

**Planning Application Ref:
CB/19/04301/OUT
Transport and Highways Technical Audit**



Client: Biggleswade Town Council

Project: Land North of Biggleswade

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Executive Summary

A Transport and Highways Technical Audit has been prepared by The Transportation Consultancy (“ttc”) on behalf of Biggleswade Town Council. This comprehensive technical audit has been undertaken of the Transport Assessment (TA) dated 20th November 2019 and the Framework Travel Plan (FTP) dated 1st November 2019, which were submitted in support of the planning application reference CB/19/04301/OUT.

The principal findings of the audit are:

- The applicant has assessed the impacts of the proposed development on the local highway network but has failed to take into account four committed developments, which would materially affect the modelling results presented.
- The development trips rates have been derived from another Transport Assessment submitted in support of nearby scheme but have not been fully validated, nor verified in accordance with best practice.
- The development traffic distribution onto the local highway network has considered a limited methodology and has failed to take account of local ‘rat running’ traffic.
- The access arrangement onto Furzenhall Road includes a proposed surface treatment, referencing changes in ‘priority’. It is presumed that pedestrians are afforded some sort of priority, however, tactile paving is not shown. Furthermore, this would be an isolated and unique feature within the highway and therefore likely to constitute a highway safety issue and has not been substantiated by an independent Stage 1 Road Safety Audit.
- The site will be served via a singular vehicular access, which will narrow from 6.1m to the 5.75m within the vicinity of the Furzenhall Road / Winston Crescent junction. The access road as proposed requires use of third-party land and no details have been submitted to confirm that access over this land has been secured.
- Pedestrian and cycle access into the site is limited. The applicant proposes providing a 2.0m wide footway/cycleway. This is below the 3.0m required by the Council’s guidance and furthermore the proposed access routes along an existing Bridleway and the PRoW officer has requested a corridor of 4.5m, which would further impact on third-party land requirements.
- The applicant has underestimated the walking distances to nearby bus stops and local services and facilities, with the majority of the development being situated beyond the desirable maximum walking distance to local bus services and therefore misleading the decision maker on the sustainability of the site as a proposed residential development.
- The applicant has ‘loosely’ agreed to contribute towards improving bus stops and bus services and suggested that an existing service could directly serve the site. However, in accordance with the Council’s guidance, the carriageway should be 6.5m, which cannot be provided. The applicant has also noted that they have discussed service improvements with operators, with no details provided as to the outcome of these discussions.
- Junction modelling has been conducted, but no model reports have been included within the submitted Transport Assessment and therefore these cannot be fully evaluated. The exclusion of model report is highly irregular.
- The modelling assessment has sought to consider a scenario where the Biggleswade East development site is excluded from the junction capacity assessment, noting that the

Biggleswade North development (the application site) would firstly, be constructed and completed prior to the Biggleswade East site and secondly, the applicant states that the Biggleswade East site may not come forward due to access issues. Notwithstanding the latter, the applicant has referred to contributions towards junction improvements being made by the Biggleswade East site and in this instance is therefore reliant on the site coming forward. As a result, Biggleswade East should be wholly considered as a committed development and therefore included in the reference case.

- The Applicant has presented mixed messages on their assumptions concerning the Biggleswade East site, with some improvements to junction being proposed since the Biggleswade East site will not come forward in the short term, and others where the applicant defers to the improvements being made by the Biggleswade East site and claiming that residual capacity from these schemes would accommodate the Biggleswade North site (the application site). The applicant has provided no evidence, provided no reference to the modelling results for the Biggleswade East site will affect the local highway network and consequently how the two sites will interact.
- The applicant has identified some junction improvements, but the drawings supplied lack any detail, measurements, evidence of design compliance, appropriate cost estimates, the extent of the highway boundary, impacts on non-motorised users or aspects of road safety. As a result, there is no evidence that they can be delivered or secured.
- The applicant has sought to quantify the impacts on Potton Road and has provided a link flow capacity but has failed to fully consider the characteristics of Potton Road and as such the assessment is severely flawed.
- Finally, the applicant has identified a set of improvements for non-motorised users (crossings and new pedestrian/cyclist connections), but as per the junction improvements, there is no detail or evidence of due process in confirming that these improvements can and will be delivered.

1. Introduction

1.1 Background

An outline planning application, reference CB/19/04301/OUT, has been submitted to Central Bedfordshire Council (CBC) which seeks planning permission to provide:

“for up to 416 dwellings including affordable housing; green infrastructure accommodating landscaping, allotments, community orchard, public open space, children's play space; new roads, car parking, cycleways and footways; associated infrastructure, including a sustainable drainage system; vehicular access to be secured from Furzenhall Road. “

It should be noted that the Planning Applications is for all matters reserved, except access.

1.2 Objective

A comprehensive technical audit has been undertaken by The Transportation Consultancy Ltd. (“ttc”) on behalf of Biggleswade Town Council, of the Applicant’s Transport Assessment (TA) dated 20th November 2019 and the Framework Travel Plan (FTP) dated 1st November 2019 submitted in support of the above planning application.

1.3 Scope of the Report

The following aspects of the Applicant’s TA and FTP have been considered within the report and are reviewed below:

- National Planning Policy Framework;
- Local Planning Policy;
- Traffic Surveys;
- Committed Development;
- Assessment Scenarios;
- Development Vehicle Trip Rates;
- Development Vehicle Trip Generation;
- Modal Shift;
- Development Vehicle Trip Distribution;
- Development Vehicle Trip Assignment;
- Committed Development Vehicle Trip Generation and Assignment;
- Proposed Site Access Arrangements;
- Site Access and Public Rights of Way;
- Site Access and Public Transport;
- Junction Modelling;

- Junction Modelling Outputs;
- Junction Model Validation;
- Future Traffic Flow Scenario;
- Potton Road; and
- Proposed Highway Improvements.

A summary of the technical audit is provided covering the following material matters:

- Sustainability of the proposed development site;
- Safe and suitable site access for all users;
- The impact of development on the local highway network; and
- The impact of the development on highway safety.

2. National Planning Policy Framework

The Decision Maker is required to make a judgement that the development proposals comply with the National Planning Policy Framework (NPPF). With regards to highways and transportation matters:

Paragraph 111 of the NPPF states;

“All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed”.

Paragraph 108 of the NPPF states;

“In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- a) Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- b) Safe and suitable access to the site can be achieved for all users; and*
- c) Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.”*

Paragraph 109 of the NPPF states;

“Development should only be prevented or refused on highway grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe”.

Paragraph 110 of the NPPF states;

“Within this context, applications for development should;

- a) Give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- b) Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- c) Create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- d) Allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- e) Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.”*

3. Local Planning Policy

Chapter 14 of the Pre-submission Central Bedfordshire Council Local Plan 2035 considers transportation matters.

Policy T1: Mitigation of Transport Impacts on the Network requires:

“Evidence must be provided in Transport Assessments to demonstrate:

- *The principles established to give priority to pedestrians and other vulnerable road users in new developments, together with links to local service provision.*
- *Comprehensive and convenient pedestrian and cycle links to schools, local employment and service provision.*
- *Connectivity with existing walking and cycling networks.*

Suitable bus or rail service provision within 400 metres (bus) or 800 metres (rail) safe walking distance offering at least a half-hourly peak hour service to a variety of service centres and interchanges.”

Policy T2: Highway Safety & Design states;

“Proposals for new development must not have a detrimental effect on highway safety and patterns of movement and must provide appropriate access in accordance with Council standards.

Development will be permitted where:

- *The proposal is or will be well integrated with the existing transport network within and beyond the development itself; avoiding severance of communities as a result of measures to accommodate increased levels of traffic on the network;*
- *The proposal does not impede the free flow of traffic on the existing network or create hazards to that traffic and other road users;*
- *The proposal retains or enhances existing footpaths and cycleway links;*
- *The proposal promotes walking and cycling permeability and ensure that linkages and publicly accessible through routes are created to successfully integrate the development into wider networks;*
- *The development provides safe and convenient access in accordance with appropriate standards, that promote accessibility for all users and all modes of transport and includes designs, where appropriate, that incorporate low speeds;*
- *The proposal must avoid locations where the cumulative impacts of congestion is likely to remain severe following mitigation;*
- *The proposal must make adequate provision for loading and unloading, circulation, servicing and vehicle turning; and*
- *The proposal fully funds where appropriate or contributes towards the costs of any measures required to cost effectively mitigate the impacts arising from the development.”*

Policy T3: Parking states:

“Developers of new residential developments must have regard to the car parking standards set out in the Central Bedfordshire Council’s Design Guide and Parking Strategy.”

Provision for cycle parking must have regard to the standards in the Central Bedfordshire’s guidance for cycle parking in new developments.”

Policy T5: Ultra Low Emission Vehicles requires the provision of charging points at new development stating:

“The provision of charging points will be negotiated on a case by case basis until standards are set out in the Local Transport Plan which will then be applied to all qualifying developments.”

4. Traffic Surveys

The TA states that fixed traffic survey cameras were used to obtain manual classified turning counts (MCTC) and maximum queue length surveys for the Applicant on Thursday 27th September 2018 during the periods 07:00 to 10:00 and 15:00 to 19:00 at the following junctions:

- Junction 1 – Potton Road / Baden Powell Way 3-arm roundabout;
- Junction 2 – Potton Road / Drove Road priority junction;
- Junction 3 – Drove Road / London Road priority junction;
- Junction 4 – London Road / Chambers Way priority junction;
- Junction 5 – Saxon Drive / Dunton Lane / Foxglove Drive 4-arm roundabout;
- Junction 6 – London Road / Saxon Drive / Holme Court Avenue 4-arm roundabout;
- Junction 7 – London Road / Normandy Lane / Retail Park Access 4-arm roundabout;
- Junction 8 – London Road / Pegasus Drive / Retail Park Access 4-arm roundabout;
- Junction 9 – Furzenhall Road / Potton Road / Lime Tree Walk crossroads;
- Junction 10 – St John's Street / Potton Road / Rose Lane priority junction;
- Junction 11 – Rose Lane / Crab Lane / Sun Street 4-arm traffic signal-controlled junction;
- Junction 12 – Sun Street / St John's Street priority junction;
- Junction 13 – Shortmead Street / Sun Street 3-arm mini-roundabout
- Junction 14 – Shortmead Street / High Street / St Andrew's Street 3-arm mini-roundabout;
- Junction 15 – Hill Lane / Sainsbury's access 3-arm roundabout;
- Junction 16 – Biggleswade Road / Station Street / Blackbird Street priority junction, Potton;
- Junction 17 – Sun Street / Royston Street priority junction, Potton;
- Junction 18 – A1 / Hill Lane 4-arm roundabout; and;
- Junction 19 – A1 / London Road / Unnamed Road 4 –arm roundabout.

The maximum queues were recorded on each junction arm at five-minute intervals. To account for any effects of a rolling queue rather than a stationary queue, a vehicle was identified as being part of the queue if it was perceived to be travelling at less than 4 mph.

The MCTC and queue survey results are reported in Appendix C of the TA. The presentation of the results for some survey sites is poor with the values being illegible.

Appendix C of the TA omits the survey results from Thursday 27th September 2018 for:

- Junction 3 – Drove Road / London Road priority junction; and;
- Junction 9 – Furzenhall Road / Potton Road / Lime Tree Walk crossroads.

On the Rose Lane southbound approach to the Rose Lane / Crab Lane / Sun Street junction:

- The maximum queue length was recorded as being 12 vehicles for 16 of the 18 five-minute intervals between 07:40 and 09:10; and
- The maximum queue length was recorded as being 12 vehicles for 22 of the 35 five-minute time intervals between 15:00 and 17:55.

It appears from the above observations and the satellite view of the junction provided by the Applicant to show the location of the fixed cameras that the single camera observing the Rose Lane southbound approach. Due to the bend, south of the bus stop, the camera was unable to observe the rear of the queue and therefore a true typical maximum queue could not be recorded. The image adjacent shows a view along Rose Lane and from measurements on aerial imagery it has been confirmed that the camera could see circa 67m or 12 vehicles, hence the recorded queue length presented within the Applicants TA is misleading.



Due to the omission of the queue survey data for the Drove Road / London Road junction from Appendix C of the TA it has not been possible to ascertain if the fixed cameras used to survey this location was able to observe the rear of a true typical maximum queue.

In Section 5 of the TA the Applicant covers the validation of junction models and refers to on-site observations of junctions. **These observations are not provided for scrutiny within the TA.**

An additional MCTC survey for the Application was also undertaken at the Furzenhall Road / Potton Road / Lime Tree Walk crossroads (Junction 9) on Thursday 7th February 2019 during the periods 07:00 to 10:00 and 16:00 to 19:00. On this occasion spot queues were recorded at five-minute intervals. The MCTC and queue survey results are reported in Appendix C of the TA.

The Applicant identifies the morning peak hour as being 07:45 to 08:45 and the evening peak hour as 17:00 to 18:00, whereby, Figure 5.1 and 5.2 of the TA show the traffic flows surveyed in 2018.

TEMPro software is used to obtain a growth factor from the National Trip End Model (NTEM) which is used to adjust the surveyed flows to provide baseline traffic flows for the application year of 2019. The 2019 baseline flows are shown in Figures 5.3 and 5.4 of the TA.

MCTC surveys for Biggleswade Town Council were undertaken on Tuesday 19th November 2019 during the time periods 07:30 to 09:30 and 16:30 to 18:30 at the junction of Potton Road / Drove Road (Junction 2) and the Furzenhall Road / Potton Road / Lime Tree Walk crossroads (Junction 9). The survey results are provided at **Appendix A** of this Technical Audit.

The Biggleswade Town Council MCTC survey data at the Furzenhall Road / Potton Road / Lime Tree Walk junction has been used to identify the peak hours and shoulder periods where the total junction vehicular traffic volume is greater than 95% of the peak hour total vehicular traffic volume.

The Town Council data shows, during the AM survey times at the Furzenhall Road / Potton Road / Lime Tree Walk junction, the peak hour was 08:15 to 09:15 with the period of high demand (shoulder period) commencing at 08:00. During the PM survey times the peak hour was 16:45 to 17:45 with the period of high demand (shoulder periods) commencing at 16:30 and ending at 18:00.

5. Committed Development

The Applicant, in line with good practice, is expected to assess the impact on the local highway network of committed developments (developments with planning consent) in combination with the proposed Biggleswade North development.

The committed developments that the Applicant considers in their TA are:

- Application MB/03/01205/OUT, Land at Kings Reach Biggleswade to provide 1,450 residential dwellings. The Applicant estimates that at the time of their September 2018 traffic surveys 134 dwellings had not been completed at this site. **The Applicant does not state how many dwellings at the Kings Reach site had been completed but were unoccupied at the time of the September 2018 traffic surveys;**
- Application CB/17/01277/OUT, Land at Saxon Drive Biggleswade to provide up to 200 residential dwellings;
- Application CB/18/02458/OUT, Land to the East of Baden Powell Way Biggleswade to provide up to 1,500 dwellings, up to 2ha of commercial development, up to 5ha of primary school development and up to 4ha of other leisure and community development; and
- Application CB/16/00181/FUL, Land to the rear of 33 to 57 Shortmead Street, Biggleswade, for the construction of 30 No. dwellings and associated road, demolition of commercial premises.

The Applicant has omitted the consideration of the impact of the following committed developments on the local highway network:

- Application CB/16/04658/FULL, Land North of Potton Road Biggleswade to provide a further 227 dwellings;
- Application CB/17/01236/OUT, Land at Sorrel Way Biggleswade, to provide extra care accommodation comprising up to 90 units; and
- Application CB/19/01211/FULL, Edward Peake School Biggleswade, to provide a double storey teaching block with 8 additional teaching facilities, new extensions to the school building to provide an additional 4 classrooms and additional car parking.

Throughout the TA the applicant refers to the fact that concerns have been raised regarding the accessibility of the Biggleswade East Site (Ref – CB/18/02458/OUT) and hence its deliverability is questioned throughout the TA.

Whilst it is good practice and in line with guidance to include all committed developments with planning permission within a TA the applicant has chosen to dismiss the effects of the Biggleswade East development, despite its grant of planning permission. This issue is discussed further within the report and supplementary representations on this will be made by Biggleswade Town Council in due course.

6. Assessment Scenarios

The Applicant considers the future operation of the local highway network for the year 2035 for the following scenarios:

1. **Reference Case** – 2018 traffic survey data with a TEMPro growth factor applied to provide background traffic flows for the year 2035 plus development vehicle trip generation taken from the TA's for the Land at Kings Reach and Land at Saxon Drive committed developments;
2. **Biggleswade East Impact Scenario** – Reference Case plus development vehicle trip generation taken from the Land to the East of Baden Powell Way TA;
3. **Cumulative Highway Impact Scenario** – Reference Case plus development vehicle trip generation from the Applicant's Biggleswade North TA plus development vehicle trip generation taken from the TA for the Land to the East of Baden Powell Way committed development; and;
4. **Biggleswade North Impact Scenario** - Reference Case plus development vehicle trip generation from the Applicant's Biggleswade North TA.

Consequently, to meet the requirement to assess the impact on the local highway network of all committed developments in combination with the proposed Biggleswade North development, the following committed developments should be added to the Applicant's Cumulative Impact Scenario:

1. Application CB/16/04658/FULL, Land North of Potton Road (remainder of the 227 dwellings);
2. Application CB/17/01236/OUT, Land at Sorrel Way Biggleswade (up to 90 extra care units);
3. Application CB/19/01211/FULL, Edward Peake School (additional classrooms, teaching facilities and car parking); and
4. Application CB/16/00181/FUL, Land to the rear of 33 to 57 Shortmead Street, Biggleswade, for the construction of 30 dwellings.

7. Development Vehicle Trip Rates

Central Bedfordshire is ranked 40th out of 326 English Districts in the 2011 census for the availability of cars and vans for household use. Furthermore, Central Bedfordshire is ranked 48th for the proportion of workers who choose to drive to their place of work by car. With Central Bedfordshire falling in the top 15% of districts in both categories it can be seen that the dependence on the car in the District is very high.

The population living within 1 mile of the proposed development is estimated as being between 15,001 and 20,000.

The Applicant extracts vehicle trip rates for privately owned houses from the TA for planning application CB/16/04658/FULL (Land North of Potton Road). The trip rates have been obtained from the TRICS database, **but the Applicant fails to provide the TRICS outputs for scrutiny**. For the purposes of openness, transparency and scrutiny the TRICS outputs have been obtained from the Land North of Potton Road application and provided here at **Appendix B**.

The vehicle trip rates are shown in Table 9.1 of the TA and are provided below at **Figure 7.1**.

Figure 7.1 Vehicle trip rates used by the Applicant extracted from the TA for planning application CB/16/04658/FULL (Land North of Potton Road)

	Morning peak (0800-0900)		Evening peak (1700-1800)	
	Arrival	Departure	Arrival	Departure
Vehicle trip rate per dwelling	0.165	0.419	0.389	0.226

Due to increasing National prosperity, historical trip rate surveys are likely to understate current trip rates with the degree of understatement increasing with the vintage of the survey date. TRICS does not have a fixed rule on the use of older donor sites but a default date cut-off of 8 years is applied. A TRICS user may shorten or lengthen the cut-off date if they wish.

The TRICS outputs used by the Applicant to derive trip rates are dated 12th August 2013 and comprise 26 surveys undertaken between 14th April 2005 and 23rd October 2012. Clearly the Applicant's TRICS donor site surveys cannot be regarded as being representative of current levels of National prosperity. Only 42% of the TRICS site surveys are from locations with a population in the range 15,001 to 20,000. The 2011 Census shows that the number of cars per household in Central Bedfordshire is 1.5 but 54% of the Applicant's TRICS survey sites are located in English Districts where the number of cars per household is 1.0 or less.

Consequently, the Applicant's vehicle trip rates shown in **Figure 7.1** above cannot be regarded as being representative of access to public transport opportunities in Biggleswade and it is normally best practise to validate trip rates obtained from TRICS using traffic survey data obtained at local sites comparable to the application site. **The Applicant fails to undertake this best practise validation of trip rates.**

The Applicant claims that the TRICS vehicle trip rates shown in **Figure 1** are validated because they are higher than the rates obtained from a validation exercise where the Applicant self-selects a further set of trip rates for privately owned houses from TRICS.

A general rule for the number of TRICS survey sites that are sufficient to provide a representative sample is "the more the better", however it should be noted that:

1. 26 TRICS survey sites are used to obtain the development vehicle trip rates but just 6 are used in the validation exercise, which the 'minimum' that should be used;
2. None of the survey sites used to obtain the development vehicle trip rates had a travel plan in place but 2 out of the 6 validation sites have travel plans. Consequently 33% of the validation survey sites cannot be regarded as being comparable to the survey sites used to obtain the development vehicle trip rates; and more critically; and
3. The validation exercise includes 1 site used to obtain the development vehicle trip rates thus invalidating the whole exercise as only three surveys are valid, well below the 'minimum'!

It is also noted that the Applicant deselected 2 of the survey sites from their validation exercise on the grounds that *"the sites have an uncharacteristically low trip rate which was impacting the likely vehicle trip rate"*.

The Applicant presents a further validation exercise in their TA which claims that the development vehicle trip rates are acceptable because they are higher than the vehicle trips rates, excluding internalisation, used when planning application CB/18/02458/OUT (Land to the East of Baden Powell Way or Biggleswade East) gained consent.

However, it should be noted that the TA for the Biggleswade East application takes as its starting point trips per person by all modes per year data for the whole of the East of England Region (Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk and Suffolk) Rural – Urban category extracted from the National Travel Survey 2014 – 15. A convoluted procedure is then used to relate the whole year all mode Regional data to provide a forecast of Biggleswade East morning and evening peak hour vehicle trips. **The Biggleswade East applicant did not follow best practise and validate the vehicle trip rates using traffic survey data obtained at local sites comparable to the application site and as such cannot be relied upon as a valid comparison.**

8. Development Vehicle Trip Generation

The Applicant multiplies the development vehicle trips rates discussed in Chapter 7 with the number of proposed dwellings to calculate the development vehicle trip generation. The results are shown in Table 9.4 of the TA and reproduced below at **Figure 8.1** below.

Figure 8.1 Development vehicle trip generation shown in Table 9.4 of the Applicant’s TA.

	Morning peak (0800-0900)		Evening peak (1700-1800)	
	Arrival	Departure	Arrival	Departure
Vehicle trip rate per dwelling	0.165	0.419	0.389	0.226
Vehicle trips	69	174	162	94

As already discussed, it is generally standard practice to validate any derived trip generation numbers against locally obtained traffic movements from similar developments in the local area.

9. Modal Shift

The Applicant’s Framework Travel Plan identifies that the principal aim of the Plan is “to minimize the number of single occupancy vehicle trips generated by the development” with a target to “reduce the single occupancy vehicle trips by an agreed proportion within five years”.

No targets have been agreed for the reduction in single occupancy vehicle trips, there can therefore be no guarantee that any target can be met by proposed travel planning measures and furthermore no remedial measures are proposed for failure to meet the targets.

Table 4.1 of the Applicant’s Framework Travel Plan claims to show the impact on development vehicle trip generation of a 10% reduction in single occupancy vehicle trips. The table is reproduced below as **Figure 9.1**.

Figure 9.1 The Applicant’s claim of the impact of a 10% reduction in single occupancy development vehicle trips on the development vehicle trip generation as shown in Table 4.1 of the Applicant’s Framework Travel Plan.

	Morning peak (0800-0900)		Evening peak (1700-1800)	
	Arrive	Depart	Arrive	Depart
Forecast vehicle trips	69	174	162	94
-10%	-7	-17	-16	-9
Target vehicle trips	62	157	146	85

The Applicant makes the assumption, that in the absence of a travel plan, development will only generate single occupancy vehicle trips. Clearly this is not the case, colleagues living nearby are likely to arrange a car share and during the morning peak period, for example, development will generate vehicle trips solely for the purpose of escorting a child to school or nursery which by definition cannot be single occupancy.

To provide a forecast of the impact of a travel plan target a necessary first step for the Applicant is to conduct a vehicle occupancy survey at a comparable location to give an indication of the likely proportion of single occupancy vehicle trips from the proposed development site.



10. Development Vehicle Trip Distribution

The Applicant makes use of travel to work data for Middle Layer Super Output Area (MSOA) Central Bedfordshire 005 (Biggleswade West) from the 2011 Census to provide a forecast for the distribution of development vehicle trips. The 2011 Census date was 27th March and it cannot be assumed that nearly nine years after data collection the distribution of potential places of employment for Biggleswade residents remains the same. Furthermore, the Applicant’s methodology has limitations as during peak periods development will generate vehicle trips for purposes other than travel to work.

The Department for Transport (DfT) National Travel Survey 2018 (Dataset NTS0502), provided here at **Appendix C**, shows the purposes of weekday adult travel for trips that begin from home and start after 07:00 and end by 09:00. The NTS Dataset shows that:

- Between 0700 – 0800, commuting and business trips account for 55% of trips, with education and escort for education account for 19% and the remaining trips are associated with shopping, leisure and personal business;
- Between 0800 – 0900, commuting and business trips reduces to 23% of trips, with education and escort for education rising significantly to 51%, with the remaining trips associated with shopping, leisure and personal business;

As a result, the use of ‘travel to work’ data as the exclusive means of distributing traffic from the proposed development onto the local highway network is highly inaccurate.

It is therefore sensible to undertake checks on actual trip distribution within the local area to ensure that the Applicant’s trip distribution forecasts are sensible and appropriate. For the proposed North Biggleswade development site there is a very easy check that can be undertaken. The Site is accessed from Furzenhall Road and it is likely that the development vehicle trip distribution will be very similar to the trip distribution from existing properties that access the local highway network from the Furzenhall Road arm of the Potton Road / Furzenhall Road / Lime Tree Walk junction.

The Town Council traffic survey data from 19th November 2019 has been used to check the Applicant’s distribution of development vehicle trips at the Potton Road / Furzenhall Road / Lime Tree Walk junction with the results shown in **Tables 10.1** and **10.2** below.

Table 10.1 AM Peak Hour comparison of the Applicant’s development vehicle trip distribution at the Potton Road / Furzenhall Road / Lime Tree Walk junction and existing vehicle trips with origins and destinations accessed from Furzenhall Road

AM Peak Hour - 8:00 am to 9:00 am	Departures			Arrivals		
	To Potton Rd East	To Lime Tree Walk	To Potton Rd West	From Potton Rd East	From Lime Tree Walk	From Potton Rd West
Applicant’s Distribution	49%	0%	51%	49%	0%	51%
Town Council Distribution	40%	7%	53%	59%	0%	41%

For the AM Peak hour, the Town Council development vehicle distribution check shows:

1. Undesirable rat running departures along Lime Tree Walk, that appear to be to avoid the Potton Road / Drove Road junction, that are not accounted for by the Applicant. The Applicant describes

Lime Tree Walk as having “a narrow carriageway of approximately 4.2 metres with a footway present on both sides of the road, ranging approximately from 1 to 1.2 metres in width”; and;

2. A significantly greater proportion of arrivals from Potton Road East that may be attributable to returning child escort trips that are not accounted for by the Applicant.

The Applicant’s survey results from 7th February 2019 confirm undesirable rat running along Lime Tree Walk with 12.5% of departures from Furzenhall Road continuing straight ahead into Lime Tree Walk between 08:00 and 09:00.

Surprisingly, given that the proposal is that Potton Road / Furzenhall Road / Lime Tree Walk junction will link the proposed development site to the local highway network, the Applicant expresses a degree of confusion over Lime Tree Walk by frequently referring to the street in their TA as Lime Tree Road and incorrectly stating that it is a cul-de-sac (TA para 5.3).

Table 10.2 PM Peak Hour comparison of the Applicant’s development vehicle trip distribution at the Potton Road / Furzenhall Road / Lime Tree Walk junction and existing vehicle trips with origins and destinations accessed from Furzenhall Road.

PM Peak Hour - 17:00 am to 18:00 am	Departures			Arrivals		
	To Potton Rd East	To Lime Tree Walk	To Potton Rd West	From Potton Rd East	From Lime Tree Walk	From Potton Rd West
Applicant’s Distribution	49%	0%	51%	49%	0%	51%
Town Council Distribution	40%	7%	53%	59%	0%	41%

For the PM Peak hour, the Town Council development vehicle distribution check is broadly in line with the Applicant’s development vehicle trip distribution except for some undesirable rat running arrivals from Lime Tree Walk.



11. Development Vehicle Trip Assignment

The Applicant uses the development vehicle trip distribution based on 2011 Census travel to work data to assign development vehicle trips to the local highway network. The assignment is illustrated in Figure 10.1 for the AM Peak Period and Figure 10.2 for the PM Peak Period in the TA.

The appropriateness of using the 2011 census to work data has been discussed in Chapter 10.

12. Committed Development Vehicle Trip Generation and Assignment

Table 11.1 of the Applicant’s TA, reproduced below as **Figure 12.1**, provides a summary of committed developments and the location of diagrams in the TA showing the assignment of these trips to the local highway network.

Figure 12.1 Summary of committed developments shown in Table 11.1 of the Applicant’s TA.

Planning reference	Development	Overall development proposal	Development considered	Transport Planning Associates figure reference	
				Morning peak	Evening peak
CB/18/02458/OUT	Land East of Biggleswade	1,500 dwellings	1,500 dwellings	Figure 11.1	Figure 11.2
CB/17/01227/OUT	Land at Saxon Drive, Biggleswade	Up to 230 dwellings	230 dwellings	Figure 11.3	Figure 11.4
MB/03/01205/OUT	Land at Kings Reach, Biggleswade	1,450 dwellings	134 dwellings	Figure 11.5	Figure 11.6
Total development considered			1,864 dwellings		

The Applicant assumes that 134 dwellings at the Kings Reach site had not been built at the time of the traffic surveys undertaken on 27th September 2018. It is likely that an additional number of completed dwellings would be unoccupied on this date which needs to be checked.

It appears from the Applicant’s TA that the trip rates, vehicle trip generations and assignments of vehicle trips to the local highway network given in the East of Biggleswade, Saxon Drive and King’s Reach Transport Assessments are used to provide traffic flow information for the Cumulative Highway Impact Scenario.

It is noted that the development vehicle trip rates for the Land at Saxon Drive committed development are 13.4% greater than those used in the Land North of Biggleswade application during the AM peak hour and 3.9% greater in the PM peak hour. This further highlights the ineffectiveness of the Applicants trip rate validation.

Whilst not referred to in the TA text, the Applicant provides the following diagrams showing their assumptions for the traffic flows generated by the committed developments included in their Cumulative Highway Impact Scenario;

- Figures 11.1 and 11.2 for Land East of Biggleswade;
- Figures 11.3 and 11.4 for Land at Saxon Drive; and;
- Figures 11.5 and 11.6 for Land at Kings Reach.

Figures 11.11 and 11.12 of the Applicant’s TA show the assumed vehicular traffic flows for the Cumulative Highway Impact Scenario. Figures 11.11 and 11.12 does not account for the vehicular traffic generated by the following committed developments;

1. Application CB/16/04658/FULL, Land North of Potton Road (part of 227 dwellings build out);
2. Application CB/17/01236/OUT, Land at Sorrel Way Biggleswade (up to 90 extra care units);

3. Application CB/19/01211/FULL, Edward Peake School (additional classrooms, teaching facilities and car parking).

Nor does it allow for use of Lime Tree Walk.

In addition, there are proposals for 30 dwellings to be constructed on Shortmead Street close to the its junction with Sun Street (planning ref: 16/00181). The impact of the development should also be taken into account within the assessment of the Sun Street/Shortmead Street junction.

It is noted that the Housing Trajectory for Central Bedfordshire, provided here at **Appendix D**, shows housing completions as of 31st December 2018. It could be used to ascertain the likely occupation of the Land North of Potton Road committed development at the time of the Applicant's traffic survey on Thursday 27th September 2018.

13. Proposed Site Access Arrangements

The TA identifies that outline permission is sought with the “*principal vehicular access to be secured from Furzenhall Road*” suggesting that more than one access will be available for vehicles. This is misleading and not the case as the development proposal notes that “*access for vehicles is to be taken from Furzenhall Road via an extension to Furzenhall Road beyond the priority-controlled junction of Furzenhall Road with Winston Crescent*” only. The Applicant’s Illustrative Masterplan indicates that there will be no direct vehicular access to dwellings from an upgraded Furzenhall Road with two new priority junctions providing access to proposed new residential streets.

It should be noted that the definitive map for Central Bedfordshire shows that beyond the Furzenhall Road / Winston Crescent junction, Furzenhall Road is designated as bridleway BW10 and forms a link in National Cycle Network Route 12 (Enfield Lock to Spalding).

Furzenhall Road currently provides access to 258 dwellings and the Biggleswade Sewage Treatment Works. This will rise to 674 dwellings plus the Sewage Treatment Work if planning consent is granted. **In the absence of a secondary vehicular site access point the Applicant has failed to confirm how emergency vehicles will be able to reach the proposed development site if access along any part of Furzenhall Road is blocked for any reason.**

The Applicant provides a drawing numbered PL01 dated 8th August 2019 shown as being amended on 9th August 2019 and **labelled as being the “Preliminary Access Arrangement and Internal Layout”**. The drawing shows:

- Proposed improvements to Furzenhall Road, north of its junction with Winston Crescent;
- Proposed parking restrictions in the vicinity of the Furzenhall Road / Winston Crescent junction;
- The proposed new priority junctions on Furzenhall Road providing access to new residential streets;
- Pedestrian / cycle access points on Furzenhall Road;
- Pedestrian access points on Furzenhall Road; and
- The junction of bridleway BW10 and footpath FP13.

Immediately north of the junction between Furzenhall Road and Winston Crescent, where there are existing footways on each side of Furzenhall Road, the Applicant’s drawing shows that the width of the carriageway is 5.75m. There are no proposals to increase the width of the carriageway at this pinch point. The Central Bedfordshire Design Guide requires a minimum carriageway width of 6.5m on bus routes, consequently, **the access design does not support extension of a bus route through the proposed development site.**

With regards to the Furzenhall Road/Potten Road junction, the proposed improvements include a proposed surface treatment, referencing changes in ‘priority’. It is presumed that pedestrians are afforded some sort of priority, however, tactile paving is not shown, this would also be an isolated and unique feature within the highway and therefore likely to constitute a highway safety issue. **As a result, a Stage 1 RSA is required to determine whether the junction is appropriate.**

Beyond number 46 Furzenhall Road the Applicant’s proposal is that the existing footway on the east side of Furzenhall Road be extended with its width being 2m for a length of approximately 50m before widening to a width of 3m with a dropped kerb and markings to become unsegregated shared use footway and cycle

route. It should be noted that 3m is the desirable minimum width for unsegregated shared pedestrian and cyclist use.

The Applicant's proposed extension of the footway and the widening the carriageway beyond number 46 Furzenhall Road requires the use of land beyond the boundary of the existing bridleway BW10 within the curtilage of two dwellings located in Stoneland Avenue. The Applicant does not indicate if they have entered into a legal agreement with the property owners in Stoneland Avenue to purchase the land required to deliver the footway and carriageway as shown on the Preliminary Access Arrangement and Internal Layout diagram. **The Applicant has also failed to supply any highway boundary information and as such, the deliverability of the access road, alongside other schemes referenced throughout the TA are questionable.**

Beyond the proposed new priority junction on the east side of Furzenhall Road the Applicant's proposal is for an unsegregated shared use footway and cycle route of 2m width that is below the desirable minimum width of 3m.

It should be noted that the Central Bedfordshire Rights of Way Officer in his consultation response states *"Furzenhall Road would become the vehicular route into the development and will be a busy road. It is essential, therefore, that the existing bridleway 10 is re-established to the side of the road. (see route A to B on Map1 in the consultation response). A 2.5m width is required with a planed surface and at least a 1m buffer verge either side. This will allow the route to be used safely by pedestrians, cyclists and horse riders alike."*

Point A on the map accompanying the Rights of Way Officer's consultation response (shown opposite) is shown to be the most southerly point of the site boundary. Consequently the Officer is clearly requiring that the shared pedestrian, cycling, horse rider route of width 2.5m with at least a 1m buffer verge on either side should extend from the boundary of number 46 Furzenhall Road to a point close to the proposed play provision shown on the Illustrative Masterplan.

It should be noted however that:

1. The Officer's requirement for a planed surface of width 2.5m for the unsegregated shared use pedestrian, cycling and horse-riding route is less than the desirable 3m minimum width for unsegregated pedestrian and cyclist use only; and
2. The Officer has an expectation that a Section 106 financial contribution be provide so that footpath FP12 can be upgraded to a bridleway of width 3.5m.



With reference to the above, it should also be acknowledged that in accordance with the Council's guidance, PRoW should not route alongside a residential estate road and as such, the proposed provision is contrary to local requirements. Furthermore, the proposed widths referenced by the PRoW of officer would create inconsistency, with connecting PRoW to the detriment of users.

The Applicant's Preliminary Access Arrangement and Internal Layout diagram shows a proposal for double yellow lines to restrict parking in the vicinity of the Furzenhall Road / Winston Road junction and northwards along Furzenhall Road to the line of the hedge behind properties in Stoneland Avenue. Currently parking can be observed on the carriageway in the vicinity of the Furzenhall Road / Winston Road junction and the loss of parking spaces here has to be regarded as a loss of residential amenity for existing residents.

Since the site would be served from a single access, whose operation would be severely impeded by on-street parking, removing on-street parking is required to maintain safe and convenient access for users, which is reliant on a TRO. A TRO can be conditioned but if it is refused, then the applicant can simply apply to have the condition removed under Section 73 and therefore there is no guaranteed that unimpeded access can be maintained.

It is noted that the Applicant's Preliminary Access Arrangement and Internal Layout diagram has not been advanced to a sufficient design level to ensure that the arrangements shown are safe and suitable for all users and as a result the following should be undertaken and provided, namely:

- Vehicle tracking diagrams;
- Access Design and Compliance Reports;
- Swept Path Analysis;
- Road safety audits; and;
- Walking, cycling, horse riding assessments and reviews (particularly prevalent given the extent of the local PRoW network).

On this basis insufficient evidence has been provided to allow for an appropriate level of scrutiny to take place or for the Decision Maker to determine, in accordance with the NPPF, that safe and suitable access to the proposed development site can be achieved for all users.

The Applicant proposes the introduction of traffic calming and a 20mph zone along Furzenhall Road and has discussed potential measures with the local highway authority. No traffic calming scheme has therefore been finalised for scrutiny by the Decision Maker to ensure it is acceptable and deliverable.

The Applicant describes the purpose of the traffic calming measures as being to "effect a change to the existing street scene" and contribute "to slower speeds and a people first environment". The Applicant has not provided evidence to show that speeding is a problem on Furzenhall Road, and it is disappointing that the Applicant has made no proposal for the Furzenhall Road / Winston Crescent community to be involved in redesigning their streets.

Traffic calming measures are often used to reduce rat-running on a through route. The use of such measures on a "principle access street" that is an approach to a major development and a bus route could be said to be unusual.

14. Site Access and Public Rights of Way

The Applicant's TA states that *"pedestrians travelling to the Edward Peake Middle School are more likely to use the traffic free route along Footpath 13 to the east of the site, before travelling southbound along Bridleway 9 towards Potton Road"*. The Applicant's Preliminary Access Arrangement and Internal Layout diagram shows Footpath FP13 as being *"unmade ground"*. Furthermore, **the path is unlit raising safety and security issues for users that the Applicant does not address.**

The Applicant proposes a number of small improvement schemes to the existing walking and cycling infrastructure, these being located at:

1. The junction of High Street / London Road / The Baulk (Feasibility Drawing 1512-07 SK32);
2. In Lawrence Road in the vicinity of the St John Ambulance Headquarters and south of the Lawrence Road and Crab Lane junction (Feasibility Drawing 1512-07 SK33);
3. The Lawrence Road / Havelock Road junction (Feasibility Drawing 1512-07 SK34);
4. The Havelock Road / Lindsell Crescent junction (Feasibility Drawing 1512-07 SK35); and;
5. In the vicinity of the junctions of Drove Road with Edward Road and Auckland Road (Feasibility Drawing 1512-07 SK35);

None of the above proposed improvement schemes have been advanced, there are no road safety audits and as such the decision maker cannot be sure that the schemes are safe and achievable, and therefore in accordance with NPPF.

It is noted that the Rights of Way Officer identifies in his consultation response a requirement for a Rights of Way Strategy. Clearly rights of way are material considerations regarding access to the proposed development site and as all matters are reserved with the exception of access it is essential that the Rights of Way Strategy is considered at the Outline Stage. If subsequent to Outline approval any matters regarding rights of way need to be changed then it will effectively be too late to do so.

15. Site Access and Public Transport

The distances from the key facilities, services and bus stops are set out in Table 3.1 of the TA, the table is reproduced at **Figure 15.1**.

Figure 15.1 Application Summary of Local Services and Facilities (from Table 3.1 of TA)

Destination	Distance (kilometres)	Walk time* (minutes)	Cycle time* (minutes)
Local bus stop (Services 85 / 85A)	0.3	3 min	1 min
Further local bus stops (Services 73 and 1B)	0.5	5 min	1 min
Costcutter (Potton Road)	0.5	5 min	1 min
Edward Peake Middle School	1.2	15 min	4 min
St Andrews Church of England VC Lower School West	1.2	15 min	5 min
Asda superstore	1.3	16 min	5 min
Biggleswade Hospital	1.4	17 min	5 min
Biggleswade railway station	1.6	20 min	6 min
Post Office	1.6	20 min	6 min
Stratton Upper School	1.6	20 min	6 min
Saxon Pool and Leisure Centre	2.5	28 min	9 min

* Walk time based on a speed of 3 mph and cycle time based on a speed of 12 mph.

It states at section 3.19 of the TA that:

“a number of key amenities are accessible within walking and cycling distances of the application site”.

Both Table 3.1 and section 3.19 of the TA are misleading as the distances measured are from the start of the proposed development site on Furzenhall Road. It is best practice to take measurements from the centre of developments to obtain a more realistic reflection of potential walking and cycling distances. Taking the measurements from when you enter the development site exaggerates the sustainability of the development site.

Taking a more appropriate and realistic approach by measuring distances from the centre of the development site, a further 250 metres need to be added to the distances set out in **Figure 15.1** (TA table 3.1). Taken to the extremities of the development site a further 450 metres should be added to the distances, thus the following distances to the nearest bus stops can be revealed, namely:

- Front edge of site – 300 metres;
- Centre of the site – 550 metres
- Far edge of site – 750 metres

This misleading approach of measuring distances from the front edge of the site is also apparent in Chapter 4 of the TA which states that the site is “well served” (ttc emphasis) by public transport as a bus stop is within a 3 minute walk of the site. A more realistic figure is 6 minutes using the industry standard walking speed of 1.4m/sec.

When making a bus journey, passengers take account of the total journey travel time including the time spent on the bus in addition to the walking time at either end of the journey. The Chartered Institute of Highways and Transportation (CIHT) regard in their report Buses in Urban Environments that the planning of development sites should consider the walking distance to bus stops. CIHT recommended that the maximum walking distance to a bus stop where the interval between services is greater than 12 minutes should be 300m. The TA claims that 400m walking distance to a bus stop should be used, again another misleading statement within the applicants support submissions.

In summary section 3.21 and Chapter 4 of the Applicants TA are misleading and that the majority of services and facilities being within a preferred walking distance is not correct.

Local Planning Policy T1 on the Mitigation of Transport Impacts on the Network requires “Suitable bus or rail service provision within 400 metres (bus) or 800 metres (rail) safe walking distance offering at least a half-hourly peak hour service to a variety of service centres and interchanges.” **This is clearly not the case in respect of the Applicants development site, and it is therefore contrary to Local Planning Policy T1.**

Table 4.1 of the Applicant’s TA identifies that the bus stop on Winston Road is served by services 85 and 85A. During weekdays;

- Service 85 runs hourly with the first service at 07:16 and the last at 17:23; and;
- Service 85A runs hourly with the first service at 08:11 and the last at 18:11.

The Applicant has reviewed the 85 / 85A bus timetables and train services and identified that;

1. It is not possible to board a bus in Winston Crescent and then catch a train to be in London before 09:00; and;
2. It is not possible for a train journey starting in London after 17:30 to get to Biggleswade in time to catch the 85 / 85A service to travel to Winston Crescent.

The TA informs the Decision Maker that the Applicant has held preliminary discussions with the current operator of the 85 / 85A service with regards to;

1. The potential extension of the service into the proposed development site; or
2. An extension in the operating hours of the service to enable future residents of the proposed site to use the bus as part of their journey to the train station and arrive in London before 09:00 or leave after 17:30.

As noted above there is a pinch point in Furzenhall Road on the approach to the proposed development site where the width of the carriageway is 5.75m. There is no proposal from the Applicant to increase the width of the carriageway at this pinch point. As already mentioned the Central Bedfordshire Design Guide requires a minimum carriageway width of 6.5m on bus routes, consequently, the current access does not support extension of the 85 / 85A bus route into the proposed development site.

As part of its Transport Mitigation Strategy the Applicant proposes that a contribution be made towards public transportation that may be used for “*providing additional buses to existing services to improve or extend service operation*”. As yet there is no firm proposal from the Applicant for a Section 106 contribution that will guarantee an extension to the operating period of the 85 / 85A bus service. If such an agreement is reached with the Applicant and the bus service operator, the Decision Maker will need to consider the

likelihood of delivery of the proposed service enhancement and the impact if the enhanced service is not viable once any period of subsidy has ceased.

Although the Applicant suggests a contribution (assume via a Section 106 contribution) to improve or extend the bus services it should be noted that no route has been defined for the service, no frequency of service been set nor has a comprehensive bus service viability study been undertaken. In addition, it appears that no guarantee is being provided that the proposed residential development will benefit from a peak period bus service or extending a bus service through the site.

The Public Transport Strategy as proposed with the TA is limited, reliant upon a contribution to public transport and therefore not guaranteed or even deliverable.

16. Junction Modelling

The Applicant makes use of industry standard software to model the baseline (2019) performance of junctions and to forecast the future operation of junctions for the year 2035.

The TA reports the results of the Applicant's junction modelling exercise in a series of tables. It should be noted that;

1. Priority junctions are modelled using the PICADY module within the industry standard Junctions 9 software package. The Ratio of Flow to Capacity (RFC) for a priority junction is deemed to be operating at theoretical capacity once it reaches a threshold of 0.85, whereby an RFC of 0.85 is used to identify when a junction requires mitigation to offset the impact of a proposed development;
2. Roundabouts are modelled using the ARCADY module within the industry standard Junctions 9 software package. The Ratio of Flow to Capacity (RFC) for a roundabout is deemed to be operating at theoretical capacity once it reaches a threshold of 0.85 whereby an RFC of 0.85 is used to identify when a junction requires mitigation to offset the impact of a proposed development; and;
3. Signalised junctions are modelled using industry standard LinSig software. The Degree of Saturation (DoS) for a signalised junction is deemed to be at its theoretical capacity once it reaches a threshold of 90.0%.

17. Junction Modelling Outputs

The Applicant does not provide detailed assessment outputs for the junction modelling undertaken using the industry standard PICADY, ARCADY and LinSig software packages. Consequently, it has not been possible to undertake the appropriate level of scrutiny to determine if, for example, the Applicant's modelling of the performance of junctions:

1. Makes use of appropriate vehicle arrival profiles; or
2. Takes account of how the use of pedestrian crossing facilities impacts on junction performance;
3. Allows for the correct Heavy Goods Vehicle proportions; and
4. Input junction geometries are appropriate or correct.

In addition, it would appear that the junction modelling of Drove Road/London Road does not include for the effects of Eagle Farm Road or the impacts from the adjacent school. These potential additional impacts should be reviewed as they impact on the operational performance of the junction.

18. Junction Model Validation

The Applicant, in line with good practice, has undertaken a validation exercise that compares modelled vehicle queues and observed vehicle queues to determine if baseline junction models are representative of true typical current traffic conditions.

As noted in Chapter 4 above, on the Rose Lane southbound approach to the Rose Lane / Crab Lane / Sun Street junction, it appears that the fixed camera used to record queuing traffic did not provide line of sight to the rear of a true typical maximum queue. Consequently, **the baseline model for the Rose Lane / Crab Lane / Sun Street junction cannot be regarded as being appropriately validated.**

At the following locations:

- Junction 6 – London Road / Saxon Drive / Holme Court Avenue 4-arm roundabout;
- Junction 13 – Shortmead Street / Sun Street 3-arm mini-roundabout; and
- Junction 18 – A1 / Hill Lane 4-arm roundabout.

the Applicant identifies that the baseline junction models have not been appropriately validated on one or more arms and yet has still used the junction models within the TA. In each case the Applicant assumes, rather than considering other reasons, that it is necessary “to increase the amount of traffic identified by the model to cross over the give-way line” and applies positive calibration.

It appears from the tables in the TA showing the results of junction model calibration that the baseline junction models at the above junctions cannot be regarded as being appropriately validated.

Furthermore, discrepancies between modelled and observed queues at the London Road / Chambers Way and Hill Lane / Sainsbury’s junction indicate that the baseline junction models at these locations cannot be regarded as being appropriately validated.

19. Future Traffic Flow Scenario Assessments

The Applicants TA at Chapter 11 sets out the future year traffic scenarios developed for the purposes of assessing the traffic impact of the Biggleswade North proposed residential development on the surrounding highway network.

The TA sets out future analysis scenario's which are:

- **Reference Case** – Background traffic flows to 2035 and “Land at Saxon Drive” and “Land at Kings Reach” committed developments only;
- **Biggleswade East Impact Scenario** – Reference Case plus Biggleswade East development only;
- **Cumulative Highway Impact Scenario** – Reference Case plus the Biggleswade North and Biggleswade East developments only; and
- **Biggleswade North Impact Scenario** – Reference Case plus Biggleswade North development only.

Within the Biggleswade North Impact Scenario it is noted that the scenario excludes the Biggleswade East committed development, whereby the TA states at Section 11.17 that its exclusion is reasonable given that the proposed Biggleswade North development will come forward prior to the full occupation of the Biggleswade East development.

The TA continues with the future traffic impact assessment at Chapter 12 which reports on the junction capacity assessment under the Biggleswade East Impact Scenario (no development trips from Biggleswade North). The conclusions from the Biggleswade East Impact Scenario assessment revealed that the Biggleswade East development materially impacts on the operation of a number of junctions within the study area, defined within the TA, which significantly reduces the available capacity for a number of junctions above the Reference Case Scenario.

Chapter 12 of the TA further concludes with a statement that reads:

“it is appropriate to assess the future impact scenario (Biggleswade North) without the inclusion of the Biggleswade East development.”

The above statement is based upon the views within the Local Plan Inspector's post hearing letter which raised concerns about the access of the site and its deliverability within the assessment timescale of 2035.

The presumption that the Biggleswade East development will not come forward before 2035 is an enormous assumption to make within the assessment process considering the site has planning permission. The omission of the traffic impacts of the Biggleswade East development within the outcomes of the TA results is misleading as it cannot be a true reflection of traffic impacts of the Biggleswade North development on the local highway network within Biggleswade. **It is considered that the Biggleswade East development should not be omitted from the assessment and should be considered within the TA in order to get a true reflection of the traffic situation within Biggleswade at 2035.**

A methodology of omitting the impact of the Biggleswade East development within the mitigation strategy and TA conclusions is a fallacious approach which if taken forward will have a massive impact on the town of Biggleswade and its residents as evidenced in the cumulative assessment presented with the Applicants TA.

Chapter 13 of the TA assesses the Cumulative Highway Impact Scenario and reports on the traffic impacts on the highway network within the study area of all committed developments (Saxon Drive, Kings Reach, Biggleswade East and Biggleswade North). The conclusions from the assessment are the same as those

identified at Chapter 12 and as set out above. To reiterate the traffic impact from the Cumulative Highway Impact Scenario has a material impact on the operation of several key junctions within Biggleswade by increasing the queues and delays on the approaches to the junction. In addition, Chapter 13 also concludes that:

“it is appropriate to assess the future impact scenario (Biggleswade North) without the inclusion of the Biggleswade East development.”

As a consequence of the conclusions from Chapters 12 and 13 of the TA, which includes the erroneous omission of the traffic from the Biggleswade East development, the Applicant's TA goes on to address the traffic impacts of the Biggleswade North development through the Biggleswade North Impact Scenario (Reference Case plus Biggleswade North development).

The Applicant's Biggleswade North Impact Scenario takes the Reference Case and adds the development vehicle trip generation and assignment contained within the TA.

It should be noted that the Applicant's Biggleswade North Impact Scenario does not consider the impact of the vehicular traffic generated by the committed developments at:

1. Land to the East of Baden Powell Way (Biggleswade East);
2. Land North of Potton Road;
3. Shortmead Road
4. Land at Sorrel Way Biggleswade; and;
5. Edward Peake School.

Consequently, the Applicant's Biggleswade North Impact Scenario cannot be regarded as an appropriate starting point for the assessment of the impact of development at the Biggleswade North site on the local highway network.

Notwithstanding the comments above regarding the efficacy of;

- Trip rate methodologies likely to result in the suppression of the generation of development vehicle trips; and;
- The validation of baseline junction models;

The Applicant identifies three locations where highway capacity improvements will be required to mitigate the impact of the proposed development of the Biggleswade North site.

At the Drove Road / London Road junction the Applicant's proposal is that the carriageway on the Drove Road arm of the junction be realigned to remove the existing traffic island. The removal of the traffic island is to allow vehicles to be stored in the flare to assist left and right turning vehicles.

The existing traffic island is located on the desire line for pedestrians walking along the east side of London Road. The gap between the two bollards is at highway level and acts as a refuge for pedestrians choosing to use the island to assist with crossing Drove Road. The longer paved alternative route for pedestrians requires crossing both Eagle Farm Road and Drove Road. The Applicant does not consider the inconvenience to pedestrians of removing the traffic island or address the safety of pedestrians attempting to cross three traffic lanes.

The Applicant states that *“an indicative layout of the proposed junction arrangement”* is provided in Appendix K of the TA.

The indicative design proposal shown in drawing 1512-07-SK27 has not been advanced to a final design nor have vehicle tracking diagrams, road safety assessments, design compliance reports and non-motorised user audits been provided for the Decision Maker to make an informed decision on safety matters.

The Applicant proposes that they make a Section 106 contribution towards the cost of the development impact mitigation scheme, but the scheme itself is not costed.

At the Shortmead Street/Sun Street junction the Applicant's proposed mitigation strategy is to replace the mini roundabout with a signalisation scheme. An indicative layout of the proposed traffic signal scheme (drawing 1512-07-SK38) is provided in appendix K of the TA. **The indicative design proposal has not been advanced to a final design nor have vehicle tracking diagrams, road safety assessments, design compliance reports and non-motorised user audits been provided for the Decision Maker to make an informed decision on safety matters.**

In addition, there are several business and residential premises with access arrangements, either onto, or adjacent to the junction which will be affected by the junction improvement proposals. It is unclear how these will be overcome with the introduction of traffic signals. **It is therefore imperative that the problems are addressed to ensure that any proposals are safe and deliverable.**

Although the Applicant proposes that they make a Section 106 contribution towards the cost of the signalisation, the proposed scheme is not costed. The Applicant notes that there is a Section 106 contribution of £250,000 for highway improvements to the Town Centre attached to the Biggleswade East planning consent and suggest that this sum could contribute towards the cost of the signalisation scheme. The vagueness of the Section 106 proposals, the Applicant's doubts on the Biggleswade East application progress and the absence of a final design that has been assessed, tested and fully costed appear to give the Decision Maker little comfort on the delivery of an appropriate mitigation scheme at the Shortmead Street / Sun Street junction.

At the A1/Hill Lane roundabout the mitigation proposals are for a partial contribution to the proposals identified within the Biggleswade East assessment. Again, a confusing statement as the Applicant does not anticipate that the Biggleswade East development will proceed.

Highways England are the highway authority for the A1 and as such they will undertake their own audit of the TA in due course.

20. Potton Road

The capacity of Potton Road has been assessed by the applicant within sections 13.90 -13.92 of the TA. The results of the assessment indicate that Potton Road will operate within capacity during both the morning and evening periods under the “Cumulative Highway Impact Scenario”. It is noted that no reference has been given as to the source of the urban capacity figures used, the document source should be referenced in order to make a true judgement of the capacity of Potton Road. It is noted that if the document TA/79/99 “Traffic Capacity of Urban Roads” from DMRB is applied to obtain a guide to the capacity of urban roads.

The TA appears to indicate that Potton Road, at section 5.128, has a two way flow capacity of 1,250 vehicles/hr. This level of capacity is extremely generous given that the characteristics of Potton Road show the following concerns arising from:

- The location of two convenience stores within 100m of each other on Potton Road;
- Vehicles parked along the length of Potton Road;
- No laybys for buses at the Bus stops on Potton Road;
- Observations of existing congestion;
- The identification of rat running along Lime Tree Walk; and
- The forthcoming expansion of Edward Peake Middle School.

All the above clearly indicate that Potton Road has severe restriction along its length which in turn effects its capacity and the smooth flow of traffic along its length, between Drove Road and Rose Lane. The characteristics results in Potton Road effectively operating as a one-way road in places causing queues and delays along its length. This situation has been observed on numerous site visits and is well known to the Town Council. As a result, the surrounding area is especially sensitive to the impact of development at the proposed Biggleswade North site.

The assessment of Potton Road has been undertaken using a static approach which appears to overestimate its capacity and in the absence of any dynamic microsimulation modelling, the Decision Maker can have little confidence in the Applicant’s assertion that the proposed development “*is acceptable and would not result in conditions that are prejudice to highway safety and the operation of the highway network*”.

It is strongly recommended that the road network within the vicinity of the Potton Road/Furzenhall Road junction is assessed by a more appropriate form of traffic modelling, such as VISSIM, in order to correctly assess the operational impact of the proposed North Biggleswade development.

21. Proposed Highway Improvements

Chapter 15 of the TA sets out a summary of the proposed highway improvements to mitigate the impact of the “*limited impact*” (quote from TA) of the Biggleswade North development and to enhance deficiencies for pedestrians and cyclists.

With regards to the capacity improvements at junctions’ concerns have been raised at Chapter 19 above regarding the fact that the drawings are indicative design proposals which have not been advanced to an appropriate level of design nor have vehicle tracking diagrams, road safety assessments, design compliance reports and non-motorised user audits been provided for the Decision Maker to make an informed decision on safety matters.

In respect of the proposed pedestrian/cycle routes a series of improvements have been proposed where deficiencies have been identified within the existing pedestrian and cycle infrastructure. The drawings of the proposed improvements are presented at Appendix H within the TA and are welcomed to aid the sustainability of the development; however, the drawings are indicative and lack the necessary checks and audits to ensure that they are safe and suitable. In order for the Decision Maker to make an informed decision the following should be undertaken on the proposed improvements, namely:

- Road Safety Audits;
- Compliance Design Reports; and
- Non-Motorised User Audits.

The limited contribution towards public transport provision within the area has been commented on at Section 15 above. Overall the Public Transport Strategy as proposed with the TA is limited, reliant upon a contribution to public transport and therefore not guaranteed or even deliverable.

Clearly there are a number of major concerns regarding the TA and its ability to effectively assess the true impacts of the Biggleswade North proposed development and until the issues outlined in the report have been correctly addressed it is difficult determine if the mitigation measures proposed are applicable and enough.

The Potton Road/Drove Road junction is particularly sensitive and whilst not identified as requiring mitigation measures, if correctly assessed then it is highly likely that this position will change.

22. Salient Points

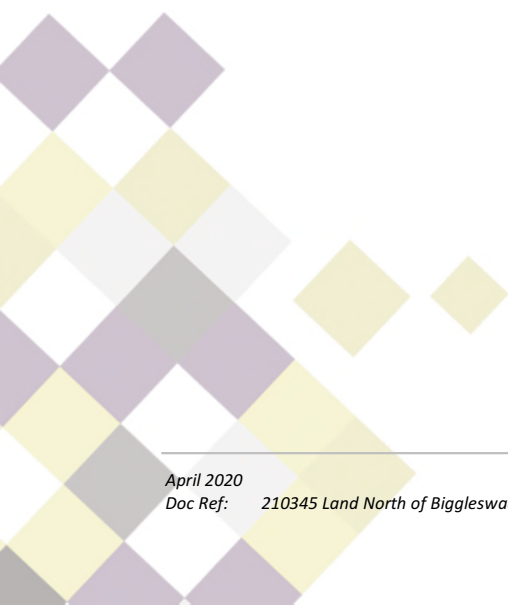
A summary of the technical audit of the Applicant’s submitted Transport Assessment dated 20th November 2019 and Framework Travel Plan dated 1st November 2019 is provided within **Table 22.1** below:

Table 22.1 Summary of Salient Points

Heading	Salient Point
Sustainability	The proposed development site cannot be regarded as being sustainable.
Safe and Suitable Site Access for All Users	Insufficient evidence has been provided to allow for an appropriate level of scrutiny to take place or for the Decision Maker to determine, in accordance with the NPPF, that safe and suitable access to the proposed development site can be achieved for all users.
Impact of Development on Potton Road	In the absence of any dynamic modelling the Decision Maker can have little confidence in the Applicant’s opinion that the impact of development on highway safety and the operation of the highway network in Potton Road will be acceptable
Impact of Development on the Local Highway Network	<p>Insufficient evidence has been provided to allow for an appropriate level of scrutiny to take place or for the Decision Maker to determine, in accordance with the NPPF, that the impact of development on the Local Highway Network will not be severe.</p> <p>The omission of the Biggleswade East committed development is not in line with good practise and could let to misleading results as to the impact of the Biggleswade North development on the surrounding highway network</p>
Impact of Development on Highway Safety	Insufficient evidence has been provided to allow for an appropriate level of scrutiny to take place or for the Decision Maker to determine, in accordance with the NPPF, that safe and suitable access to the proposed development site can be achieved for all users.

The work undertaken within the Technical Audit of the transport and highway supporting documents for planning application, reference CB/19/04301/OUT, has revealed a number of serious concerns as highlighted above.

Biggleswade Town Council reserves the right to submit further information as additional information becomes available.



Appendix A

Biggleswade Town Council MCTC surveys

Biggleswade - Tuesday 19th November 2019

Junction: Furzenhall Road/Potton Road

Approach: Furzenhall Road

TIME	Left Turn				Southbound				Right Turn			
	Lights	HGV	Bus/Coach	TOTAL	Lights	HGV	Bus/Coach	TOTAL	Lights	HGV	Bus/Coach	TOTAL
0730 - 0745	8	0	0	8	1	0	0	1	13	0	0	13
0745 - 0800	5	0	0	5	4	0	0	4	10	0	0	10
Hourly Total	13	0	0	13	5	0	0	5	23	0	0	23
0800 - 0815	15	0	0	15	1	0	0	1	5	0	0	5
0815 - 0830	6	1	0	7	2	0	0	2	7	1	0	8
0830 - 0845	6	0	0	6	3	0	0	3	18	0	0	18
0845 - 0900	6	0	2	8	0	0	0	0	15	0	0	15
Hourly Total	33	1	2	36	6	0	0	6	45	1	0	46
0900 - 0915	7	0	0	7	0	0	0	0	5	0	0	5
0915 - 0930				0				0				0
Hourly Total	7	0	0	7	0	0	0	0	5	0	0	5
TOTAL	53	1	2	56	11	0	0	11	73	1	0	74

TIME	Left Turn				Southbound				Right Turn			
	Lights	HGV	Bus/Coach	TOTAL	Lights	HGV	Bus/Coach	TOTAL	Lights	HGV	Bus/Coach	TOTAL
1630 - 1645	3	0	0	3	0	0	0	0	7	0	0	7
1645 - 1700	8	0	1	9	1	0	0	1	4	0	0	4
Hourly Total	11	0	1	12	1	0	0	1	11	0	0	11
1700 - 1715	0	0	0	0	0	0	0	0	8	0	0	8
1715 - 1730	3	0	0	3	0	0	0	0	2	0	0	2
1730 - 1745	8	0	0	8	0	0	0	0	5	0	0	5
1745 - 1800	6	0	0	6	0	0	0	0	2	0	0	2
Hourly Total	17	0	0	17	0	0	0	0	17	0	0	17
1800 - 1815				0				0				0
1815 - 1830				0				0				0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	28	0	1	29	1	0	0	1	28	0	0	28

Biggleswade - Tuesday 19th November 2019

Junction: Furzenhall Road/Potton Road

Approach: Potton Road (East)

TIME	Left Turn			Westbound			Right Turn			
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach	TOTAL
0730 - 0745	1	0	0	58	8	0	4	0	0	4
0745 - 0800	0	0	0	38	2	3	1	2	0	3
Hourly Total	1	0	0	96	10	3	5	2	0	7
0800 - 0815	1	0	0	55	3	1	5	0	0	5
0815 - 0830	0	1	0	63	4	1	5	0	0	5
0830 - 0845	1	0	0	81	7	1	4	0	0	4
0845 - 0900	1	0	0	83	2	1	5	1	0	6
Hourly Total	3	1	0	282	16	4	19	1	0	20
0900 - 0915	0	0	0	54	7	5	5	1	0	6
0915 - 0930										0
Hourly Total	0	0	0	54	7	5	5	1	0	6
TOTAL	4	1	0	432	33	12	29	4	0	33

TIME	Left Turn			Westbound			Right Turn			
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach	TOTAL
1630 - 1645	1	0	0	70	4	1	6	2	0	8
1645 - 1700	0	0	0	49	4	0	10	0	0	10
Hourly Total	1	0	0	119	8	1	16	2	0	18
1700 - 1715	0	0	0	47	5	0	10	1	0	11
1715 - 1730	1	0	0	51	5	1	6	1	0	7
1730 - 1745	0	0	0	78	3	0	12	3	0	15
1745 - 1800	0	0	0	46	3	0	10	0	0	10
Hourly Total	1	0	0	222	16	1	38	5	0	43
1800 - 1815										0
1815 - 1830										0
Hourly Total	0	0	0	0	0	0	0	0	0	0
TOTAL	2	0	0	341	24	2	54	7	0	61

Biggleswade - Tuesday 19th November 2019

Junction: Furzenhall Road/Potton Road

Approach: Lime Tree Walk

TIME	Left Turn			Northbound			Right Turn		
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach
0730 - 0745	0	0	0	0	0	0	0	0	0
0745 - 0800	1	0	0	0	0	0	0	0	0
Hourly Total	1	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0
0815 - 0830	1	0	0	0	0	0	0	0	0
0830 - 0845	1	0	0	0	0	0	0	0	0
0845 - 0900	0	0	0	3	0	0	1	0	0
Hourly Total	2	0	0	3	0	0	1	0	0
0900 - 0915	1	0	0	1	0	0	0	0	0
0915 - 0930	0	0	0	0	0	0	0	0	0
Hourly Total	1	0	0	1	0	0	0	0	0
TOTAL	4	0	0	4	0	0	1	0	0

TIME	Left Turn			Northbound			Right Turn		
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach
1630 - 1645	0	0	0	0	0	0	0	0	0
1645 - 1700	0	0	0	1	0	0	0	0	0
Hourly Total	0	0	0	1	0	0	0	0	0
1700 - 1715	2	0	0	2	0	0	2	0	0
1715 - 1730	0	0	0	0	1	0	0	0	0
1730 - 1745	2	0	0	0	0	0	1	0	0
1745 - 1800	0	0	0	0	0	0	0	0	0
Hourly Total	4	0	0	2	1	0	3	0	0
1800 - 1815									
1815 - 1830									
Hourly Total	0	0	0	0	0	0	0	0	0
TOTAL	4	0	0	3	1	0	4	0	0

Biggleswade - Tuesday 19th November 2019

Junction: Furzenhall Road/Potton Road

Approach: Potton Road (West)

TIME	Left Turn			Eastbound			Right Turn		
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach
0730 - 0745	2	1	0	58	2	0	2	0	0
0745 - 0800	4	0	0	51	1	0	1	0	0
Hourly Total	6	1	0	109	3	0	3	0	0
0800 - 0815	1	0	0	39	0	1	0	0	0
0815 - 0830	5	0	0	57	0	1	0	0	0
0830 - 0845	4	0	1	56	1	0	0	0	0
0845 - 0900	4	0	1	66	1	3	0	0	0
Hourly Total	14	0	2	218	2	5	0	0	0
0900 - 0915	6	0	0	66	0	0	0	0	0
0915 - 0930									
Hourly Total	6	0	0	66	0	0	0	0	0
TOTAL	26	1	2	393	5	5	3	0	3

TIME	Left Turn			Eastbound			Right Turn		
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach
1630 - 1645	9	0	0	72	2	1	3	0	0
1645 - 1700	3	0	0	65	1	2	1	0	0
Hourly Total	12	0	0	137	3	3	4	0	0
1700 - 1715	12	0	0	79	2	1	2	0	0
1715 - 1730	14	1	0	102	0	0	1	0	0
1730 - 1745	9	0	0	90	0	1	4	0	0
1745 - 1800	12	0	0	68	0	0	0	0	0
Hourly Total	47	1	0	339	2	2	7	0	0
1800 - 1815									
1815 - 1830									
Hourly Total	0	0	0	0	0	0	0	0	0
TOTAL	59	1	0	476	5	5	11	0	11

Queues observed on Potton Road between 5.30 and 5.45 pm

Biggleswade - Thursday 14th November 2019

Junction: Furzenhall Road/Potton Road

Approach: Potton Road (East)

TIME	Left Turn			Right Turn		
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach
0730 - 0745						
0745 - 0800	50	3	0	22	5	1
Hourly Total	50	3	0	22	5	1
0800 - 0815	44	3	1	31	5	0
0815 - 0830	59	1	1	62	2	0
0830 - 0845	71	2	8	75	5	4
0845 - 0900	44	3	0	66	0	0
Hourly Total	218	9	10	234	12	4
0900 - 0915	44	3	1	79	6	1
0915 - 0930						
Hourly Total	44	3	1	79	6	1
TOTAL	312	15	11	338	23	6

TIME	Left Turn			Right Turn		
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach
1630 - 1645	38	1	0	64	0	0
1645 - 1700	40	1	0	41	0	0
Hourly Total	78	2	0	105	0	0
1700 - 1715	23	0	0	29	0	0
1715 - 1730	41	2	0	41	0	0
1730 - 1745	29	1	0	29	0	1
1745 - 1800	19	0	0	9	0	0
Hourly Total	112	3	0	108	0	1
1800 - 1815						
1815 - 1830						
Hourly Total	0	0	0	0	0	0
TOTAL	190	5	0	213	0	1

Biggleswade - Tuesday 19th November 2019

Junction: Furzenhall Road/Potton Road

Approach: Drove Road

TIME	Left Turn			Right Turn		
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach
0730 - 0745	5	0	1	19	1	0
0745 - 0800	6	0	0	25	4	0
Hourly Total	11	0	1	44	5	0
0800 - 0815	7	0	0	24	0	1
0815 - 0830	1	0	1	36	5	0
0830 - 0845	3	0	0	53	4	2
0845 - 0900	5	0	1	58	1	0
Hourly Total	16	0	2	171	10	3
0900 - 0915	2	0	0	31	2	0
0915 - 0930						
Hourly Total	2	0	0	31	2	0
TOTAL	29	0	3	246	17	3

TIME	Left Turn			Right Turn		
	Lights	HGV	Bus/Coach	Lights	HGV	Bus/Coach
1630 - 1645	4	0	1	40	0	0
1645 - 1700	3	1	0	51	0	0
Hourly Total	7	1	1	91	0	0
1700 - 1715	5	0	0	69	0	0
1715 - 1730	7	0	1	50	0	2
1730 - 1745	3	0	0	55	1	0
1745 - 1800	1	0	1	41	0	0
Hourly Total	16	0	2	215	1	2
1800 - 1815						
1815 - 1830						
Hourly Total	0	0	0	0	0	0
TOTAL	23	1	3	306	1	2

Appendix B

Biggleswade East TRICS

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
 Category : A - HOUSES PRIVATELY OWNED

MULTI-MODAL VEHICLES

.....

02	SOUTH EAST	
	EX ESSEX	1 days
03	SOUTH WEST	
	CW CORNWALL	2 days
04	EAST ANGLIA	
	CA CAMBRIDGESHIRE	1 days
	NF NORFOLK	1 days
	SF SUFFOLK	3 days
05	EAST MIDLANDS	
	LE LEICESTERSHIRE	1 days
	LN LINCOLNSHIRE	2 days
	NT NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS	
	SH SHROPSHIRE	1 days
	ST STAFFORDSHIRE	1 days
	WM WEST MIDLANDS	1 days
	WO WORCESTERSHIRE	3 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	NY NORTH YORKSHIRE	1 days
08	NORTH WEST	
	CH CHESHIRE	3 days
	GM GREATER MANCHESTER	1 days
	LC LANCASHIRE	1 days
09	NORTH	
	CB CUMBRIA	1 days
	TV TEES VALLEY	1 days

.....

Filtering Stage 2 selection:

.....
.....

Parameter: Number of dwellings
Actual Range: 7 to 237 (units:)
Range Selected by User: 6 to 491 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/05 to 23/10/12

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.....

.....
Tuesday 14 days
Wednesday 5 days
Thursday 7 days

.....

.....
Manual count 26 days
Directional ATC Count 0 days

.....
.....
.....

.....
Suburban Area (PPS6 Out of Centre) 15
Edge of Town 11

.....
.....
.....

.....
Residential Zone 21
No Sub Category 5

.....
.....
.....

Filtering Stage 3 selection:

.....
C3 25 days

.....
.....

.....
1,001 to 5,000 1 days
5,001 to 10,000 3 days
10,001 to 15,000 7 days
15,001 to 20,000 11 days
20,001 to 25,000 4 days

.....

Filtering Stage 3 selection (Cont.):

.....

5,001 to 25,000	1 days
25,001 to 50,000	3 days
50,001 to 75,000	1 days
75,001 to 100,000	7 days
100,001 to 125,000	5 days
125,001 to 250,000	6 days
250,001 to 500,000	2 days
500,001 or More	1 days

.....

.....

0.6 to 1.0	14 days
1.1 to 1.5	12 days

.....

.....

No	26 days
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.....

.....

<p>1 CA-03-A-04 DETACHED</p> <p>THORPE PARK ROAD PETERBOROUGH Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 9</p> <p>.....</p>	<p>CAMBRIDGESHIRE</p> <p>.....</p>
<p>2 CB-03-A-03 SEMI DETACHED</p> <p>HAWKSHEAD AVENUE</p> <p>WORKINGTON Edge of Town Residential Zone Total Number of dwellings: 40</p> <p>.....</p>	<p>CUMBRIA</p> <p>.....</p>
<p>3 CH-03-A-05 DETACHED</p> <p>SYDNEY ROAD SYDNEY CREWE Edge of Town Residential Zone Total Number of dwellings: 17</p> <p>.....</p>	<p>CHESHIRE</p> <p>.....</p>
<p>4 CH-03-A-06 SEMI-DET./BUNGALOWS</p> <p>CREWE ROAD</p> <p>CREWE Suburban Area (PPS6 Out of Centre) No Sub Category Total Number of dwellings: 129</p> <p>.....</p>	<p>CHESHIRE</p> <p>.....</p>
<p>5 CH-03-A-08 DETACHED</p> <p>WHITCHURCH ROAD BOUGHTON HEATH CHESTER Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 11</p> <p>.....</p>	<p>CHESHIRE</p> <p>.....</p>
<p>6 CW-03-A-01 TERRACED</p> <p>ALVERTON ROAD</p> <p>PENZANCE Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 13</p> <p>.....</p>	<p>CORNWALL</p> <p>.....</p>
<p>7 CW-03-A-02 SEMI D./DETACHED</p> <p>BOSVEAN GARDENS</p> <p>TRURO Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 73</p> <p>.....</p>	<p>CORNWALL</p> <p>.....</p>

.....

<p>15 NT-03-A-03 SEMI DETACHED B6018 SUTTON ROAD</p> <p>KIRKBY-IN-ASHFIELD Edge of Town Residential Zone Total Number of dwellings: 166 </p>	<p>NOTTINGHAMSHIRE</p> <p>.....</p>
<p>16 NY-03-A-01 MIXED HOUSES GRAMMAR SCHOOL LANE</p> <p>NORTHALLERTON Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 52 </p>	<p>NORTH YORKSHIRE</p> <p>.....</p>
<p>17 SF-03-A-01 SEMI DETACHED A1156 FELIXSTOWE ROAD RACECOURSE IPSWICH Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 77 </p>	<p>SUFFOLK</p> <p>.....</p>
<p>18 SF-03-A-02 SEMI DET./TERRACED STOKE PARK DRIVE MAIDENHALL IPSWICH Edge of Town Residential Zone Total Number of dwellings: 230 </p>	<p>SUFFOLK</p> <p>.....</p>
<p>19 SF-03-A-04 DETACHED & BUNGALOWS NORMANSTON DRIVE</p> <p>LOWESTOFT Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 7 </p>	<p>SUFFOLK</p> <p>.....</p>
<p>20 SH-03-A-04 TERRACED ST MICHAEL'S STREET</p> <p>SHREWSBURY Suburban Area (PPS6 Out of Centre) No Sub Category Total Number of dwellings: 108 </p>	<p>SHROPSHIRE</p> <p>.....</p>
<p>21 ST-03-A-05 TERRACED & DETACHED WATERMEET GROVE ETRURIA STOKE-ON-TRENT Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 14 </p>	<p>STAFFORDSHIRE</p> <p>.....</p>

.....

22 TV-03-A-01 HOUSES & FLATS
POWLETT ROAD

TEES VALLEY

HARTLEPOOL
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 225

.....

23 WM-03-A-02 DETACHED & SEMI DET.
HEATH STREET

WEST MIDLANDS

STOURBRIDGE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 12

.....

24 WO-03-A-01 DETACHED
MARLBOROUGH AVENUE

WORCESTERSHIRE

ASTON FIELDS
BROMSGROVE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 10

.....

25 WO-03-A-02 SEMI DETACHED
MEADOWHILL ROAD

WORCESTERSHIRE

REDDITCH
Edge of Town
No Sub Category
Total Number of dwellings: 48

.....

26 WO-03-A-06 DET./TERRACED
ST GODWALDS ROAD

WORCESTERSHIRE

ASTON FIELDS
BROMSGROVE
Edge of Town
No Sub Category
Total Number of dwellings: 232

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Appendix C

Dataset NTS0502

Department for Transport statistics
National Travel Survey

Table NTS0502
Trip start time by trip purpose (Monday to Friday only): England, 2014/2018

Start time	Percentage										Unweighted sample size (trips '000s)
	Commuting	Business	Education	Escort education	Shopping	Other work, other escort and personal business	Visiting friends / entertainment / sport	Holiday / Day trip / Other	All purposes		
0000 - 0059	47	3	1	-	3	11	31	5	100	1	
0100 - 0159	44	4	-	-	2	10	34	5	100	-	
0200 - 0259	62	2	0	1	2	9	14	10	100	-	
0300 - 0359	62	7	1	-	2	7	10	11	100	1	
0400 - 0459	70	8	-	-	1	7	2	10	100	1	
0500 - 0559	76	6	-	-	1	6	3	7	100	7	
0600 - 0659	67	7	1	-	2	9	4	10	100	20	
0700 - 0759	49	6	14	5	3	14	4	5	100	58	
0800 - 0859	20	3	29	22	4	14	3	4	100	120	
0900 - 0959	11	5	3	7	22	26	15	11	100	59	
1000 - 1059	5	4	1	1	34	25	16	13	100	60	
1100 - 1159	5	4	2	2	35	24	18	11	100	63	
1200 - 1259	7	5	2	2	31	25	20	9	100	59	
1300 - 1359	10	5	2	2	29	24	19	10	100	56	
1400 - 1459	10	4	4	11	25	20	17	10	100	63	
1500 - 1559	7	2	26	21	12	14	12	6	100	115	
1600 - 1659	22	4	7	4	15	21	18	9	100	77	
1700 - 1759	32	4	3	2	12	20	20	7	100	78	
1800 - 1859	21	3	1	1	15	18	31	10	100	57	
1900 - 1959	11	2	1	-	16	18	41	10	100	38	
2000 - 2059	13	3	1	-	14	16	44	10	100	23	
2100 - 2159	15	3	1	-	8	16	50	8	100	16	
2200 - 2259	21	3	-	-	4	12	52	7	100	11	
2300 - 2359	24	2	1	-	3	11	52	6	100	6	
All day	18	4	9	7	17	19	18	8	100	1,008	

1 Five survey years combined.

The figures in this table are National Statistics

The results presented in this table are weighted. The base (unweighted sample size) is shown in the table for information. Weights are applied to adjust for non-response to ensure the characteristics of the achieved sample match the population of Great Britain (1995-2012) or England (2013 onwards) and for the drop off in trip recording in diary data. The survey results are subject to sampling error.

Source: National Travel Survey
Last updated: 31 July 2019
Next update: Summer 2020

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[Notes & definitions](#)

Appendix D

Housing Trajectory for Central Bedfordshire

