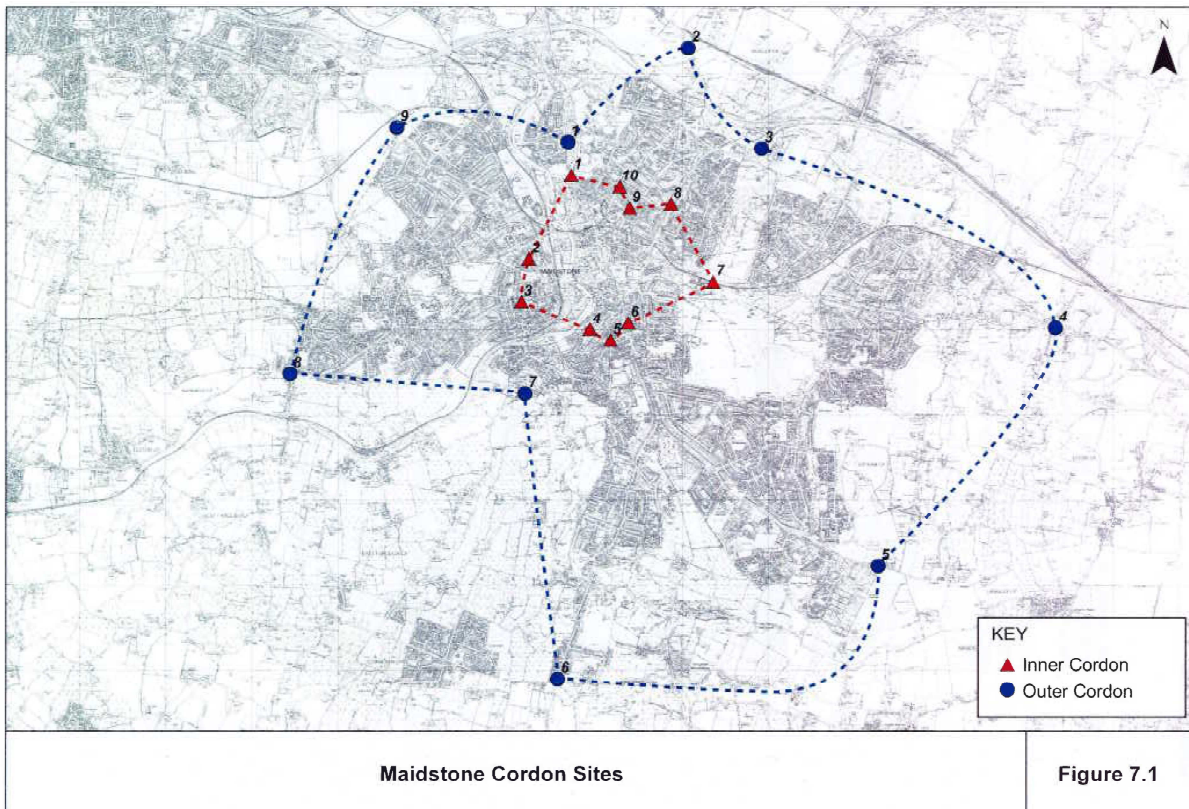


Figure 7.1

Furthermore, VISUM does not fully model the M20 junctions and main motorway carriageway. The trip origin/destination matrices used within the model have been based upon 2001 London Area Transport Study (LATS) survey data, 2001 Census Journey to Work data and other roadside interview (RSI) data. Due to the age of the original 2007 base VISUM model produced by Jacobs, this was updated by Amey to a 2014 baseline using third party data from Transport Assessments and journey time data, but no new trip origin/destination data was collected. It is possible that this may affect the accuracy of the VISUM forecasts, as trip patterns may have changed in the past 15 years. The DfT's WebTAG guidance advises that any trip origin/destination data over six years old should be replaced.

For these reasons Highways England (HE), the highway authority for England's strategic motorway and trunk road network, has indicated that the VISUM model is unsuitable for use as a tool for assessing the impacts of the Local Plan on the motorway network. HE's Regulation 19 representation therefore objected to the Local Plan. The Borough Council is working towards the agreement of an alternative methodology with HE and KCC involving localised junction modelling at M20 Junctions 5 to 8 using the LinSig, ARCADY and PICADY modelling software packages.

In the context of south east Maidstone, LinSig, ARCADY and PICADY have already been used to assess the detailed impact of development proposals at individual junctions. The use of localised transport models to supplement strategic modelling tools such as VISUM is standard practice (notwithstanding the issues with the age and coverage of the Maidstone VISUM model), to consider junction capacity in detail and to confirm that identified transport mitigation measures will be effective. Results of the LinSig, ARCADY and PICADY modelling for the relevant junctions are presented separately.

Forecast VISUM models were built from the 2014 base model for 2031 (the end of the Local Plan period) and subsequently for an interim forecast year of 2022, at which time the first review of the Local Plan is scheduled to take place.

VISUM Model Outputs

Various scenarios have been tested for the 2031 forecast year, but only the Do Something 4a (DS4a, with the South East Maidstone Strategic Link (SEMSL)) and Do Something 4b (DS4b, without SEMSL) have tested the objectively assessed housing need of 18,560 units. However, the Do Minimum (DM) scenario (i.e. including committed highway schemes only (the Maidstone Bridges gyratory) and not the package of highway, public transport and walking/cycling improvements identified in the ITS) was re-run in June 2016 with the 18,560 housing units. A full report of the DM scenario outputs is awaited from KCC.

With regard to the 2022 forecast year, the Do Minimum and Do Something scenarios have both tested a revised housing target of 14,034 units, adjusted to remove the three broad locations for housing growth towards the end of the Local Plan period (Maidstone town centre, Invicta Park Barracks and Lenham) and the windfall sites expected to come forward between 2022 and 2031. **However, the 2022 target includes all development identified for the South East Strategic Development Location.**

A summary of the travel demand and network performance for the AM peak in each of these scenarios is provided in the table below.

	2014 Base	2022 DM	2022 DS	2031 DM	2031 DS4a (with SEMSL)	2031 DS4b (without SEMSL)
Travel Distance (veh km)	122,000	141,400	132,000	143,900	140,100	135,600
<i>% difference vs 2014</i>		16%	8%	18%	15%	11%
Travel Time (veh hours)	8,300	10,700	9,100	11,000	9,300	9,700
<i>% difference vs 2014</i>		29%	10%	33%	12%	17%
Person Trips	50,300	56,800	56,800	59,100	59,200	59,200
<i>% difference vs 2014</i>		13%	13%	17%	18%	18%
Vehicle Trips	35,500	40,000	37,800	41,500	39,300	39,300
<i>% difference vs 2014</i>		13%	6%	16%	11%	11%

When compared against the 2014 baseline, the results identify an increase in vehicle trips of 6% for the 2022 Do Something scenario. This increase is lower than the 13% predicted for the 2022 Do Minimum scenario, due to the positive effect of the ITS interventions including bus and walking/cycling improvements.

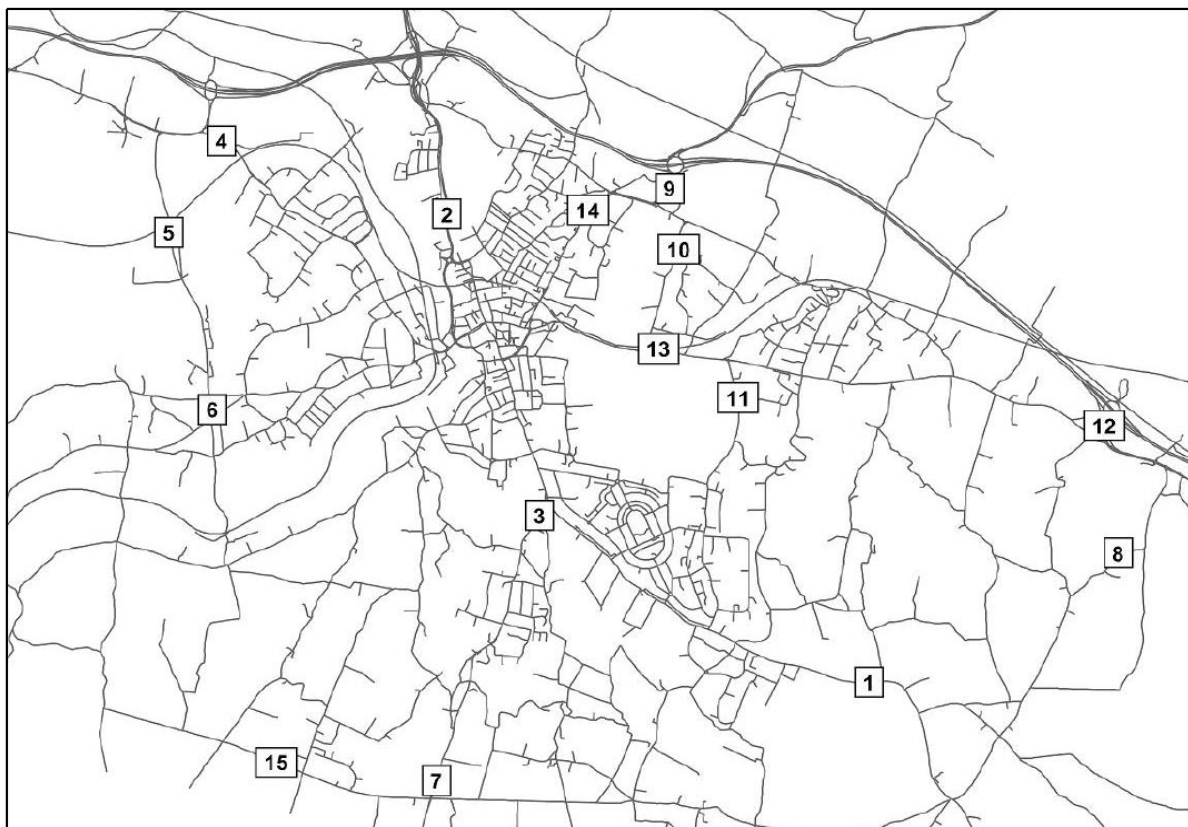
With respect to the 2031 scenarios, the Do Something 4a (with SEMSL) and 4b (without SEMSL) scenarios predict an 11% increase in vehicle trips relative to the 2014 baseline. This is lower than the 16% increase predicted by the Do Minimum scenario, again due to the positive effect of the ITS interventions.

The 6% increase in vehicle trips in the 2022 Do Something scenario is equivalent to an additional 2,300 vehicle trips on the highway network in the AM peak. A further 1,500 vehicle trips are predicted to be added to the highway network during the AM peak between 2022 and 2031. As the 2022 scenarios assume that the South East Maidstone Strategic Development Location and other Local Plan housing and employment allocations are fully built out, this increase can be attributed to traffic generated by the broad housing locations and windfall sites – representing less than 25% of the objectively assessed need of 18,560 housing units – and background traffic growth not associated with Local Plan development.

It is notable that in summarising the results of the 2022 model runs, paragraph 5.1 of KCC's original report to the 22 February 2016 JTB noted that the results "demonstrate a level of impact on the highway network that cannot be regarded as severe in the context of the National Planning Policy Framework".

With respect to the A274 and A229 corridors, analysis of VISUM model outputs has necessarily been confined to the link flows and travel time routes published in Appendix E of the *Maidstone VISUM Transport Model Forecasting Report* (Amey, March 2016). This covers the 2014 base and 2031 Do Something 4a and 4b scenarios only as equivalent data for the updated 2031 Do Minimum (i.e. with the objectively assessed need of 18,560 housing units) and 2022 Do Minimum and Do Something scenarios is awaited from KCC.

The figure below shows the model network and the approximate location of the links for which directional traffic flows have been published in Amey’s March 2016 report. Traffic flows for sites 1 and 3 are presented in the following table.

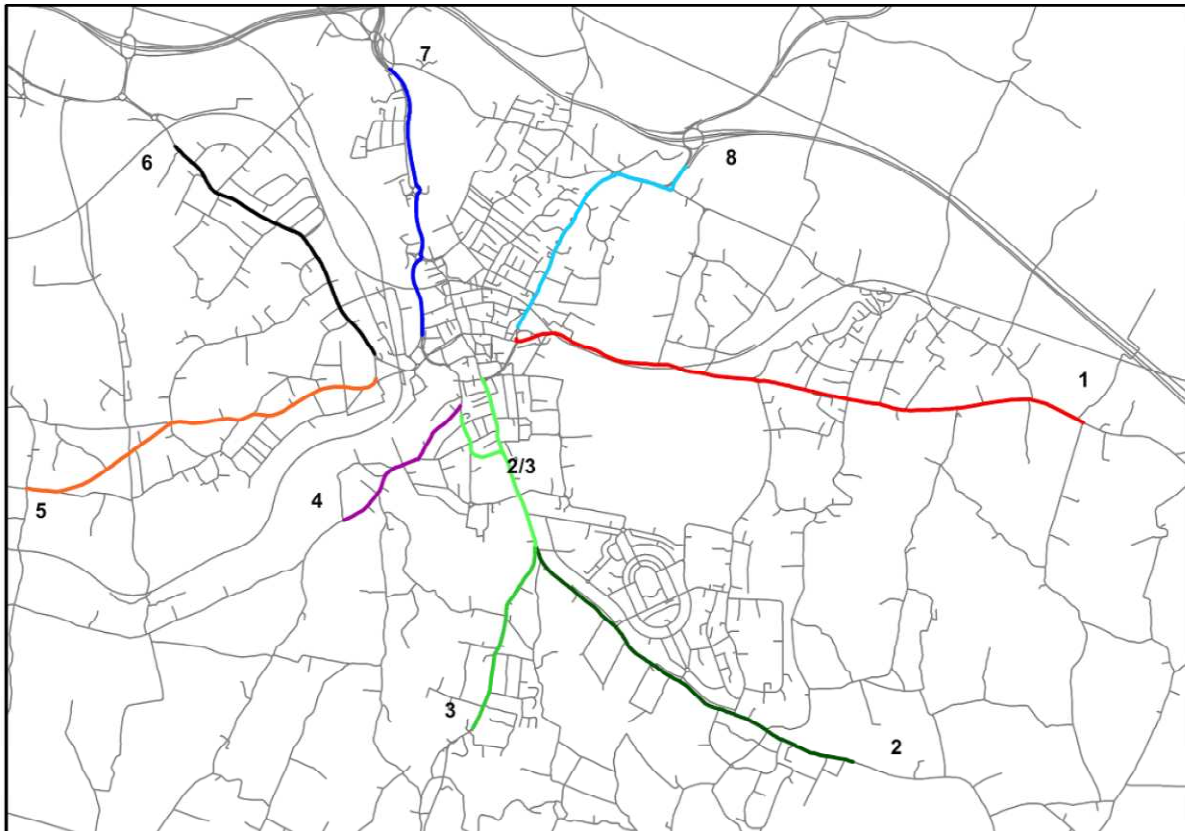


Site	Link	2014	2022 DM	2022 DS	2031 DM	2031 DS4A (with SEMSL)	2031 DS4B (without SEMSL)
1	A274 (W)	1050	<i>Data awaited</i>	<i>Data awaited</i>	<i>Data awaited</i>	1450	1450
3	A229 Loose Road (N)	2600	<i>Data awaited</i>	<i>Data awaited</i>	<i>Data awaited</i>	3000	3200

It can be seen that on the A274 (W) that traffic flows in the 2031 Do Something scenarios are predicted to increase by 400 vehicles relative to the 2014 baseline, an increase of 38%. On the A229 Loose Road (N), the equivalent increase is 400 vehicles for DS4a (with SEMSL) and 600 vehicles for DS4b (without SEMSL), an increase of 15% and 23% respectively. However, **these increases cannot be attributed solely to the traffic generated by the proposed developments in south east Maidstone** – this represents the cumulative impact of the full Local Plan objectively assessed housing need of 18,560 units, together with background traffic growth not associated with the Local Plan.

It must be reiterated that VISUM is a strategic highway model and is unsuited to the assessment of individual junction capacity. This is more robustly undertaken using the LinSig, ARCADY and PICADY modelling software packages, as is industry standard practice. VISUM can, however, model the impacts of mitigation measures to a degree, not to assess individual junction capacity but to assess how these mitigation measures can reassign traffic across the highway network and their effect on travel time delay.

With respect to travel times, Amey’s March 2016 report presented forecast travel times from VISUM for eight key radial road corridors as shown in the figure below.



It can be seen from the above figure that travel time route 2 relates to the A274 Sutton Road and, north of the Wheatsheaf junction, the A229 Loose Road into Maidstone town centre. The table below shows the the AM peak inbound and outbound travel times for the A274, for the 2014 baseline and 2031 Do Something 4b scenario.

Travel times in seconds – AM Peak

Route	2014		2031 DS4B (without SEMSL)	
	Inbound	Outbound	Inbound	Outbound
2 - A274 Sutton Road	738	602	818	713
Difference vs 2014	-	-	80	111

The VISUM model predicts an AM peak inbound travel time for route 2 of 12 minutes 18 seconds for the 2014 baseline scenario. This compares with an inbound travel time for scenario 2031 DS4b of 13 minutes 38 seconds. This represents an increase in travel time of 1 minute 20 seconds.

In the outbound direction, VISUM predicts an AM peak travel time of 10 minutes 2 seconds in the 2014 baseline scenario, compared with 11 minutes 53 seconds for scenario 2031 DS4b. This represents an increase in travel time of 1 minute 51 seconds.

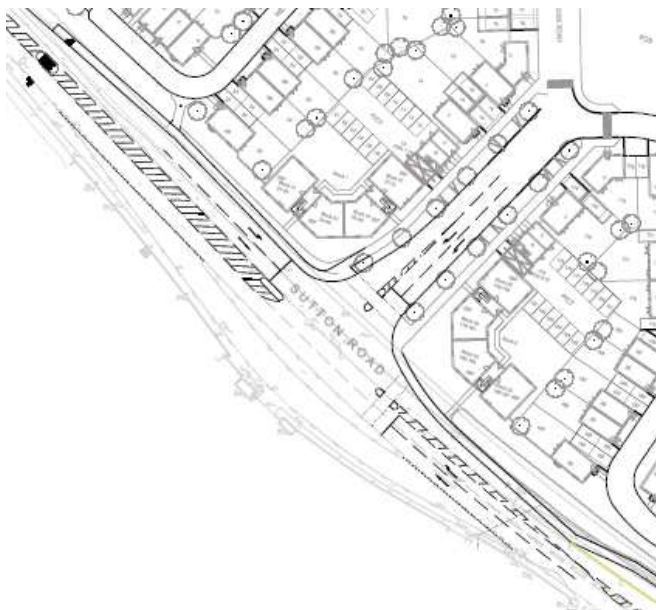
The increases in travel time predicted by VISUM in 2031 relative to the 2014 baseline **cannot be regarded as significant in the context of the variations in traffic conditions that can typically be expected to occur on a day to day basis**. Notwithstanding this, it appears from Appendix C of Amey's March 2016 report that the proposed junction capacity improvements at the A229 Loose Road/Armstrong Road/Park Way junction and the A274 Sutton Road/St Saviours Road junction have **not** been modelled in the VISUM Do Something scenarios. Therefore it is likely that the beneficial impacts of the proposed junction improvements on travel time delay on the A274 corridor have been underestimated by VISUM.

Discussion on LINSig Junction Modelling

Assessment Results

In this section, the drawings by the applicants of the relevant junctions together with their assessment results are presented. Different scenarios were considered in the transport documentation. The 2030 scenarios are included in this note showing a future situation with committed development without highway mitigation, and the future situation with committed and proposed development with highway mitigation where mitigation is proposed.

A274 / Imperial Park Junction



**Table 11: A274 Sutton Road / Imperial Park Site Access junction – 2030 Base + Committed
Flows AM & PM Peak Hour Assessments**

Link No.	Lane Description	AM Peak		PM Peak	
		Deg Sat (%)	Mean Max Q	Deg Sat (%)	Mean Max Q
Network		83.6%	-	90.5%	-
J1: A274 Sutton Road / Imperial Park Site Access junction		83.6%	-	90.5%	-
1/1+1/2	Sutton Rd W/B Ahead Right	83.6%	28.5	58.3%	11.7
2/2+2/1	Sutton Rd E/B Ahead Left	62.1%	17.6	90.5%	40.1
3/1	Site Exit Left	36.2%	1.6	18.1%	0.8
3/2	Site Exit Right	23.7%	1.6	7.4%	0.5
Practical Reserve Capacity (%):		7.7		-0.5	
Total Delay Over All Lanes (pcuHr)		10.80		13.85	

Note: Cycle time = 120s in AM and PM Peak hours / Mean Max Queue in pcus

**Table 12: A274 Sutton Road / Imperial Park Site Access junction – 2030 Base + Committed +
Proposed Flows AM & PM Peak Hour Assessments**

Link No.	Lane Description	AM Peak		PM Peak	
		Deg Sat (%)	Mean Max Q	Deg Sat (%)	Mean Max Q
Network		84.0%	-	92.4%	-
J1: A274 Sutton Road / Imperial Park Site Access junction		84.0%	-	92.4%	-
1/1+1/2	Sutton Rd W/B Ahead Right	84.0%	28.6	60.6%	11.8
2/2+2/1	Sutton Rd E/B Ahead Left	65.0%	19.0	92.4%	42.9
3/1	Site Exit Left	60.2%	3.8	38.8%	1.7
3/2	Site Exit Right	46.5%	3.4	15.3%	1.0
Practical Reserve Capacity (%):		7.1		-2.7	
Total Delay Over All Lanes (pcuHr)		13.81		17.07	

Note: Cycle time = 120s in AM and PM Peak hours / Mean Max Queue in pcus

The vehicular access to the site is proposed A274 at the Imperial Park junction, through the Imperial Park development and along Gore Court Road. A274 / Imperial Park junction is presently a priority junction. It is proposed to provide full signalisation of this junction.

Above tables show very minor increases in queuing when comparing 2030 base + committed with 2030 base + committed + development of +1 pcu in the AM peak and +3 pcus in the PM peak. Such an increase is not considered severe.

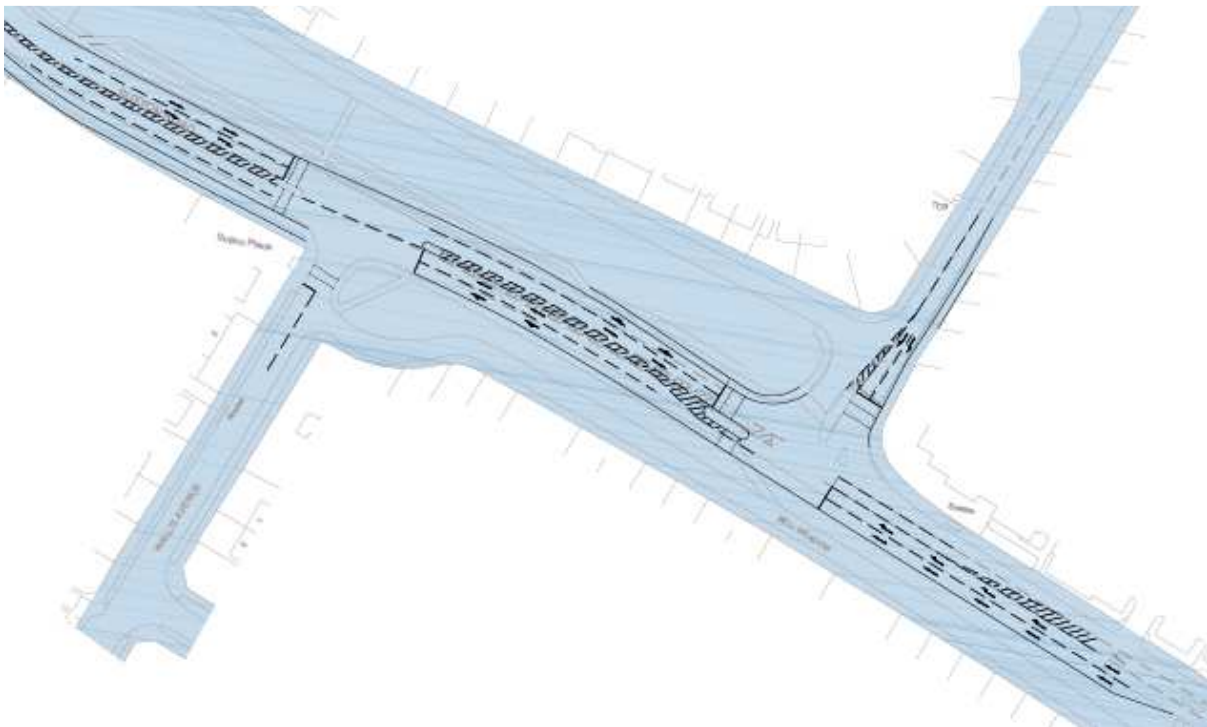
KCC's response dated 25 January 2016 comments as follows: "The limited junction modelling capacity that has been included in the TA has highlighted how the Imperial Park access priority junction with the A274 will operate over capacity in the PM peak by 2025. Further analysis is included to highlight how a model run based on a direct input profile results in the junction operating within capacity for a further five years, with capacity exceeded by 2030.

No mitigation is proposed, although the land necessary to achieve a signalised arrangement has been made available as part of the Imperial Park proposals and capacity modelling is included to demonstrate how such an arrangement could operate in the 2025 and 2030 scenarios. This shows that the junction would be approaching capacity in the PM peak by 2030.

The TA does not propose that the traffic signalled arrangement will be implemented alongside the new development. This implies that the current junction will reach capacity by 2030 or sooner. This is not acceptable to KCC Highways and the applicant is required to identify and implement an effective form of junction improvement.”

The updated Transport Note submitted on 17 May 2016 includes the signalisation of the Imperial Park junction as detailed above. “an effective form of junction improvement” has thereby been proposed.

A274 / Willington Street / Wallis Avenue



	Committed junction layout with Committed flows				Proposed junction layout with committed + development flows			
	AM		PM		AM		PM	
	PRC	Max DoS	PRC	Max DoS	PRC	Max DoS	PRC	Max DoS
2030	-38.1	124.3%	-39.2	125.3%	-24.8	112.4%	-25.7	113.2%

The proposal for this junction put forward by the developer is almost identical to the latest scheme drawing produced by KCC’s consultant Amey. It contains two lanes in each direction between the two junctions, both of which allow ahead movements, and two to one lane merges on the exits along A274.

The above table shows the headline results for the base without development flows scenario and with development flows scenario. The results show that in 2030 all scenarios would be significantly over capacity. They also show the “with development” scenario in 2030 to perform significantly better than the “without development” scenario. This demonstrates that by introducing the mitigation and adding development flows, the junction would operate significantly better than without mitigation and without development flows. Whilst the mitigation would not resolve existing congestion, the mitigation would entirely mitigate the development’s impact at this junction leading to overall significantly lower average delays.

The original TA did not include detailed assessments of this junction and KCC's response of January 2016 did therefore not specifically refer to this junction or the acceptability of LinSig modelling. The Transport Note submitted by the applicant in May 2016 contains detailed assessment of this junction, yet KCC have not provided comments to this submission. The comments made in the papers relating to Land South of Sutton Road and Land at Bicknor Farm in relation to KCC's LinSig comments on those two applications equally apply to the modelling carried out for this scheme. These are repeated in the appendix to this paper.

A274 / New Road

Table 25: A274 Sutton Road/New Road Junction Capacity Assessment

Movement	AM		PM	
	Q	RFC	Q	RFC
<u>2030 Base + Committed</u>				
B-AC	1	0.50	1	0.35
C-AB	0	0.12	0	0.22
<u>2030 Base + Committed + Proposed</u>				
B-AC	1	0.54	1	0.38
C-AB	0	0.13	0	0.22

The results show the junction to operate within capacity in both scenarios in 2030. No mitigation has been proposed.

A274 / Horseshoes Lane

Table 27: A274 Sutton Road/Horseshoe Lane Junction Capacity Assessment

Movement	AM		PM	
	Q	RFC	Q	RFC
<u>2030 Base + Committed</u>				
B-C	4	1.173	0	0.098
B-A	17	1.143	1	0.804
C-AB	0	0.027	0	0.89
<u>2030 Base + Committed + Proposed</u>				
B-C	5	1.29	0	0.12
B-A	23	1.25	2	0.88
C-AB	0	0.03	0	0.10

The results for 2030 show that there would be no additional queuing on A274, the addition of the development traffic therefore has no impact on the A274. Although Horseshoes Lane exceeds theoretical capacity in both scenarios in the morning peak, the increase in queuing is not significant, with queues increasing by 6pcus for right turners out of Horseshoes Lane.

A potential improvement scheme fully mitigating was considered by the applications of South of Sutton Road. It is however considered that such an improvement could lead to induced demand along this lane

which would not be desirable due to the type of road and its width restrictions. No mitigation at this junction is therefore suggested by any of the applicants but a solution would be possible should members wish so.

'Rat Running'

At the Planning Committee Meeting of 7 July 2016, a survey demonstrating "100,000 vehicles rat running along the lanes" was cited by members. To date, we have not had sight of this survey and therefore are not able to comment on the survey.

The applicant of South of Sutton Road in their original TA dated October 2015 considered the potential for rat running along Gore Court Road and the B2163 through Leeds village. The relevant paragraphs for Gore Court Road are as follows:

Paragraph 5.2.6: *"As can be seen from Table 5-2 the traffic flows on Gore Court Road can be considered relatively light, with no more than 118 vehicles in the morning peak hour travelling southbound and 84 vehicles travelling northbound. This equates to an average of no more than two vehicles per minute in either direction, which suggests that the route is of limited attractiveness as a 'rat-run'."*

Paragraph 5.2.7: *"Traffic speed was also recorded by the ATC, and this shows vehicles entering the urban area travelling at 34.61mph (85th percentile) and heading north away from the urban area at 35.21mph (85th percentile), which reflects Gore Court Road's limited width and restricted forward visibility. It should be noted that Gore Court Road is subject to a 60mph speed limit at this location."*

Given the highway improvements proposed by the applicant and the junction assessment results presented in this paper which show improved junction performance at the key junctions, it is considered unlikely that the development would result in rat running along the lanes to the north of Sutton Road.

Notwithstanding the above, an additional Section 106 Heads of Terms is suggested to monitor and if necessary mitigate any impact in respect of rat running.

Public transport improvements and Modal Shift

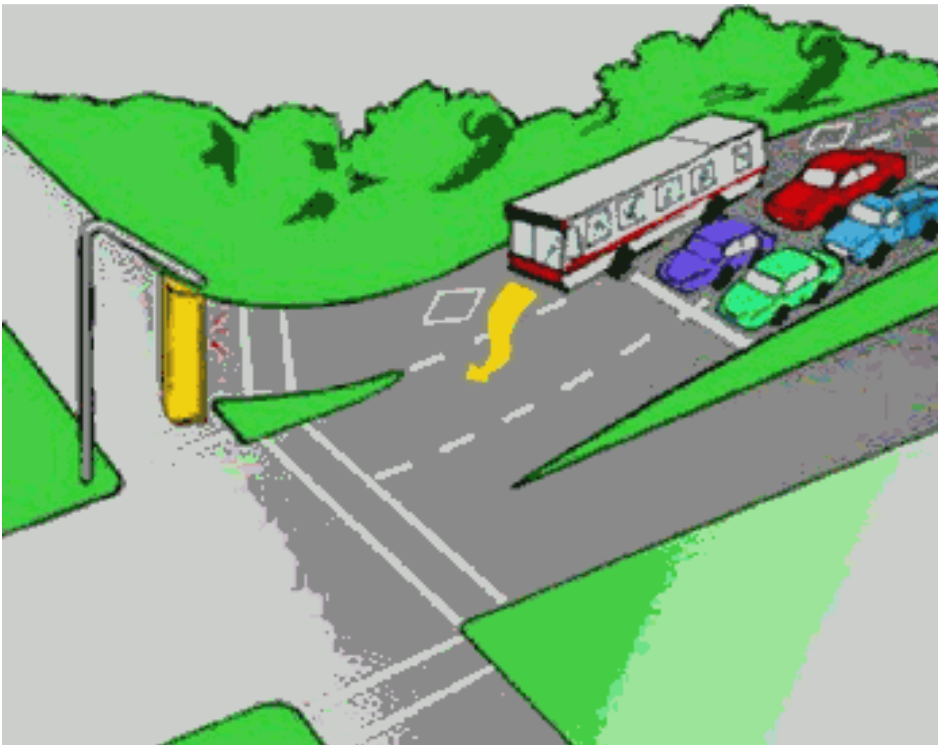
Public transport improvements, including bus prioritisation are put forward as part of the highways mitigation for housing proposals on the A274. Such improvement will assist in encouraging modal shift: the change from the use of the private car to other forms of transport. Such improvements include:

- **Bus improvements** Including
 - bus prioritisation at key junctions on the A274,
 - prioritisation of individual buses via transponders,
 - bus stop improvements including real time information systems and shelters,
 - improvements to ticketing (such as smart ticketing).
- **Improving walking and cycling** improving access to bus stops and to provide alternatives to the private car.
- **Increasing bus** frequency from 12 minutes to 6 minutes overall.

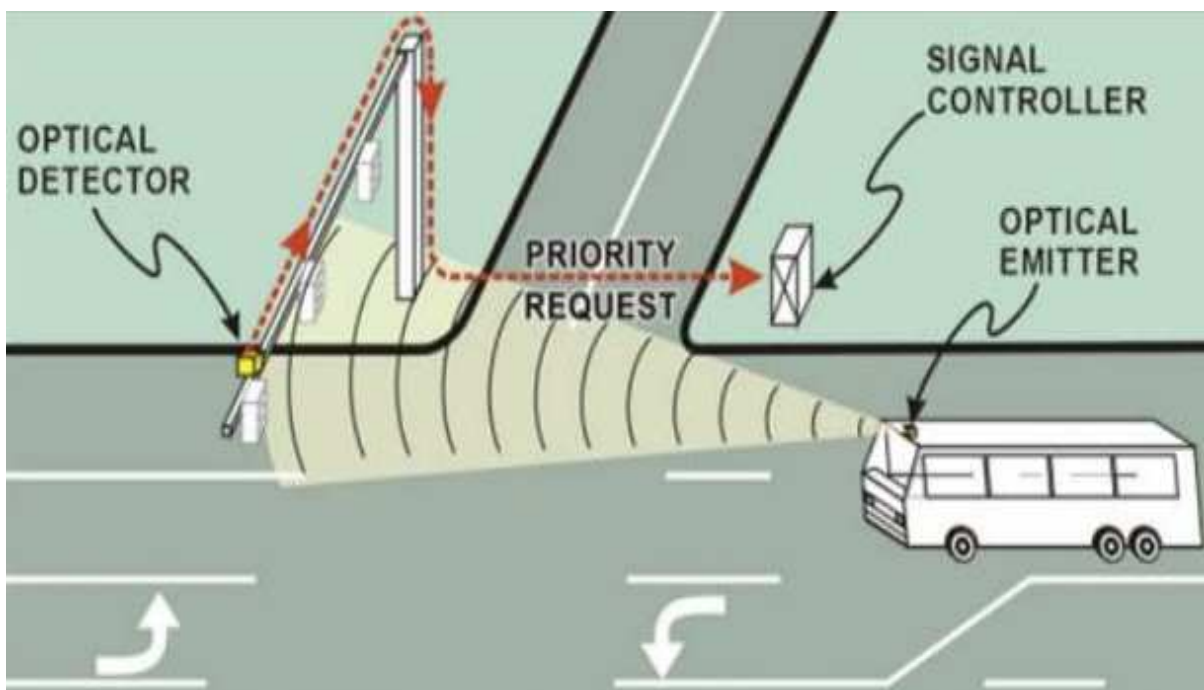
The housing proposals include Section 106 contributions to provide for the above improvements. The Transport Assessment of the applications make no assumption about modal shift, apart from the alternative solution for the Wheafsheaf junction where a conservative 3% modal shift is assumed.

Examples of bus prioritisation

Pre-signals to allow buses to pull ahead of traffic in advance of a signalised junction



Bus prioritisation via transponder, which allows the bus to communicate to the signal ahead, altering the signal to prioritise the bus at the junction



Bus Stop pull-out priority, allowing buses priority to pull out of bus stops

HOW DOES THE SCHEME WORK?

When motorists see these road markings near a bus stop, they must:



It is a traffic offence if motorists do not give way to buses or stay in the yellow box marked **Give Way to Buses**.

Transport Conclusions

The proposed housing allocations at the south east strategic development location are well related to existing development and existing bus routes and walking and cycling facilities. The transport improvements proposed by the developers consist not just of junction capacity improvements, but improvements to the 82 bus service to Maidstone town centre (this is already high quality with frequencies of up to every 8 minutes, low emission vehicles and on board WiFi), together with the provision of walking and cycling routes and crossing facilities to connect seamlessly with existing infrastructure and provide an attractive choice of travel modes for work, education, business and leisure purposes.

The above directly contributes to the delivery of the balanced package of transport interventions set out in the Integrated Transport Strategy . The 2022 Do Something and 2031 Do Something 4b VISUM models have tested these interventions. The model outputs demonstrate that the transport impacts of the proposed development in the south east area (as well as across the whole Maidstone urban area) can be mitigated to a level where the residual impact is less than severe. Furthermore, KCC have themselves acknowledged in summarising the results of the 2022 model runs, which included all development identified for the South East Strategic Development Location to the end of the Local Plan period, that the results *“demonstrate a level of impact on the highway network that cannot be regarded as severe in the context of the National Planning Policy Framework”* (paragraph 5.1 of the original report to the 22 February 2016 JTB).

The detailed junction modelling undertaken using LinSig, ARCADY and PICADY conclusively demonstrates that the traffic impacts of proposed development in south east Maidstone can be mitigated to a situation

where congestion is **lower** than if the developments were **not** built and if the mitigation was **not** implemented.

The level of impact on the highway network of the planned developments in south east Maidstone, following mitigation, cannot therefore be regarded as severe in the context of the National Planning Policy Framework. As well as mitigating the impact of proposed development, the transport improvements proposed by the developer will provide benefits to existing transport users on the corridor.

Proposed Additional Condition

1. AIR QUALITY RE OFFSETTING EMISSIONS (Calculation of Mitigation/Compensation)

Due to the scale of this proposal, a calculation of pollutant emissions costs from the vehicular traffic generated by the development should be carried out, utilising the most recent DEFRA Emissions Factor Toolkit and the latest DEFRA IGCB Air Quality Damage Costs for the pollutants considered, to calculate the resultant damage cost.

The calculation should include:

- Identifying the additional trip rates generated by the proposal (from the Transport Assessment);
- The emissions calculated for the pollutants of concern (NO_x and PM₁₀) [from the Emissions Factor Toolkit];
- The air quality damage costs calculation for the specific pollutant emissions (from DEFRA IGCB);
- The result should be totalled for a five year period to enable mitigation implementation.
- The calculation is summarised below:

Road Transport Emission Increase = Summation [Estimated trip rate for 5 years X Emission rate per 10 km per vehicle type X Damage Costs]

The pollution damage costs will determine the level of mitigation/compensation required to negate the impacts of the development on local air quality.

- No development shall commence until the developer has developed a scheme detailing and where possible quantifying what measures or offsetting schemes are to be included in the development which will reduce the transport related air pollution of the development during construction and when in occupation. The report should be submitted to and approved by the Local Planning Authority, prior to development. [The developer should have regard to the DEFRA guidance from the document *Low Emissions Strategy -using the planning system to reduce transport emissions January 2010.*]

Reason: to ensure the impact of the proposal upon air quality is mitigated.

Additional Heads of Terms

'Rat Running' Monitoring

Within six months of the first occupation of any development within sites designated by policies H1(7); H1(8); H1(9) or H1(10) the respective applicants shall commence 'rat running' monitoring of the highway routes to the north of A274 Sutton Road linking with the A20 Ashford Road. Three Automatic Traffic Count (ATC) survey points shall be undertaken for a period of one week, 24 hours a day, at locations to be agreed by the Council, in the same week every year for a period of 5 years beyond the first commencement of each of the abovementioned sites. A Monitoring Report will be produced within four weeks of the

completion of each annual survey and submitted to the Council for review and agreement. It will incumbent upon the Council to respond to this data within a 28 day period.

Should the Monitoring Report identify significant adverse traffic flow conditions (a quantum to be determined) arising from 'rat running' activity, as decided by the Borough Council, then the Council will enact the Trigger to release the S106 Contribution sum of Two Hundred Thousand Pounds (£200,000) to be paid towards suitable mitigation.

The 'rat running' mitigation scheme will be devised by the Council and Highway Authority and implemented by the Highway Authority.

'Rat Running' Mitigation Sum

The Rat Running Mitigation Sum is Two Hundred Thousand Pounds (£200,000) to be split proportionately between sites H1(7), H1(8), H1(9) and H1(10) on the basis of housing unit numbers.

The recommendation remains unchanged

APPENDIX

Traffic Flows / Traffic Generation / Traffic Distribution

Existing flows are based on traffic surveys that were undertaken in June 2015. Traffic surveys carried out within 3 years of an application being submitted are usually considered up to date enough to be valid to establish an existing traffic situation.

Background growth to the future years has been applied using TEMPro (Trip End Model Presentation Program) which is based on the National Trip End Model (NTEM), the DfT's model used in transport planning which includes forecasts on population, employment, households by car ownership, trip ends and simple traffic growth factors. Committed development has also been included. This is the standard approach taken in Transport Assessments.

Development flows were calculated based on TRICS, the tool used nationally to calculate traffic generation of developments. It is based on surveys at various different development types across the UK and Ireland. The traffic generation proposed is presented in the TA. It should be noted that the TRICS data has not been adjusted to allow for any modal shift from either the significant investment in public transport, footways and cycleways proposed by the developer or the travel plan measures. The traffic distribution is presented in the transport documents.

Given KCC's responses were very detailed, and except for positively acknowledging the traffic generation assumed by the applicant, don't make any mentioning with regards to either flows or traffic distribution, it can therefore be concluded that KCC accept the traffic flow, generation and distribution assumptions that underpin the assessments carried out in the TA.

Robustness of LinSig Modelling

KCC stated during the meeting on 7 July 2016 that officers had undertaken detailed assessments of the A274 / Willington Street / Wallis Avenue junction. In a meeting involving KCC, MBC and the Land South of Sutton Road's transport consultant in February 2016, the LinSig modelling and KCC's assertion that the models would "become unstable" with "lower levels of confidence" and the results would likely be "distorted" that was raised by KCC in response to the Land South of Sutton Road application, was discussed. Clarification was requested and liaison between the applicant's transport consultant and KCC's Traffic Signal Team was suggested. No further information, nor alternative modelling of this junction has been received from KCC since then that would further substantiate their assertion that the numbers would be "unstable" or "distorted".

JCT Consultancy Ltd who produced the LinSig modelling in the Land South of Sutton Road transport documents responded to KCC's response as follows:

"It is over generalised to say that model results will always be unacceptably distorted in cases where the highway network being modelled is over capacity. In some cases, high levels of congestion in traffic models can distort results if not suitably identified and addressed; however, in most cases a well constructed traffic model should be capable of forecasting the relative performance of development and highway mitigation options even where oversaturation occurs. In any event, it would not be correct to dismiss modelling as flawed simply because over capacity exists without identifying specific issues with the model and demonstrating that any issue will actually lead to distortions in the comparison of options. Depending on the circumstances, in many cases a model operating over capacity will be more stable than a model operating at capacity as the random effect of arriving traffic will have less of an effect"

Recent Local Growth Fund business case submission to the South East Local Enterprise Partnership (SELEP) in respect to Phase 1 of the Maidstone Integrated Transport Package includes similar junction

improvements at this junction. The following statements in this document should be considered in relation to the differing views with regards to the LinSig modelling carried out in the TA:

- *“A main objective of the Willington Street junction improvements is to reduce delay and congestion on the A274 and A20 corridors and on Willington Street. This will allow the existing network to operate more efficiently and also present some potential capacity to accommodate the future trip growth arising from new development in and around Maidstone”* (Page 22);
- *“LinSig is assumed to be a robust tool for this assessment”* (Page 27)

In conclusion, LinSig is the industry-standard tool to assess signalised junctions. There is no evidence to suggest that results would be “distorted” or “unstable” in oversaturated conditions. It is correct that modelling is never perfect and always ever a best approximation. Modelling is based on a layout and input flows. Given the proposed layouts can be achieved within the highway boundary and there is no objection in principle to such improvements, the same levels of confidence should be applied to both layouts tested (Do Nothing / Do Something). KCC have not objected to the flows (existing / future / development) in any of their responses, these being the other key element to a LinSig model. With both input elements to the LinSig models being clearly defined, there is therefore no reason to suggest that the model results should lack in confidence.