Bloor Homes Ltd and Gillian Smith, John Robert Carmichael Smith, Robert Giles Russell Smith and Andrew James Smith

LAND EAST OF STATION ROAD, ELSENHAM

Transport Assessment

70084697-WSP-XX-XX-RPT-0001-P01
OCTOBER 2022

PUBLIC

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1. WSP has been commissioned by Bloor Homes Ltd and Gillian Smith, John Robert Carmichael Smith, Robert Giles Russell Smith and Andrew James Smith to prepare a Transport Assessment (TA) to accompany an outline planning application with all matters reserved apart from access for up to 200 residential dwellings on Land to the East of Elsenham, Essex.

1.1.2. This TA should be read alongside the Framework Residential Travel Plan (RTP) that has been prepared separately for the development and submitted with the outline planning application. The RTP sets out initiatives and measures to be implemented to achieve objectives relating to reduced private car use and promotion of sustainable modes of travel.

1.2 SCOPE

1.2.1. Proposals for a planning application for up to 200 dwellings were discussed with highways officers from Essex County Council (ECC) on 11 November 2021. Following the meeting the scope of the traffic surveys was agreed with ECC via email.

1.2.2. A second meeting with ECC was held on 22 September 2021. The purpose of this meeting was to discuss the proposed assessment methodology to ensure the approach is acceptable to ECC.

1.2.3. Minutes of the above meetings and email correspondence with ECC are attached in **Appendix A**.

1.3 STRUCTURE

1.3.1. The remainder of this TA is structured as follows:

- **Section 2 – Development Proposals**: Describes the development proposals in terms of the quantum of development and the proposed access arrangements.
- **Section 3 – Policy Context**: Briefly summarises the relevant national and local transport policies against which the development has been assessed. In general, this relates to the Site's accessibility by a choice of modes of travel.
- **Section 4 – Existing Conditions**: Establishes the Site's existing accessibility by all modes of travel.
- **Section 5 – Future Baseline Transport Conditions:** Assesses future baseline transport conditions.
- **Section 6 – Multi-Modal Travel Demand**: Establishes the predicted multi-modal trip generation, distribution and assignment for the Proposed Development.
- **Section 7 – Transport Impacts and Mitigation**: Assess the multi-modal impact of the development proposals and sets out the proposed mitigation measures. And
- **Section 8 – Conclusion**: Summarises the findings of the TA.

2 DEVELOPMENT PROPOSALS

2.1 OVERVIEW

2.1.1. This section of the TA describes the proposed residential development, including the Site location, proposed access arrangements, parking strategy and servicing and delivery arrangements.

2.2 EXISTING LAND USE

2.2.1. The Site is located on the north-eastern edge of Elsenham. The Site is in agricultural use as arable land. The Proposed Development would be located on part of the existing field, but does not extend to the western, northern or eastern field boundaries. The Site is 11.12 Ha in size and is broadly rectangular in shape. The Site is relatively flat, although the eastern part of the Site at a slightly higher level than the western part of the Site. The Site does not currently generate any significant trips on the local transport networks.

2.3 DEVELOPMENT PROPOSALS

2.3.1. This TA accompanies an outline planning application with all matters reserved except for the primary means of access for the development of up to 200 residential dwellings along with landscaping, public open space and associated infrastructure works.

2.3.2. A red line boundary plan, parameter plan and illustrative layout have been prepared by Carter Jonas and are attached in **Appendix B.1**.

2.3.3. The development construction phase is predicted to take place between 2023 and 2026. Housing delivery is anticipated to be in the range of about 80 dwellings per annum. It is anticipated that development will commence in the south and work from south to north.

2.3.4. For the purposes of this TA a 2027 future assessment year has been adopted, 5 years post planning submission, a date by which the development is expected to be fully built out.

2.4 ACCESS ARRANGEMENT

PRIMARY ACCESS

2.4.1. The Proposed Development will take primary access via the consented Phase 1 development to the south and connect with the priority junction with Henham Road. The primary access will provide for vehicular, bicycle and pedestrian access into the Site.

2.4.2. The access into the Site from the consented Phase 1 development and consented access into the Phase 1 Site from Henham Road are attached in **Appendix B.2**.

SECONDARY ACCESSES

2.4.3. The Proposed Development is generally well connected to existing infrastructure and key destinations immediately surrounding the Site with additional pedestrian and cycle access provided via:

- A pedestrian and cycle route to the west of the Site that provides access to Elsenham Station (Southbound Platform) and Old Mead Road (via the consented Phase 1 development).
- A pedestrian route to the southeast of the Site that connects with the Phase 1 development, close to the location of the proposed primary school and early years facility.

2.5 INTERNAL LAYOUT

2.5.1. The Proposed Development is being submitted as an outline application with all matters reserved except for the primary access and so provides limited information regarding the Site's internal layout. Future reserved matters application(s) will include details on the internal layout. The internal site layout will be developed with regard to the movement principles set out in the Essex Design Guide and Manual for Streets including:

- Provision of a permeable residential layout with direct and attractive pedestrian and cycle routes; and
- A street network that creates a low speed (under 20 mph) residential environment.

2.6 BUS ACCESS

2.6.1. ECC requested durring scoping discussions that WSP explore the feasibility of providing a secondary bus only access. This access would connect the Phase 2 site with Old Mead Road adjacent the Elsenham Railway Station southbound platform and enable a bus to route through the Site between Old Mead Road and Henham Road.

2.6.2. WSP have explored the feasibility of providing a bus only access at this location. However due to visibility and level crossing safety issues it was concluded that the location is not suitable for vehicular access to the Site.

2.6.3. The specific issues associated with the delivery of a bus only access at this location are listed below.

- The width of the Site frontage is limited and not wide enough to accommodate the visibility splay distance required to the north and south (2.4m x 43m). A large tree immediately to the south of the railway station car park restricts visibility to the north and existing level crossing / station infrastructure restricts visibility to the south.
- A bus entering the site from the south could trap vehicles on level crossing if entry to the site was obstructed (e.g. by vehicules queuing on Old Mead Road or by a vehicle exiting the site via the bus only access). This would pose a significant road and rail safety issue, particularly given the safety history of the Elsenham level crossing.
- As part of the consented Phase 1 development a pedestrian/cycle access will be provided immediately to the north of the southbound platform at Elsenham Railway Station. This new bus access will create a complex interaction between buses, vehicles and pedestrians and cyclist accessing the railway station. The provision of a new pedestrian / cycle access contrains the location of the bus access (i.e. it cannot be situated immediately opposite the level crossing).
- Given the relatively rural nature of Old Mead Road, ECC are unlikely to be able to enforce the use of the bus access. This could result in misuse and intensify the use of Elsenham Level Crossing by vehicular traffic.
- It is anticipated that any proposals for a new bus access from Old Mead Road would raise strong objection from Network Rail on safety grounds. It is also anticipated that the same issues would be raised by ECC or a third party auditor as a part of a road safety audit.

2.6.4. A constraints plan showing issues associated with the delivery of a bus only access is attached at **Appendix B.3**.

2.7 PARKING PROVISION

2.7.1. This TA accompanies an outline planning application for the Proposed Development and therefore future reserved matters applications will set out in detail the provision and layout of car and cycle parking. However, the parking provision provided for the Proposed Development will be in accordance with the Essex County Councils 'Parking Standards: Design and Good Practice, September 2009' which were adopted by Uttlesford District Council in February 2013 or any relevant parking standards at the time of the application.

2.8 SUMMARY

2.8.1. The Proposed Development will provide direct and attractive walk and cycle routes and a low-speed residential street environment in accordance with principles set out in the Essex Design Guide and Manual for Streets.

2.8.2. A Framework RTP is submitted with the outline planning application which sets out the measures to encourage sustainable travel to and from the Proposed Development.

3 POLICY CONTEXT

3.1 OVERVIEW

3.1.1. This section briefly summarises the national and local transport polices that are relevant to the Proposed Development.

3.2 NATIONAL POLICY

NATIONAL PLANNING POLICY FRAMEWORK (2021)

3.2.1. The National Planning Policy Framework (NPPF), revised by the Ministry of Housing, Communities and Local Government (MHCLG) in July 2021, provides the Government's planning policies for England and how these are expected to be applied.

3.2.2. The NPPF has a presumption in favour of sustainable development, summarised as:

"Meeting the needs of the present without compromising the ability of future generations to meet their own needs." [paragraph 7]

3.2.3. When considering development proposals, the NPPF [paragraph 110] advises that development proposals should ensure:

- appropriate opportunities to promote sustainable transport modes can be – or have been – taken
- up, given the type of development and its location;
- safe and suitable access to the Site can be achieved for all users;
- the design of streets, parking areas, other transport elements and the content of associated standards reflect current national guidance, including the National Design Guide and the National Model Design Code; and
- 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.

3.2.4. The NPPF [paragraph 112] continues to add that developments should:

- 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;
- address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
- 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;
- allow for the efficient delivery of goods, and access by service and emergency vehicles; and
- be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible
- and convenient locations.

3.2.5. The NPPF [paragraph 111] also notes that development should only be prevented, or refused, on highways grounds, if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.

NATIONAL PLANNING PRACTICE GUIDANCE (2014)

3.2.6. The National Planning Practice Guidance (NPPG) collection, published by the MHCLG in March 2014, provides guidance on Travel Plans, Transport Assessments and Statements. The guidance states:

> *"Transport Assessments and Statements are ways of assessing the potential transport impacts of developments… Transport Assessments are thorough assessments of the transport implications of development, and Transport Statements are a 'lighter-touch' evaluation to be used where this would be more proportionate to the potential impact of the development"*

3.2.7. From the scale of the Proposed Development, it is considered that the provision of a comprehensive TA is appropriate to assess the transport implications of the Proposed Development on the local transport networks. The guidance also recognises that TA's can positively contribute towards:

- encouraging sustainable travel;
- lessening traffic generation and its detrimental impacts;
- reducing carbon emissions and climate impacts;
- creating accessible, connected, inclusive communities;
- improving health outcomes and quality of life;
- improving road safety; and
- reducing the need for new development to increase existing road capacity or provide new roads.

3.3 LOCAL POLICY

ESSEX LOCAL TRANSPORT PLAN (2011)

3.3.1. The Essex Local Transport Plan sets out ECC's plans and policies for the future of transport in Essex. The current local plan was adopted in 2011 and covers 15 years. The County Council's vision for transport is for a transport system which supports sustainable economic growth and helps deliver the best quality of life for the residents of Essex.

3.3.2. The core objectives of the Essex Local Transport Plan are:

- Provide connectivity for Essex communities and international gateways to support sustainable economic growth and regeneration;
- Reduce carbon dioxide emissions and improve air quality through lifestyle changes, innovation and technology;
- Improve safety on the transport network and enhance and promote a safe travelling environment;
- Secure and maintain all transport assets to an appropriate standard and ensure that the network is available for use; and
- Provide sustainable access and travel choice for Essex residents to help create sustainable communities.

3.3.3. A list of key priorities relevant to the application site have been identified in support of the transport strategy, including the following:

- Strategic transport priorities:

- Lobbying Government for additional capacity on the Great Eastern Mainline and West Anglia mainline to accommodate growing commuter demand

- Transport priorities for West Essex:
  - Improving access to and from the M11 corridor;
  - Providing the transport improvements needed to support housing and employment growth;
  - Improving the attractiveness of bus services;
  - Improving cycling networks and walking routes and encouraging their greater use; and
  - Improving access to Stansted Airport by low carbon forms of transport.

3.3.4. The LTP development management policies (2010) are in line with its objectives and set out the principles upon which the relevant highway authorities will make recommendations regarding Proposed Developments. The relevant development management policies include:

- Protecting the highway network for the safe and efficient movement of people and goods by all modes and ensuring safe and convenient access for sustainable modes;
- Protecting the function of all other routes by ensuring that new access points are designed and constructed to current standards;
- Ensuring residential estates allow access by passenger transport and estate roads are designed with an emphasis on a high-quality built environment and urban realm;
- Ensuring all works within the highway comply with the current national and ECC design standards;
- Ensuring that development proposals comply with ECC's current parking standards;
- Ensuring that the developer will minimise the number of trips by the private vehicle through the provision of alternative transport modes and / or associate infrastructure;
- Safeguarding existing Public Rights of Way, requiring an alternative route where they cannot be and requiring or enhanced PRoW; and
- Demonstration that the proposal has no impact in congestion and requiring the provision of appropriate mitigation measures when needed.

ESSEX COUNTY COUNCIL'S SUSTAINABLE MODES OF TRAVEL STRATEGY (2020)

3.3.5. Essex County Council's Sustainable Modes of Travel Strategy (2020) sims to reduce the amount of private motor vehicles used on the highway network during peak travel times and demonstrate the different methods used by ECC (and partners) to facilitate the uptake of active and sustainable travel modes for businesses, schools and residents in Essex.

3.3.6. The strategy outlines Travel Plans as a key mechanism for the strategic elements that are required for successful delivery of the following objectives;

- Allow and enable residents to make an informed choice about how they travel for work, school and leisure;
- Improve the health, welfare and safety of all Essex residents by encouraging an active lifestyle through increased walking and cycling;
- Shape future planned growth and development in Local Plans at locations which promote the hierarchy of preferred modes of transport, namely walking, cycling and public transport, and focus development in locations which are or can be made sustainable;
- Importance of design to create attractive and safe environments that will be more welcoming and enticing to walking and cycling

- Better management of congestion to secure the resilience of the network;
- Embed high quality sustainable alternatives, reducing the need to travel by car;
- Reduce CO2 and other emissions;
- Promote and support the development of travel options being used to access employment, health, education and leisure facilities;
- To consolidate and build on existing Travel Plans developed within the County;
- Contribute to meeting the County Council's Sustainable Travel Business Plan targets that relate to the delivery of transport services.

3.3.7. Regarding residential travel plans, the ECC's Sustainable Modes of Travel Strategy policy SE2 Residential Travel Planning states that residential travel plans are required as part of new residential developments with 80 or more dwellings in accordance with Development Management Policies DM9 - Accessibility and Transport Sustainability and DM10 - Travel Plans.

3.3.8. Policy SE2 further outlines residential travel planning initiatives which are listed below;

- Consultations on Local Plans – ECC STPT provide recommendations on Local Plans regarding the formulation of policies and their supporting text, which will feed into the design and location of development at the early stages; to ensure integrated sustainable transport options are secured from the outset.
- Recommendations for Planning Applications – ECC STPT provide advice, support and guidance to developers and/or local employers on sustainable travel related matters.
- Residential Travel Information Pack (prepared by ECC) – working alongside local businesses and employers with 50 or more staff members within Essex to develop Travel Plans that deliver measurable progression in achieving modal shift.
- ECC Residential Travel Plan Co-ordinator – The role of the ECC Residential Travel Plan Co-ordinator is to assist the Residential Travel Plan Co-ordinator employed by the develop and/or transport consultant, to implement, develop and monitor the Residential Travel Plan for their specific development site (80 or more dwellings).
- In responding to specific planning applications due consideration is given to ensuring pedestrian, cycle and where appropriate bridleway connectivity is provided within the Site and to the wider area to improve connectivity to nearby key destinations and services. Travel Plan recommendations are adapted to reflect the needs and requirements of a particular site, e.g. student accommodation

UTTLESFORD DISTRICT COUNCIL LOCAL PLAN (2005)

3.3.9. The current Local Plan was adopted in 2005 and provides the basis for all planning decisions within the district. The objectives of the Local Plan's Transport Strategy are to:

- Locate high trip generating activity in areas well served by public transport;
- Increase the proportion of journeys made by rail and bus, on foot and by cycle;
- Reduce the number and length of motor vehicle trips by the location of development, and
- Minimise the adverse effects of traffic on residential and shopping areas by traffic management measures.

3.3.10. General Local Plan Policy GEN1 Access states that development will only be permitted if it meets all the following criteria:

- Access to the main road network must be capable of carrying the traffic generated by the development safely;
- The traffic generated by the development must be capable of being accommodated on the surrounding transport network;
- The design of the Site must not compromise road safety and must take account of the needs of cyclists, pedestrians, public transport users, horse riders and people whose mobility is impaired;
- It must be designed to meet the needs of people with disabilities if it is development to which the general public expects to have access; and
- The development encourages movement by means other than driving a car.

DRAFT UTTLESFORD LOCAL PLAN

3.3.11. Uttlesford District Council are in the process of developing a new Local Plan for the period between 2020 – 2040. The initial 'Issues and Options' stage was conducted in 2020/21 with the Regulation 19 'submission draft' local plan aiming to be sent for consultation in November / December 2023.

3.3.12. The council plans to adopt the plan in March 2025.

3.3.13. The local plan will include policies that cover;

- New housing
- Employment
- Transport required to support new developments and existing communities
- Parks and green spaces
- Community facilities such as halls and community centres
- Heritage, listed buildings and conservation areas
- Health and leisure facilities

PARKING STANDARDS

3.3.14. Uttlesford District Council have adopted ECC's parking standards September 2009. **Table 3-1** summarises the relevant residential and education parking standards.

Table 3-1 – Residential Parking Standards

Type	Vehicles	Cycle	Powered Two Wheelers (PTW)	Disabled Car Parking Provision
	Minimum	Maximum	Minimum	Minimum
bedroom	1 space per dwelling	1 secure covered space per dwelling	N/A	N/A if parking is in curtilage of dwelling, otherwise as Visitor/unallocated
2+ bedroom	2 spaces per dwelling*	1 space per 8 units (visitors)	2 PTW spaces and 1 space per 2 dwellings for mobility scooters	
4+ bedroom	3 spaces per dwelling			
Visitor/ unallocated	25 spaces per dwelling (unallocated). Rounded up to nearest whole number	If no garage or secure area is provided within curtilage of dwelling then 1 covered and secure space per dwelling in a communal area for residents plus 1 space per 8 dwellings for visitors	1 space, + 1 per 20 car spaces (for 1st 100 car spaces), then 1 space per 30 car spaces (over 100 car spaces)	200 vehicle bays or less = 3 bays or 6% of total capacity, whichever is greater, Over 200 vehicle bays = 4 bays plus 4% of total capacity

** Excluding garage if less than 7m X 3m internal dimension*

Source: Essex County Council Parking Standards, Design and Good Practice Guide, September 2009

3.3.15. Appropriate car and cycle parking will be provided within the Proposed Development. Details on parking provision for the Proposed Development will be provided at the reserved matters application stage.

3.4 SUMMARY

3.4.1. The focus of national and local transport policy is to locate residential development in locations that provide good accessibility to local services by foot and bicycle, provide good access to public transport services and where the local road network can accommodate the residual vehicle trip generation of the proposed scheme without resulting in a severe transport impact.

3.4.2. The Development Proposals in the context of the national, regional and local policies above demonstrate that the Site is well situated for its intended use. In the following Chapters overleaf, this TA will demonstrate that residents of the Site will be within reasonable walking distance of local facilities, bus stops and Elsenham Railway Station and the residual highway impact of the development, as assessed later in this TA, will not be severe. A suitable access into the development can be achieved from Henham Road and a good quality walk and cycle link can be provided to Elsenham Railway Station and Old Mead Road.

4 EXISTING CONDITIONS

4.1 INTRODUCTION

4.1.1. This section of the TA sets out the travel characteristics of existing local residents along with the current accessibility of the Proposed Development site by all modes of travel. Personal Injury Accident (PIA) data and a review of the local road network are also provided in this section.

4.2 SITE LOCATION

4.2.1. The Proposed Development site is located to the east of Elsenham and is shown on the location plan provided in **Appendix C**. The Site is currently used predominantly for agriculture and does not generate any significant trips on the local transport networks.

4.2.2. The Site is bounded to the west by the West Anglia Mainline railway, Elsenham Station car park and existing commercial uses accessed from Old Mead Road.

4.2.3. The land to the south of the Site currently comprises a construction site and Bloor Homes are currently building out the consented Phase 1 development for 350 dwellings, primary school and early years facility (REF: Outline Permission UTT/17/3573/OP and APP/C1570/W/19/3243744 and Reserved Matters UTT/21/3269/DFO).

4.2.4. The Site's eastern boundary is comprised of arable land, running towards Mill Pond Farm. A public right of way runs along the northern extent of the Site in an east-west direction.

4.2.5. The wider context of the Site to the east and southeast is characterised by Elsenham village, which will over time extend to the area south of the Site as development progresses.

4.2.6. The Site's wider context to the east and north is farmland, with the village of Henham approximately 1.5km beyond.

4.2.7. The village of Elsenham is situated in Essex and lies east of the M11. The village is approximately 2.5km east of Stansted Mountfitchet, 3.5km north of Stansted Airport, and 9km northeast of Bishop's Stortford. Elsenham is located in the administrative boundary of Uttlesford District Council which is the local planning authority.

4.2.8. Elsenham has a population of approximately 2,500 people in 980 households (2011 Census), as well as places of employment, Elsenham Railway Station and a range of local facilities typical of a village of its size, including a primary school, doctor's surgery, shops, petrol station, a public house and a recreation ground.

4.2.9. The smaller village of Henham is located some 2km northeast of Elsenham and has a population of approximately 1,200 people (2011 Census). The village contains a number of amenities, including a primary school, shop and a public house. Stansted Mountfitchet is located approximately 2.5 km to

the west of Elsenham and provides a wide range of local shops and a railway station on the same line as Elsenham.

4.2.10. The closest regional service centre is Bishop's Stortford, approximately 7.0km southwest of Elsenham. Bishop's Stortford provides a wide range of employment opportunities, leisure facilities and retail services. Stansted Airport and its neighbouring employment parks (including Stansted Business Park) to the south of Elsenham are important local employers. Stansted Airport employs approximately 10,200 people across 200 companies[1].

4.3 TRAVEL PATTERNS

LOCAL RESIDENT TRAVEL MODES

4.3.1. The 2011 Census Journey to Work data for the local area has been analysed to determine the existing travel to work characteristics of Elsenham residents. Census Output Areas covering the built-up area of Elsenham have been selected and combined. The 2011 Census Journey to Work data is provided in **Appendix D** along with a plan showing the selected area. **Table 4-1** summarises the Elsenham resident travel to work mode split along with comparative data for the district of Uttlesford. Residents not in employment and those working from home have been excluded as they do not make a journey to work on local transport networks.

Table 4-1 – 2011 Census Journey to Work Mode Share (Main Mode) for Elsenham and Uttlesford

Mode	Elsenham	Uttlesford	Difference
Underground	0%	1%	+1%
Train	13%	9%	+4%
Bus	1%	1%	0%
Taxi	0%	0%	0%
Motorcycle/Scooter	1%	1%	0%
Car/Van driver	76%	73%	+3%
Car/Van Passenger	5%	4%	+1%
Bicycle	1%	1%	0%
Walk	2%	10%	-8%
Other	1%	0%	+1%
Total	**100%**	**100%**	**N/A**

Source: 2011 Census

[1] https://www.stanstedairport.com/community/community-support/economic-development/

4.3.2. **Table 4-1** shows that car/van driver is the main mode of travel to work for existing Elsenham residents. This is not unexpected given the relatively low number of jobs within Elsenham that can be easily accessed on foot and by bicycle. The second most popular mode of travel is train (13%), demonstrating that Elsenham Railway Station provides a viable public transport commuter option for a considerable proportion of existing local residents. Active modes currently form a relatively low proportion of existing resident commuter trips.

4.3.3. Compared to Uttlesford, existing Elsenham residents achieve higher levels of train use, higher levels of car sharing, and car/van use compared to the district average. Fewer residents in Elsenham walk to work compared to the average for Uttlesford. The comparative data highlights the benefits of having a local railway station available to support sustainable commuter travel.

4.3.4. The 2011 Census analysis provides an overview of existing Elsenham residents travel to work patterns. It should be recognised that non-work trips typically achieve more sustainable patterns of travel. **Table 4-2** shows the mode split for the average number of trips by journey purpose in 2015 (DfT National travel Survey 2016).

Table 4-2 – Mode Split: Average number of trips by purpose and main mode: England 2015

Mode	Commuting	Business	Education	Shopping	Personal business	Leisure
Walk	11%	6%	38%	21%	20%	14%
Bicycle	4%	1%	1%	1%	1%	2%
Car/Van Driver	56%	70%	22%	46%	43%	38%
Car/van passenger	9%	6%	24%	21%	24%	34%
Motorcycle	1%	0%	0%	0%	0%	0%
Other private transport	0%	1%	2%	0%	1%	1%
Local bus	8%	5%	10%	9%	7%	5%
Underground	3%	4%	0%	0%	1%	1%
Surface Rail	7%	6%	1%	1%	1%	2%
Other public transport	1%	1%	1%	1%	2%	2%
Total	100%	100%	100%	100%	100%	100%

4.3.5. **Table 4-2** demonstrates that non-commuter trips typically achieve higher levels of trips by non-car/van driver modes. Within Elsenham there is a range of local education, shopping and leisure facilities that can be accessed on foot and by bicycle. The mode shares presented in **Table 4-1** therefore provide a robust basis for the likely local resident travel mode splits for non-commuter trips.

4.3.6. Further evidence that primary education trips will result in a higher proportion of movements being undertaken on foot is provide by the Elsenham Church of England Primary School Travel Plan (STP). The STP included a hands-up survey of pupils which showed approximately 50% of pupils walk to school and 50% travel by car. This local evidence demonstrates that education trips within Elsenham achieve a higher proportion of travel by non-car modes.

4.3.7. It is therefore considered that local residents within Elsenham are likely to adopt relatively sustainable travel patterns to access local facilities and services including the existing and proposed Primary School, shops and Elsenham Railway Station .

LOCAL RESIDENT TRAVEL TO WORK DESTINATIONS

4.3.8. The 2011 Census Journey to Work Origin and Destination data for the Middle Super Output Area (MSOA) that includes Elsenham and the surrounding villages (including Stansted Mountfitchet, Henham, Manuden) has been analysed to identify existing local residents travel to work destinations. A plan showing the geographical extent of the MSOA is provided in **Appendix D**. A summary of the 2011 Census origin and destination data by main mode of travel is provided in **Table 4-3**.

Table 4-3 – 2011 Census Journey to Work Destinations: Elsenham and Henham MSOA

Destination	Car Driver	Train	Bus	Cycle	Walk	All Modes
Southeast Essex (Basildon, Boreham, Chelmsford)	1.5%	0.0%	3.5%	0.0%	0.5%	1.2%
East Essex (Braintree, Colchester	4.4%	0.4%	0.0%	4.4%	2.7%	3.7%
North Essex (Chesterford, Saffron Walden)	9.1%	2.2%	8.8%	13.3%	9.1%	8.4%
South Essex (Chingford, Waltham Abbey)	1.0%	0.2%	0.0%	2.2%	0.0%	0.8%
Southwest Essex (Epping, Hainault, Romford)	2.3%	0.2%	0.0%	0.0%	0.0%	1.8%
North Herts (Stevenage)	0.9%	0.0%	0.0%	0.0%	0.0%	0.7%
Central Herts (Hertford, Hatfield, Welwyn Garden City)	2.0%	0.2%	1.8%	0.0%	0.0%	1.5%
East Herts (Much Hadham)	1.1%	0.4%	0.0%	0.0%	0.0%	0.9%
Southeast Herts (Broxbourne, Cheshunt)	3.0%	0.0%	0.0%	0.0%	0.0%	2.2%
Harlow (inc Hastingwood and Lower Nazeing)	11.6%	6.4%	8.8%	4.4%	0.5%	10.0%
Bishop's Stortford (inc Sawbridgeworth, Standon, Standsted Abbotts)	25.5%	11.7%	31.6%	17.8%	3.7%	22.6%
Northeast Herts (Buntingford)	0.5%	0.0%	0.0%	0.0%	0.0%	0.4%
Cambridgeshire (Cambridge, Duxford)	3.9%	5.0%	1.8%	0.0%	1.4%	3.7%
London (Enfield, central, Leyton)	3.9%	66.4%	5.3%	0.0%	0.5%	12.1%
Suffolk (Haverhill)	0.3%	0.0%	0.0%	0.0%	0.0%	0.2%
Beds (Luton)	0.8%	0.4%	1.8%	0.0%	0.0%	0.7%
Local Villages (Stansted Mountfitchet, Henham, Manuden, Farnham)	11.1%	1.8%	7.0%	33.3%	72.6%	13.7%
Stansted Airport (Airport, Takeley, Little Canfield)	15.1%	4.4%	29.8%	22.2%	7.8%	13.8%
Local Villages South (Hatfield Haths, High Roding, Leaden Roding)	1.8%	0.4%	0.0%	2.2%	1.4%	1.6%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

4.3.9. **Table 4-3** shows a relatively widespread set of workplace destinations for existing residents living in Elsenham and the surrounding villages. The main workplace destination areas (by all modes of travel) are Bishop's Stortford (22.6%), Stansted Airport (13.8%), local villages surrounding Elsenham (13.7%), London (12.2%), and Harlow (10.0%).

4.3.10. The analysis by mode shows that the main workplace destination by train is London (66.4%), the main workplace destination by bus is Bishop's Stortford (31.6%) with local cycle trips being made to the surrounding villages (33.3%) and Stansted Airport (22.2%). Walking to workplaces is predominately internal within the MSOA (72.6%).

4.3.11. The analysis of the 2011 Census Origin and Destination data shows that residents within Elsenham and the surrounding villages have a broad range of workplace destinations, with the main locations being Bishop's Stortford, Stansted Airport, London and Harlow.

4.4 ACCESS TO LOCAL FACILITIES AND SERVICES

OVERVIEW

4.4.1. **Table 4-4** summarises the main existing local facilities and services within walking and cycling distance of the Proposed Development. The Proposed Development connects with Henham Road via the consented Phase 1 development to the south of the Site. The distance from Henham Road to the proposed primary access into the Phase 2 site is 500m. **Table 4-4** shows that a range of day-to-day services and facilities will be available to local residents which can be accessed by non-car modes.

Table 4-4 – Local Services and Facilities (distance from the Phase 2 access points)

Destination	Name	Distance KM	Approx. Walking Time	Approx. Cycle Time	Bus/Train Access
Leisure	Recreation Ground	1.7	21 mins	5 mins	N/A
	Stanstead Cricket Ground	4.1	N/A	15 min	N/A
	The Crown Public House	0.9	11 mins	2 min	N/A
Shopping	Tesco Express	1.3	16 mins	3 mins	N/A
	Elsenham Post Office	1.3	16 mins	4 mins	N/A
	Standsted Mountfitchet	4.5	N/A	14 mins	Yes
	Bishops Stortford	9.1	N/A	29 mins	Yes
Education	The Ugly Duckling Pre-School (Ugley Green)	3.3	N/A	10 mins	No
	Saplings Nursery (Henham)	5	N/A	15 mins	No
	Rainbow Pre-School (Stansted Mountfitchet)	4.2	N/A	13 mins	Yes
	Elsenham C of E Primary School	1	12 mins	2 min	N/A
	Henham and Ugley Primary School and Nursery	2.5	N/A	7 mins	Yes
	Forest Hall School	5.1	N/A	16 mins	Yes
	Primary School & Early Years Facility (Proposed as per Phase 1 Development)	0.3	4 mins	2 Mins	-
Health	Elsenham Surgery	1.5	19 mins	4 mins	N/A
	Princes Alexandra Hospital	28	N/A	N/A	Yes

4.4.2. Within the village of Elsenham there are a number of local facilities that can meet many of the day-to-day needs of local residents, including local top-up shopping and leisure amenities, without the need to use a car. These facilities, as well as those in neighbouring Stansted Mountfitchet are shown on the location plan provided in **Appendix E**.

SCHOOLS

4.4.3. Elsenham Church of England Primary School is located on the High Street, approximately 1 km to the west of the proposed primary site access. This is within 10-12 min walking distance for parents and primary school aged children. Other nearby primary schools are in Henham to the northeast or Stansted Mountfitchet to the southwest. Although outside of walking distance to the development, both are accessible via existing bus services. In the case of Stansted Mountfitchet, children could also travel to school by train.

4.4.4. A new early year's nursery and a one form entry primary school will also be delivered as a part of the consented Phase 1 development to the south of the Site.

4.4.5. The nearest secondary school to the Site is Forest Hall School, located in the south of Stansted Mountfitchet. This school is within cycling distance of the development and can be accessed via

public transport. There are multiple secondary schools in Bishop's Stortford which can also be accessed via public transport.

4.4.6. Children travelling to secondary schools in Newport or Saffron Walden directions can do so using the bus service 441 which is operational during weekdays.

HEALTHCARE

4.4.7. The closest GP practice to the Proposed Development is on Station Road in Elsenham. This is within walking and cycling distances of the Site. There is also a GP practice in Stansted Mountfitchet in close proximity to the train station thus making it easily accessible by public transport.

4.4.8. The closest major hospital is the Princess Alexandra Hospital in Harlow. This is near Harlow Town train station which is accessible by train from Elsenham. From Harlow Train Station, Princess Alexandra Hospital can be access on foot (20-minute walk), by taxi or interchanging with local bus services. The closest dentist practices to the Proposed Development are within Bishop's Stortford and the closest pharmacy is within Stansted Mountfitchet. Both are accessible by public transport.

RETAIL

4.4.9. There is a local convenience shop (Tesco Espress) and a post office on the corner of the High Street/Station Road/Robin Hood Road/Stansted Road double mini-roundabout junction in Elsenham. A wider range of convenience shops, garages, cafes are available in Stansted Mountfitchet. The closest major shopping destination is Bishop's Stortford which can be easily accessed by bus and train.

4.5 ACTIVE TRAVEL NETWORK

WALKING ACCESSIBILITY

4.5.1. A 25-minute walking catchment plan for the Site is provided in **Appendix F**. The walking catchment is based on a typical walking speed of 3 mph (about 4.8kph), so the catchment extends to a distance of 1.25 miles (or about 2km), which is considered a reasonable walking distance on a day-to-day basis.

4.5.2. The walking catchment shown excludes main roads without a segregated footway as these sections of road are considered to be unattractive to pedestrians to walk along on a regular basis. Minor local access streets without footways have however been included due to the low number of vehicles expected at these locations. Public footpaths which do not form a part of the highway network have also been included in the catchment as they could be attractive to leisure users.

4.5.3. The walking catchment plan shows that the entirety of Elsenham is within easy walking distance of the Site. The local facilities provided in the village including the doctors surgery, post office, local convenience shop and primary school are all within the walking catchment. Existing bus stops and the train station are also within the Site's walking catchment.

PEDESTRIAN INFRASTRUCTURE

Henham Road

4.5.4. Henham Road in the vicinity of the primary site access junction has a footway on the southern side of the carriageway only. The footway is typically 1.4 metres in width and is generally in good condition. Henham Road routes northeast from the proposed primary access junction, and the

footway continues on the southern side only for a distance of approximately 300 metres where it then terminates.

4.5.5. Travelling west from the proposed primary access junction, the footway on the southern side of Henham Road continues to Hall Road where Henham Road continues west as the High Street.

4.5.6. On the northern side of Henham Road there is an existing footway from the Hall Road/Henham Road/High Street junction which routes east towards the proposed primary access junction but terminates at the western boundary of the cricket pitch. This is an gap in the existing network. However this will be addressed by the consented Phase 1 development (discussed in more detail below).

Hall Road

4.5.7. Hall Road has a footway along the western side of the carriageway only. The footway is generally in good condition and lit by existing street lighting. To the south of Elsenham, the footway on the western side of the carriageway terminates and continues as a footway on the eastern side only to Church Lane.

High Street

4.5.8. Footways are provided on both sides of the High Street from Henham Road to the junction of High Street/Robin Hood Road/Station Road/Stansted Road. The footways on both sides of the High Street are generally in good condition, lit and overlooked by frontage residential development. Outside the primary school main entrance pedestrian guard railing is provided along with a zebra crossing to the west of Hailes Wood. On approach to the primary school there are children crossing warning signage to alert approaching drivers.

4.5.9. The majority of local pedestrian movements generated from the Proposed Development are likely to route along the High Street towards the primary school and local shops. It is noted that good pedestrian facilities are currently provided, including a recently installed raised table entry treatment crossing across Hailes Wood as part of the residential development accessed from the road.

Station Road

4.5.10. The double mini-roundabout junction of the High Street/Robin Hood Road/Station Road/Stansted Road provides pedestrian access into southern, western and northern Elsenham respectively. The junction has an uncontrolled pedestrian crossing on the High Street arm, with dropped kerbs, tactile paving and a pedestrian refuge.

4.5.11. Station Road routes through the centre of Elsenham and has footways on both sides of the carriageway. The footways are in good condition, lit be existing street lighting and overlooked by frontage residential development.

4.5.12. The footways provide good pedestrian connectivity into the main existing residential areas accessed from Station Road, as well as the surgery, recreation ground and employment areas to the north of the village. The existing footways also provide pedestrian access to the railway station.

4.5.13. The proposed walk/cycle link from the development to the station will provide an attractive alternative route to the existing footways along Station Road.

Infrastructure Being Delivered As A Part Of The Consented Phase 1 Development

4.5.14. In response to the existing infrastructure shortfalls identified above, the consented Phase 1 development will deliver the following pedestrian infrastructure improvements.

- A new 2.0-metre-wide footway along the northern side of Henham Road from the Site access junction to tie in with the existing footway that terminates at the western edge of the adjacent cricket pitch. This new pedestrian facility will provide a direct pedestrian route for future residents to access the local facilities and services provided in Elsenham village as well as benefiting users of the cricket pitch.
- Improvements to the existing pedestrian footways and crossings on Henham Road.
- Provision of new bus stops on Henham Road, in close proximity to the consented access into the Phase 1 development.

4.5.15. A pedestrian/cycle connection will also be provided to Elsenham Station / Old Mead Road. This will provide a direct connection between the Proposed Development and the railway station. This connection will enhance the attractiveness of the rail services available from the station to future residents.

4.5.16. In addition to the above, the developer will seek to extend the existing Elsenham 30mph speed limit to a position beyond the east of the primary access junction (to improve amenity for pedestrians and cyclists) and provide a village gateway feature. Noting that this is subject to the consent of the Local Highway Authority.

WIDER LOCAL AREA

4.5.17. Within Elsenham, there is a good network of pedestrian footways linking the residential estates with the key local facilities. The existing network of footways is typically in good condition with street lighting and, in most cases, overlooked by frontage residential development. Site visit observations indicate that existing footways are well used by local residents.

4.5.18. From Elsenham, a continuous footway is provided along the entire length of Stansted Road from Elsenham to Stansted Mountfitchet. Other routes from the village, including Hall Road and Henham Road do not provide continuous footways, however it is likely that there is very limited pedestrian demand to destinations outside of Elsenham along these routes.

PUBLIC FOOTPATHS

4.5.19. There are two public footpaths within the immediate locality of the Site, public footpath 21 to the south and public footpath 15 to the north.

4.5.20. Public footpath 21 routes to the north of Henham Road and is accessed from the High Street to the west of the Hall Road junction. The footpath routes across the cricket pitch, across the main spine road that runs through the consented Phase 1 development, before continuing east to Pennington Hall.

4.5.21. Public footpath 15 runs in an east-west direction to the north of the Site, connecting Mill Road to the east with Old Mead Road to the west, approximately 150m to the north of Elsenham Railway Station.

4.5.22. The existing public footpath network in the vicinity of the Site is shown on **Figure 4-1**.

Figure 4-1 – Public Footpath 21 – North of Henham Road

Source: ECC: Interactive PROW map

CYCLING ACCESSIBILITY

4.5.23. The Proposed Development site will be accessible by cycle. This is indicated by the cycling catchment plan provided in **Appendix G** which shows cycling journey times from the Site at 5 minute intervals up to 25 minutes at a cruising cycling speed of 12 mph (about 19 kph). The Department for Transport's Local Transport Note 2/08 'Cycle Infrastructure Design' advises that, for commuter journeys, cycling distances up to 5 miles are not uncommon, which at an average cycling speed of 12mph is therefore equivalent to a 25 minute cycling journey time.

4.5.24. The cycling catchment shows that the entirety of Elsenham is accessible from the Site by bicycle within 5 minutes. Henham can be reached within 10 minutes, Stansted Mountfitchet within 15 minutes and the edge of Bishop's Stortford and Newport within 25 minutes. Stansted Airport, which is likely to be a key employer for some of the future residents of the Proposed Development, is within a 20 minute cycle ride of the Site.

Henham Road

4.5.25. The proposed primary access junction connects with Henham Road via the consented development to the south of the Site. No cycle specific infrastructure is currently provided on Henham Road. Henham Road in the vicinity of the primary access junction currently has a 40 mph speed limit. Henham Road at this location is 6.8 metres wide, has no on-street car parking demand and is relatively lightly trafficked (approximately 300-450 vehicles two-way in the peak hours). Drivers therefore have sufficient space to safely overtake existing cyclists on Henham Road.

4.5.26. It is recognised that many cyclists feel more comfortable on roads with no cycle-specific infrastructure if traffic speeds are low. Lower speeds can reduce the likelihood of an accident along with the severity.

4.5.27. The consented Phase 1 scheme to the south of the Site will deliver an improvement scheme along Henham Road. This includes the relocation of the existing 30mph speed limit on Henham Road to the east of the Site's primary access (subject to consent by the Local Highway Authority). This scheme would encourage lower traffic speeds in proximity to the Site access and create a safer local environment for cyclists.

Hall Road

4.5.28. No cycle specific infrastructure is currently provided on Hall Road. South of Elsenham, Hall Road is derestricted and rural in nature. Hall Road is relatively lightly trafficked (around 400 vehicles two-way in the peak hours) and the single carriageway road is of sufficient width for vehicles to be able to safely overtake cyclists. Hall Road is likely to be an attractive cycle route towards Stansted Airport for regular commuter cyclists.

High Street

4.5.29. The High Street provides the main route into Elsenham. The High Street has a 30mph speed limit and has a relatively straight alignment with limited on-street parking. Drivers therefore have good forward visibility to be able to safely overtake cyclists who can use the route to directly access the primary school, local shops and routes to the north, south and west respectively.

Station Road

4.5.30. No cycle specific infrastructure is currently provided on Station Road. Station Road has a 30 mph speed limit and varies in from 5.5-7.5 metres in width. Station Road is relatively lightly trafficked (around 350 to 400 vehicles two-way in the peak hours). The existing carriageway width therefore provides sufficient space for drivers to safely pass cyclists.

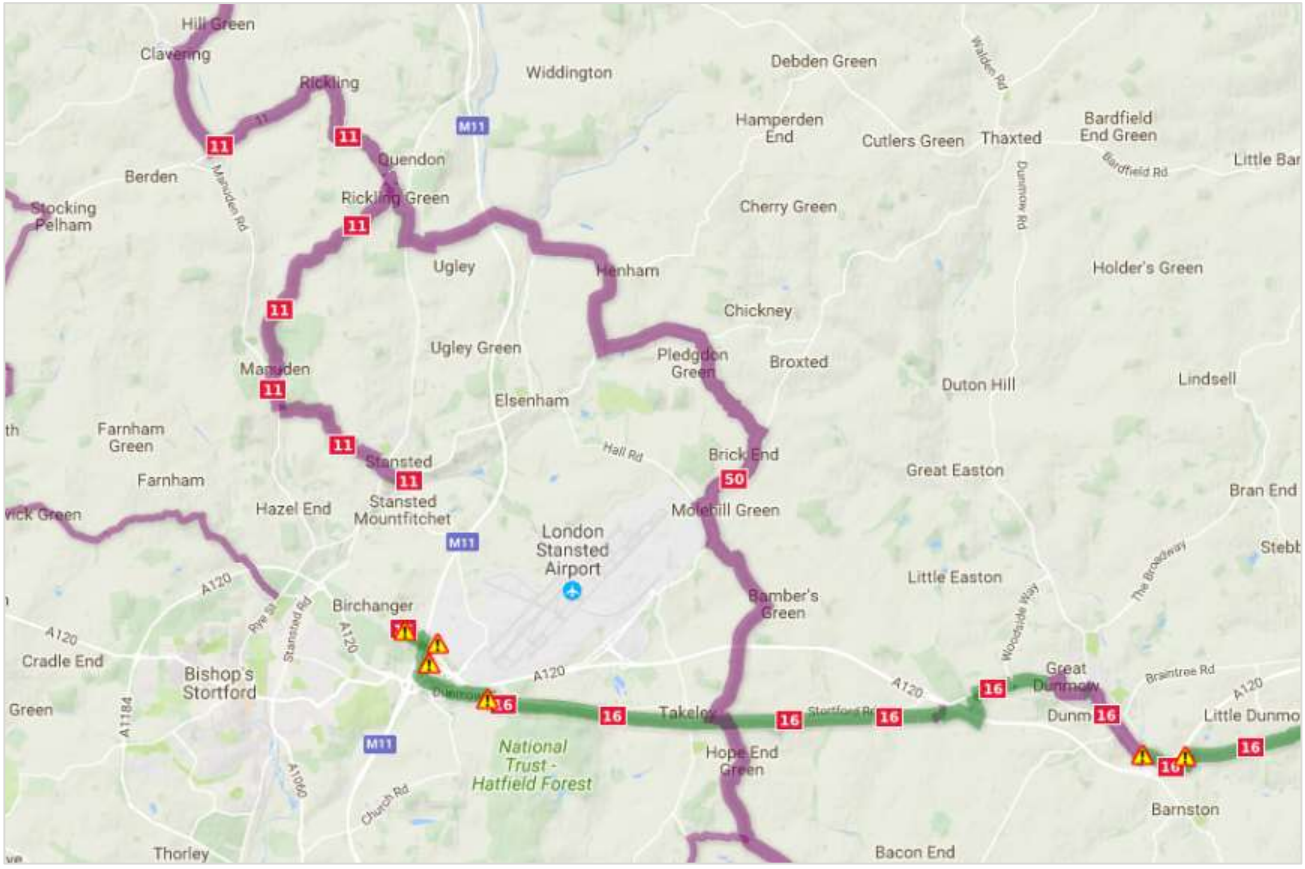
4.5.31. The Proposed Development will provide a new direct walk/cycle link to Elsenham Railway Station (via the consented Phase 1 development). This proposed walk/cycle connection will be attractive to future residents as it will provide a more direct route to the railway station compared to the equivalent on-road alternative via Station Road.

WIDER LOCAL AREA

4.5.32. From Elsenham, cycle access can be gained to the surrounding villages using the existing road network. It is recognised that the existing routes from Elsenham are typically derestricted, single carriageway roads (Hall Road, B1051 Henham Road and B1051 Stansted Road) and are therefore most likely to be used by confident commuter cyclists in weekday peak periods and utility/leisure cyclists at weekends and during off-peak periods.

4.5.33. Within the local area there are a number of Sustrans National Cycle Network (NCN) Routes that are predominately used by leisure cyclists. A plan showing the local NCN routes is provided in **Figure 4-2**.

Figure 4-2 – Local Sustrans Routes



Source: Sustrans website

4.5.34. **Figure 4-2** shows that NCN routes 11, 16 and 50 are in close proximity to Elsenham. NCN 11 routes from Stansted Mountfitchet, northwards towards Cambridge and can be accessed from Old Mead Road to the north of Elsenham. NCN 16 provides a predominately traffic-free cycle route between Bishop's Stortford and Braintree. NCN 50 links with NCN 11 to the north and NCN to the south of Elsenham and routes southeast towards Chelmsford. NCN 11 can be accessed locally from Henham Road or Hall Road.

INFRASTRUCTURE BEING DELIVERED AS A PART OF THE CONSENTED PHASE 1 DEVELOPMENT

4.5.35. As part of the Phase 1 development, a pedestrian/cycle connection will be provided to Elsenham Station/Old Mead Road. This will provide a direct connection between the Proposed Development and Elsenham Railway Station. This connection will enhance the attractiveness of the rail services to future residents.

4.5.36. A pedestrian and cycle connection to the residential development located to the east of Hailes Wood will also be considered in order to improve the permeability of the Site.

4.6 PUBLIC TRANSPORT NETWORK

BUS SERVICES

4.6.1. The Site will have two main access points, an all modes access onto Henham Road (delivered as a part of the consented Phase 1 development to the south) and a pedestrian and cycle access onto Old Mead Road (via the conseted Phase 1 development), immediately to the north of Elsenham Railway Station's southbound platform.

4.6.2. The closest existing bus stops to the proposed main access onto Henham Road are located at the junction of Henham Road/Hall Road/High Street. These existing bus stops are approximately 1,200m from the centre of the Site (a 15 minute walk) which is beyond the recommended 400m.

4.6.3. To address this the consented Phase 1 development will deliver two new bus stops on Henham Road, in close proximity to the new all modes access onto Henham Road. This scheme will improve the accessibility of existing bus services from the Site.

4.6.4. The closest bus stops to the proposed pedestrian and cycle access on Old Mead Road are located on Station Road to the south of New Road. These bus stops are approximately 550m (a 5 to 10 minute walk) from the centre of the Proposed Development. The bus stops on Station Road and Henham Road are served by two bus services:

- 7/7A – Stansted Airport – Takeley – Henham – Elsenham – Bishop's Stortford (operated by Acme Transport Services); and
- 441 – Takeley – Stansted Mountfitchet – Ugley – Newport – Saffron Walden (operated by Stephensons of Essex).

4.6.5. **Table 4-5** summarises the bus services at the Henham Road/Hall Road/High Street and Station Road bus stops. Timetable information is provided in **Appendix H**.

4.6.6. Bus route 7/7A and 441 serve both The Crown stop on Henham Road and Station Road, buses route clockwise and anticlockwise via Hall Road, Henham Road, Mill Road, Henham, Old Mead Road and Station Road. Residents in Elsenham using existing bus routes will most likely use the Station Road stops when travelling west towards Bishop's Stortford and the Henham Road stop when travelling south towards Stansted Airport so as to avoid travelling through Henham village.

Table 4-5 – Existing Elsenham Bus Services

Bus stop	Bus	Day	Route	First Bus	Last Bus	Frequency
Henham Road (Opposite the Crown)	7/7A	Mon-Sat	Stansted Airport – Bishop's Stortford	07:18	18:31	6 buses per day
			Bishop's Stortford – Stansted Airport	06:46	20:16	8 buses per day
	441	Mon-Fri	Takeley – Saffron Walden	07:31		1 bus per day
			Saffron Walden – Takeley	16:06		1 bus per day
Station Road	7/7A	Mon-Sat	Stansted Airport – Bishop's Stortford	07:31	18:44	6 buses per day
			Bishop's Stortford – Stansted Airport	06:33	20:03	8 buses per day
	441	Mon-Fri	Takeley – Saffron Walden	07:49		1 bus per day
			Saffron Walden – Takeley	15: 58		1 bus per day

Source: https://bustimes.org/ 01/09/22

4.6.7. Bus route 7/7A is a regular bus service that typically operates a service once every 2 hours between Bishop's Stortford, Stansted Mountfitchet, Elsenham, Henham and Stansted Airport. The existing route therefore provides the opportunity for existing and future residents to access a wide range of local employment, leisure and retail facilities by bus, including Stansted Airport and Bishop's Stortford.

4.6.8. The 441 is a school bus service and therefore only operates on school days. The bus route provides one morning service towards Saffron Walden and a return service in the afternoon. This existing route provides bus access to the secondary schools in Newport and Saffron Walden.

4.6.9. **Table 4-5** shows that the first bus departs Elsenham at 07:18 hours towards Stansted Mountfitchet and Bishop's Stortford and the last bus departs Elsenham towards Stansted Airport at 20:16 hours. The existing bus service therefore provides a viable travel option for commuters working typical office hours (0900-1700 hours) as well for non-work-related journeys.

RAIL SERVICES

4.6.10. Elsenham Railway Station is situated on the West Anglia Main Line and is located at the junction of Old Mead Road/New Road to the north of Elsenham.

4.6.11. The station is accessible via a new pedestrian and cycle link that connects with Old Mead Road (via the consented Phase 1 development).

4.6.12. Old Mead Road bisects the station, with an at grade level crossing provided between the northbound and southbound platforms. The northbound platform is located on the north side of the level crossing and the southbound platform on the south side of the level crossing. A pedestrian bridge is provided over the rail line, accessed from the southbound platform.

4.6.13. The station facilities currently include a fully enclosed waiting area provided on Platform 1 (northbound) and a covered seating area on Platform 2 (southbound). There is also a manned station ticket office on one side with ticket machines provided on both platforms. Timetable information is available at both platforms as well as live departure time displays. Cycle parking is provided at both platforms but is not currently well used. This is likely to be due to the fact the whole of Elsenham is within easy walking distance of the station.

4.6.14. A privately operated pay and display car park is provided to the north of the railway line on Old Mead Road. There is space for approximately 80 cars, however the spaces are unmarked and disabled parking is poorly signed. Parking on roads around the station is controlled with single and double yellow lines and time limited parking restrictions apply during peak hours.

4.6.15. A summary of the existing services operating from Elsenham Railway Station is provided in **Table 4-6**. Full rail timetable information is attached in **Appendix I**.

Table 4-6 – Existing Elsenham Rail Services

Day	Route	First Train	Last Train	Frequency
Mon-Fri	Cambridge to London Liverpool Street	05:46	23:55	Peak 2 trains per hour, Off-Peak 1 train per hour
	London Liverpool Street to Cambridge	06:07	00:52	
Sat	Cambridge to London Liverpool Street	05:49	23:53	1 train per hour
	London Liverpool Street to Cambridge	06:22	00:52	
Sun	Cambridge to London Liverpool Street	08:18	23:18	
	London Liverpool Street to Cambridge	08:52	23:52	
Mon-Fri	Ely to London Liverpool Street	08:19	08:49	Two Trains in the AM Peak
	London Liverpool Street to Ely	16:52	16:52	One train

Source: Abellio Greater Anglia

4.6.16. There are currently two trains per hour north and southbound between Cambridge and London Liverpool Street stopping at Elsenham Station in the peak hours and one train per hour during off-peak periods. The existing train services provide excellent local and regional accessibility south to Bishop's Stortford, Harlow, Broxbourne and into London (Tottenham Hale and Liverpool Street). The existing train services also provide excellent accessibility north to Great Chesterford, Whittlesford Parkway and Cambridge. The journey time from Elsenham to London Liverpool Street is approximately 1 hour and from Elsenham to Cambridge is approximately 30 minutes. In addition, there are two southbound trains in the weekday morning peak and one northbound train in the weekday afternoon that continues from Cambridge to Ely.

4.6.17. The Cambridge North station is also serviced by the existing Cambridge to Liverpool Street route. This station provides direct access from Elsenham to the employment centres in the Cambridge Northern Fringe. The journey time from Elsenham to Cambridge North is 35 minutes.

PUBLIC TRANSPORT ACCESSIBILITY

4.6.18. Public Transport catchment analysis of the Proposed Development site has been undertaken using TRACC. A 60 minute journey time catchment has been produced for weekday development trips departing from the Site between 0700-0900 hours and arriving at the Site between 1600-1800 hours. The analysis presented in **Appendix J** shows the destinations that can be reached within 60 minutes public transport (bus and train) travel time from the Proposed Development in the weekday morning and the origins to the Proposed Development site in the weekday evening periods.

4.6.19. The catchment analysis shows that Bishop's Stortford, Stansted Mountfitchet, Newport, Great Chesterford, Cambridge, Stansted Airport, Broxbourne and Cheshunt are within 60 minutes travel time by public transport. The proximity of the Proposed Development site to Elsenham Railway Station is therefore a key sustainability benefit and provides future residents who could work in a

number of local and regional employment centres with the opportunity to commute via public transport as a viable alternative to the car.

4.7 HIGHWAY NETWORK

OVERVIEW

4.7.1. This section of the TA describes the local highway network along with observed levels of network flows.

4.7.2. Existing traffic flows have been obtained for the main junctions located within the study area. The assessment of the baseline performance of the highway network has been informed by the predicted distribution and assignment of development generated vehicle trips within the study area.

4.7.3. The main vehicle movements associated with the Proposed Development will be through central Elsenham and Stansted Mountfitchet (trips towards Bishop's Stortford and M11 Junction 8) and Hall Road (trips towards Stansted Airport, A120 and M11 Junction 8). Routes in the wider network, beyond these initial points will accommodate relatively low numbers of additional vehicle as vehicle movements becomes dispersed such that the increase in trips through the wider junctions and links will be minimal.

4.7.4. **Section 7** of this TA presents the results of the development trip modelling.

DESCRIPTION OF KEY LINKS

ELSENHAM: B1051 STANSTED ROAD – HIGH STREET – HENHAM ROAD

4.7.5. The B1051 is a single carriageway B class road which routes east-west along the southern boundary of the Proposed Development from Elsenham to Stansted Mountfitchet in the west and between Elsenham and Henham to the east of the development.

4.7.6. Within Elsenham, the B1051 High Street is subject to a 30mph speed limit. The main junctions within Elsenham are the High Street/Station Road/Robin Hood Road/Stansted Road double mini-roundabout and the junction of Henham Road with Hall Road (known locally as Elsenham Cross) which is formed as a triangular priority intersection. These two junctions provide access to routes through Elsenham and south towards Stansted Airport respectively.

4.7.7. Between Elsenham and Stansted Mountfitchet to the west, the B1051 Stansted Road is subject to the national speed limit. The B1051 High Street crosses the Cambridge-London Liverpool Street mainline rail link in the centre of Elsenham and passes over the M11 motorway between Elsenham and Stansted Mountfitchet. West of the M11 overbridge, the road provides access to Stansted Mountfitchet.

4.7.8. The B1051 narrows on approach to Stansted Mountfitchet to form a single lane road on Grove Hill with shuttle working controlled by traffic signals at its junction with Lower Street. A 7.5 Tonne weight restriction applies to this section of the B1051 between Elsenham and Stansted Mountfitchet. Traffic above this weight limit is directed towards Elsenham via Takeley and Hall Road.

4.7.9. To the east of High Street in Elsenham, the B1051 Henham Road is subject to a limit 40mph up to its junction with the secondary access of Elsenham Quarry. East of the quarry access, the B1051 is subject to the national speed limit. The B1051 Henham Road continues eastwards, providing local access to Henham (via Mill Road), Chickney, Broxted and Thaxted.

CENTRAL STANSTED MOUNTFITCHET: LOWER STREET AND B1051 CHAPEL HILL

4.7.10. Stansted Mountfitchet is located to the west of Elsenham and is likely to accommodate additional development generated vehicle trips destined for the village itself as well as destinations towards Bishop's Stortford and the M11 Junction 8.

4.7.11. The central road network is formed of the B1051 which enters the village from the east as Grove Hill, continues south as Lower Street then routes east-west through the village as Chapel Hill. The main junctions on this section of the local road network are:

- B1051 Grove Hill traffic signals (which control the single file section of Grove Hill).
- Lower Street/B1051 T-Junction which is located in close proximity to the Grove Hill signals.
- Lower Street/Chapel Hill/Church Road/Lower Street Car Park mini-roundabout. And
- Chapel Hill/B1383 Silver Street/Bentfield Road/ B1383 Cambridge Road priority controlled junction.

4.7.12. Sections of the main route through the village accommodate on-street parking which narrows the available carriageway width. In particular, on-street parking occurs on the B1051 at Chapel Hill and Grove Hill, just north of the traffic lights controlling the single lane section. The presence of on-street parking at these locations can reduce the available carriageway width to a single lane.

4.7.13. The B1051 route through the village accommodates both local trips as well as through trips to Church Road and the B1383. The operation of the route during the highway peaks is constrained by both the capacity of the junctions within Stansted Mountfitchet and the link capacity as a result of the presence of on-street car parking on Grove Hill.

HALL ROAD – PARSONAGE ROAD

4.7.14. Hall Road provides a route south of Elsenham via Molehill Green and Stansted Airport and then continues onto Parsonage Road to Takeley Village and the Four Ashes crossroads. Access is also provided into Stansted Airport via Thremhall Avenue and onwards to the M11 via the A120. This route is considered to be an attractive option for destinations including Stansted Airport and locations along the A120 and M11 corridors as it avoids the need to route through central Stansted Mountfitchet.

4.7.15. Hall Road is classified as a Secondary Distributor in Essex County Council's road classification and is derestricted. There are no footways on either side of the road beyond the entrance to Elsenham Hall, but there are verges and local accesses serving commercial and local properties along its route. The width of Hall Road typically varies between 6.0 metres – 6.5 metres along its length.

4.7.16. At present, Hall Road does not carry significant volumes of traffic. Hall Road carries HGV's to and from the Elsenham Quarry at Gaunts End and employment at Elsenham Industrial Estate. Hall Road is the main HGV route to Elsenham from the M11 since Stansted Road is subject to a weight restriction.

PARSONAGE ROAD MINI-ROUNDABOUT LEADING TO COOPERS END ROUNDABOUT – THREMHALL AVENUE

4.7.17. Hall Road routes around the eastern perimeter of Stansted Airport and forms a three arm mini-roundabout with Parsonage Road. Parsonage Road then routes south over the A120 to Takeley.

4.7.18. Approximately 30 metres west of the mini-roundabout is the Coopers End Roundabout. Coopers End Roundabout is a large priority controlled five-arm roundabout that provides access into Stansted Airport via Terminal Road North and South, Coopers End Road and Thremhall Avenue.

4.7.19. Thremhall Avenue routes southwest and provides access to the A120 via the Bassingbourn Road and Southgate Road roundabouts. Thremhall Avenue is a privately owned road in the control of the airport operator. It is open to general through traffic and it provides a route from Elsenham to the A120 and the M11 Junction 8 via Hall Road and Thremhall Avenue.

4.7.20. Historically, an Order enabling BAA to close the old historic Coopers End farm access was confirmed by the Secretary of State as part of the original planning permission for BAA for airport expansion in 1984. At the time BAA retained the access as a local airport access point, and then obtained planning permission to retain it until the new A120 was open to public use. At the same time, BAA also obtained planning permission in 1991, (as an option should it be necessary), to turn the Coopers End access into a controlled staff / public service vehicle only access. Via a series of further renewals, the airport's operatorcan now retain the access indefinitely, and the controlled access option was renewed about every 3 years until, the last renewal (UTT/1211/06/REN) expired in 2009 (in response to the Planning Inspectors report on the G1 expansion which concluded that it was not necessary to impose a condition requiring closure of the Coopers End access).

4.7.21. Uttlesford District Council has confirmed that to close the connection a planning permission and a Stopping Up Order would now be required.

TYE GREEN ROAD - ROUND COPPICE ROAD - BURY LODGE LANE

4.7.22. Tye Green Road to the south of Elsenham is a quiet, rural unclassified road which provides access to the north side of Stansted Airport via the hamlets of Tye Green and Burton End. This road is accessed from Hall Road, via an uncontrolled priority junction approximately 650 metres south of Elsenham Cross.

4.7.23. Generally, this route is narrow and tortuous, with sections less than 5.0 metres in width and comprising a number of tight bends. It is therefore not considered to provide an attractive route for vehicles to access Stansted Airport, the A120 and the M11 at Junction 8, although it may be suited as a cycle route to Stansted Airport and Stansted Mountfitchet.

CHURCH ROAD – BURY LODGE LANE – ROUND COPPICE ROAD

4.7.24. Church Road is accessed via Lower Street in central Stansted Mountfitchet. Within Stansted Mountfitchet, Church Road has a 30mph speed limit and crosses the rail line via a bridge. Church Road provides access south to Forest Hall School and then onwards towards Stansted Airport via Bury Lodge Lane. Church Lane, on approach to Stansted Mountfitchet has existing traffic calming measures including give-way build-outs.

4.7.25. To the south of Stansted Mountfitchet, Church Lane is derestricted. Church Lane crosses the M11 and forms a simple T-junction with Bury Lodge Lane. Bury Lodge Lane is derestricted and is a good standard single carriageway road. On approach to the Round Coppice Road/First Avenue/Roman Lane mini-roundabout the speed limit reduces to 30mph. The route at this point becomes a private road in the control of the airport operator.

4.7.26. Round Coppice Road then continues south around the perimeter of Stansted Airport and provides access to the main airport car parking and Stansted Business Park. Round Coppice Road continues

south to a large priority controlled roundabout with the A120 (Priority Wood Roundabout). The Priority Wood Roundabout provides access to the A120 and the free flow slips to the M11 south.

4.7.27. This route is considered to offer an attractive vehicular route from Elsenham to Stansted Business Park and the M11 Junction 8 due to the direct access to the south facing free flow slips. This route avoids the need to route along Chapel Hill in Stansted Mountfitchet and via the B1383 and A120 around the northern perimeter of Bishop's Stortford.

STATION ROAD – OLD MEAD ROAD – NORTH HALL ROAD

4.7.28. Station Road is a route used by local traffic travelling north-south through Elsenham. Newport, Wendens Ambo, Saffron Walden, Great Chesterford and eventually Cambridge to the north of Elsenham are accessible via this route. Parking along sections of Station Road is evident on both sides resulting in a reduction in vehicle speeds. Station Road crosses the level crossing at Elsenham Railway Station, linking into Old Mead Road.

4.7.29. To the north of the development, Old Mead Road becomes North Hall Road which routes north, adjacent to the M11. Old Mead Road and North Hall Road are both narrow single carriageway rural lanes. North Hall Road routes under the railway line (2.2km north of Elsenham Station). The bridge is known locally as 'Toot' Bridge – which forms a double bend and is narrow with limited forward visibility.

4.7.30. The existing route standard results in low vehicle speeds and is therefore considered to be unattractive for longer distance commuter trips to strategic destinations to the north of Elsenham. The M11 (accessed via Junction 8) provides a higher quality standard of route for destinations to the north and therefore is considered to provide a more attractive route for longer distance commuter trips.

NEW ROAD – BEDWELL ROAD – SNAKES LANE – ALSA STREET

4.7.31. This route provides local access west from Elsenham. New Road in Elsenham provides local access to the adjacent village of Ugley Green to the west and links Station Road to the B1383 beyond Ugley Green. This road is rural in character and is subject to a number of width restrictions and tight bends. It is therefore considered that this route will only be attractive to local vehicle trips from Elsenham to the surrounding local villages.

THE A120 AND B1256 LEADING TO M11 JUNCTION 8

4.7.32. The A120 strategic road routes in an east-west direction from the A10 west of Bishop's Stortford to the A12 east of Braintree at Marks Tey. The A120 forms a single carriageway northern bypass to Bishop's Stortford and intersects with the M11 motorway at Junction 8 to the east of Bishop's Stortford. East of M11 Junction 8, the A120 becomes a dual carriageway which runs south of Stansted Airport to Great Dunmow, bypassing Takeley village. This section of road was opened in 2004 and replaced the former route (now known as B1256) which runs through Takeley village to the east of M11 Junction 8.

4.7.33. Based on the road network audit, the most direct route to access the A120 to travel east towards Braintree from Elsenham is via Hall Road and Thremhall Avenue. To travel west it is considered that vehicles from Elsenham are more likely to route via Stansted Mountfitchet and the B1383 Silver Street.

4.7.34. The B1256 is a single lane carriage way which runs from Great Dunmow to the M11 Junction 8 via Takeley village. It is a former strategic road (former A120) now downgraded to a 40mph local road. It intersects with Parsonage Road in the centre of Takeley Village. Within Takeley, the B1256 is subject to a 30mph limit and has speed enforcement measures in place to prevent traffic travelling at higher speeds through the village.

M11 JUNCTION 8

4.7.35. M11 Junction 8 is the only access point to the strategic motorway network in Uttlesford District. The junction is a large grade separated, signal controlled roundabout providing access to the M11, A120 East and West, Birchanger Green services and the B1256 Dunmow Road.

4.7.36. At the junction, north and south facing slips are provided to access the M11. In addition free flow south facing slips are provided from the M11 to the A120 Priory Wood Roundabout and to the A120, east of this junction. Therefore, vehicles travelling along the M11 from the south and accessing Stansted Airport (via the Priory Wood Roundabout) or continuing onto the A120 East bypass can avoid routing around Junction 8.

4.7.37. From the M11 North, vehicles access Junction 8 via the north facing slips and then have access to the A120 dual carriageway link to the Priory Wood Roundabout which then provides access to Stansted Airport and the A120 as well as access the Dunmow Road, the Birchanger Green services and the A120 west.

4.7.38. An improvement scheme is currently being delivered at Junction 8 of the M11. The scheme will improve off-slip lane capacity onto Junction 8 of the M11 with a widened A120 signalised junction, to help meet future network demand. The scheme will:

- Improve access between the M11 and A120 with London Stansted Airport, Bishop's Stortford, Birchanger Services and Takeley;
- Reduce congestion and improve capacity on the M11 Junction 8 exit slips and the A120; and
- Help support future plans for housing, employment and business developments.

4.7.39. Work started in September 2021 and is anticipated to take 18 months to complete.

EXISTING TRAFFIC FLOWS

4.7.40. A comprehensive set of traffic surveys was carried out in February 2022 to identify existing traffic flows, queue lengths and typical journey times on the local road network. The scope of the traffic survey was agreed with ECC via email (see scoping correspondence with ECC attached in **Appendix A**). The raw survey data is attached in **Appendix K**.

Junction Turning Counts and Queue Length Surveys

4.7.41. A comprehensive traffic survey was undertaken on the existing local road network. Classified turning counts were collected on Tuesday 22 February 2022 between 0700-1000 hours and 1600-1900 hours at six junctions on the local highway network. The scope attached in **Appendix A** shows the locations of the surveyed junctions within the study area. A list of the surveyed junctions is also provided below:

- Site 1 – Junction of the B1383 Cambridge Road / B1051 Chapel Hill / Bentfield Road;
- Site 2 – Junction of the B1051 Chapel Hill / Lower Street / Mountfitchet Castle Street / Church Road (mini-roundabout);

- Site 3 – Junction of the B1051 Grove Hill / Lower Street (traffic signals);
- Site 4 – Junction of the B1051 Stansted Road / High Street / Station Road / Robin Hood Road (double mini-roundabout);
- Site 5 – Junction of the B1051 High Street / Henham Road / Hall Road; and
- Site 6 – Junction of Hall Road / Parsonage Road / Access Road (adjacent to Coopers End roundabout at Stansted Airport)

Automatic Traffic Count Surveys

4.7.42. ATC's were also carried out across the local road network providing traffic volumes and speed data, for 14 days. The ATC's were undertaken at the same time as the junction surveys. ATC's were undertaken on the following links:

- Site A – B1383 Cambridge Road (between Clarence Road and St John's Road)
- Site B – B1383 Cambridge Road (between Chapel Hill / Bentfield Road and Sanders Close);
- Site C – B1051 Chapel Hill (between Woodfield Terrace / Woodfields);
- Site D – Church Road (between Station Road and Dairy Lane);
- Site E – Lower Street (between Chapel Hill / Church Road and Grove Hill);
- Site F – High Lane (between Brewery Lane and Gall End Lane;
- Site G – B1051 Grove Hill (approximately 300m east of the junction of Lower Street);
- Site H – Station Road (between Stansted Road / High Street and The Croft);
- Site I – High Street (between Station Road / Robin Hood Road and Hall Road);
- Site J – Hall Road (approximately 200m south of the junction of Henham Road);
- Site K – Parsonage Road (approximately 100m south of the junction of Hall Road / Access Road

4.7.43. The observed AM, PM and daily average weekday link flows on the local highway network are summarised in **Table 4-7** below.

Table 4-7 – ATC Average Weekday Link Flow (All Vehicles)

Location	Road	Direction	February 2022		
			AM Peak	PM Peak	24 Hour
Site A	B1383 Cambridge Road (between Clarence Road and St John's Road)	Clarence Road (S) -St John's Road (N)	349	475	5,474
		St John's Road (N) - Clarence Road (S)	554	465	6,128
		2-Way Traffic Flow	903	940	11,602
Site B	B1383 Cambridge Road (between Chapel Hill / Bentfield Road and Sanders Close)	Mill Hill (S) - Chapel Hill (N)	604	768	8,690
		Chapel Hill (N) - Mill Hill(S)	830	652	8,949
		2-Way Traffic Flow	1,434	1,420	17,639
Site C	B1051 Chapel Hill (between Woodfield Terrace / Woodfields)	Woodfields (W) -Sunnyside (E)	252	321	3,564
		Sunnyside (E)- Woodfields (W)	319	234	3,477
		2-Way Traffic Flow	571	555	7041
Site D	Church Road (between Station Road and Dairy Lane)	Dairy Lane (S) - Station Road (N)	377	348	3,590
		Station Road (N) - Dairy Lane (S)	367	289	3,407
		2-Way Traffic Flow	744	637	6,997
Site E	Lower Street (between Chapel Hill / Church Road and Grove Hill)	Mountfitchet Castle Street (S) - Grove Hill (N)	378	526	4,956
		Grove Hill (N) - Mountfitchet Castle Street (S)	461	303	4,432
		2-Way Traffic Flow	839	829	9388
Site F	High Lane (between Brewery Lane and Gall End Lane	Brewery Lane (S) - Grange Place (N)	199	198	1,869
		Grange Place (N) - Brewery Lane (S)	214	116	1,612
		2-Way Traffic Flow	413	314	3481
Site G	B1051 Grove Hill (approximately 300m east of the junction of Lower Street)	Lower Street (W) - Old Mill Farm (E)	199	298	2,923
		Old Mill Farm (E) - Lower Street (W)	274	178	2,788
		2-Way Traffic Flow	473	476	5,711
Site H	Station Road (between Stansted Road / High Street and The Croft)	Fourways (S) - The Croft (N)	181	193	2,005
		The Croft (N) - Fourways (S)	198	166	1,948

Location	Road	Direction	February 2022		
			AM Peak	PM Peak	24 Hour
		2-Way Traffic Flow	379	359	3,953
Site I	High Street (between Station Road / Robin Hood Road and Hall Road)	Glebe End (W) - Park Road (E)	349	276	3,126
		Park Road (E) - Glebe End (W)	315	273	3,076
		2-Way Traffic Flow	664	549	6,202
Site J	Hall Road (approximately 200m south of the junction of Henham Road)	Church Lane (S) - High Street (N)	158	219	1,891
		High Street (N) - Church Lane (S)	249	143	1,977
		2-Way Traffic Flow	407	362	3,868
Site K	Parsonage Road (approximately 100m south of the junction of Hall Road / Access Road	Coopers Villas (S) - Coopers End Roundabout (N)	260	247	2,549
		Coopers End Roundabout (N) - Coopers Villas (S)	240	196	2,289
		2-Way Traffic Flow	500	443	4,838

4.7.44. **Table 4-7** shows the most heavily trafficked route in the study area to be Silver Street in Stansted Mountfitchet with an average of 1,434 two-way movements in the weekday AM peak and 1,420 two-way movements in the weekday PM peak. High traffic flows were also observed on Cambridge Road in Stansted Mountfitchet, with 903 and 940 two-way movements in the AM and PM peak hours respectively, and Church Road in Stansted Mountfitchet, with 774 and 637 two-way movements in the AM and PM Peak Hours respectively.

4.8 2022 BASELINE

HIGHWAY OPERATION

4.8.1. This section of the TA sets out the existing operation of the main junctions within the study area that are likely to be affected by additional vehicle trips from the Proposed Development. The existing network performance has been assessed using a Junctions 10 and a VISSIM micro-simulation model of central Stansted Mountfitchet. Flow diagrams showing the 2022 baseline flows are provided in **Appendix L**.

STAND ALONE JUNCTION MODELLING

4.8.2. The following junctions in Elsenham and at Stansted Airport have been assessed using the Assessment of Roundabout Capacity and Delay (ARCADY) and the Priority Intersection Capacity and Delay (PICADY) modules of Junctions 10.

- High Street Double Mini Roundabout.
- Hall Road / Henham Road Priority Junction.
- Coopers End Mini Roundabout.

4.8.3. The results of the Junctions 10 capacity assessment provide an RFC (Ratio of flow to capacity) figure, junction delay and a Queue length. The RFC model output is typically used to assess the performance of each arm. The Design Manual for Roads and Bridges (DMRB) industry-standard 0.85 RFC threshold is generally accepted for new junctions, with an RFC of up to 1.00 generally accepted for the operation of existing junctions in peak periods. The RFC determines how a particular arm of the junction is operating, thus:

- An RFC of 0.85 or less - the relevant arm of the junction is considered to be operating within its design capacity with minimal delay.
- An RFC greater than 0.85 and less than 1.0 - the junction is operating close to its design capacity, and as such, some queues and delays may start to occur.
- An RFC greater than 1.0 - the arm of the junction is operating at or exceeding its design capacity and is likely to result in longer delays, and queues will start to form.

4.8.4. The results of the standalone junction modelling are summarised below. The full capacity assessment results are attached in **Appendix M**.

High Street Double Mini Roundabout

4.8.5. The results of the High Street Double Mini Roundabout capacity assessment using Junctions 10 is summarised in **Table 4-8**.

Table 4-8 – 2022 Baseline Junction Capacity Assessment Results - High Street Double Mini Roundabout

Junction	Stream	Description	AM Peak Hour			PM Peak Hour		
			Max RFC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Roundabout 1	Arm 1	High Street (Entry)	0.34	6.14	0.50	0.35	6.30	0.50
	Arm 2	Robinhood Road	0.05	5.21	0.10	0.04	4.79	0.00
	Arm 3	Stansted Road (Entry)	0.36	6.22	0.00	0.35	6.05	0.00
Roundabout 2	Arm 1	Stansted Road	0.32	7.87	0.50	0.26	6.99	0.30
	Arm 2	High Street	0.38	5.39	0.60	0.33	5.03	0.50
	Arm 3	Station Road	0.30	4.86	0.00	0.26	4.57	0.00

4.8.6. As illustrated in **Table 4-8** above, the High Street Double Mini Roundabout operate within its theoretical design capacity in both the AM and PM peaks, with minimal delays and insignificant queues.

4.8.7. In the AM peak hour, the junction is predicted to operate with a maximum RFC of 0.38 and queue of less than 1 PCU. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.35 and queue of less than 1 PCU.

Hall Road / Henham Road Priority Junction

4.8.8. The results of the Hall Road / Henham Road junction capacity assessment using Junctions 10 is summarised in **Table 4-9**. As the junction is not a standard T-junction, it has been modelled as three separate T-junctions to provide the best estimation of the junction's operation and capacity.

Table 4-9 – 2022 Baseline Junction Capacity Assessment Results - Hall Road / Henham Road junction

Junction	Stream	Description	AM Peak Hour			PM Peak Hour		
			Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Hall Road - High Street - Henham Road	B-AC	Hall Road - High Street	0.25	8.82	0.30	0.35	9.60	0.50
	C-AB	High Street - Hall Road	0.34	8.36	0.60	0.21	7.01	0.30
Hall Road Slip - Hall Road	B-AC	Hall Road Slip - Hall Road South	0.12	6.96	0.10	0.06	6.22	0.10
	C-AB	Hall Road South - Hall Road Slip	0.07	6.47	0.10	0.09	6.15	0.10
Hall Road Slip - High Street - Henham Road	B-AC	Hall Road Slip - High Street	0.10	9.66	0.10	0.13	9.04	0.10
	C-AB	High Street - Hall Road Slip	0.00	0.00	0.00	0.00	0.00	0.00

4.8.9. As illustrated in **Table 4-9** above, the Hall Road / Henham Road junction operate within its theoretical design capacity in both the AM and PM peaks, with minimal delays and insignificant queues.

4.8.1. In the AM peak hour, the junction is predicted to operate with a maximum RFC of 0.34 and queue of less than 1 PCU. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.35 and queue of less than 1 PCU.

Coopers End Mini Roundabout

4.8.1. The results of the Coopers End Mini Roundabout capacity assessment using Junctions 10 is summarised in **Table 4-10**.

Table 4-10 – 2022 Baseline Junction Capacity Assessment Results - Coopers End Mini Roundabout

Stream	Description	AM Peak Hour			PM Peak Hour		
		Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Arm A	Hall Road	0.70	18.83	2.20	0.52	11.74	1.10
Arm B	Parsonage Road	0.31	5.95	0.50	0.30	5.54	0.40
Arm C	Coopers End Roundabout Access	0.47	9.57	0.90	0.51	10.18	1.00

4.8.2. As illustrated in **Table 4-10** above, Coopers End Mini Roundabout operate within its theoretical design capacity in both the AM and PM peaks, with minimal delays and insignificant queues.

4.8.3. In the AM peak hour, the junction is predicted to operate with a maximum RFC of 0.70 and queue of 2 PCUs. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.52 and queue of 1 PCU.

VISSIM MICRO-SIMULATION MODEL - STANSTED MOUNTFITCHET (BASE CASE)

4.8.4. Due to the close proximity of the junctions in Stansted Mountfitchet (and potential for interaction) and sections of single file carriageway operation, a micro-simulation model has been developed for the purposes of this TA, to allow detailed analysis of the operation of the local road network in Stansted Mountfitchet. This process has involved updating the 2017 model (developed as a part of the Transport Assessment for the consented Phase 1 development) to provide a 2022 base model that replicates observed conditions which then allows testing of proposed changes in vehicle demand within the network.

4.8.5. The 2022 base model has been developed for the central Stansted Mountfitchet network to provide a robust assessment of its existing operation. The Technical Note provided in **Appendix N** sets out details on the geographical scope, input data and validation and calibration of the base VISSIM model.

4.8.6. The geographical scope of the VISSIM model includes the following:

- All key routes that are likely to accommodate traffic from the Proposed Development – Grove Hill, Lower Street, Church Road, Chapel Hill, Cambridge Road, Silver Street and Bentfield Road;
- Both the AM and PM peak periods, identified based on observed data;
- On-street parking on Chapel Hill and Grove Hill and incorporates the parked car overtaking behaviours observed on-site at these locations; and
- Vehicle interaction at the following junctions:
  - Lower Street/Grove Hill signalised junction;
  - Chapel Hill/Church Road/Lower Street/Station Road roundabout; and
  - Bentfield Road/Silver Street/Chapel Hill/Cambridge Road crossroads.

4.8.7. The validation and calibration results presented in **Appendix N** show that overall, the modelled flows, journey times and queues length compare well to those observed and therefore the 2022 base model provides a good representation of observed traffic patterns.

4.8.8. A summary of the 2022 base model maximum queue lengths and journey times on key sections of the network are summarised below. The model results are based on an average of multiple VISSIM model runs. This is standard practice when reporting VISSIM model outputs due to the random variation that occurs in each model run.

Queue Length

4.8.9. The maximum queue lengths recorded during the model runs have been logged and are summarised in **Table 4-11** for the AM and PM peaks respectively. The maximum queue lengths are the longest recorded queues during the assessment time periods. Therefore, it should be recognised that the maximum queues are not necessarily a common occurrence within the peak periods and may feature for only a short period in a single iteration of the model, and for this reason they do not represent the typical queue. The maximum queue lengths are given in metres and

vehicles. An average vehicle is often considered to be approximately 6 metres in length so a 60-metre queue represents in the region of 10 vehicles.

Table 4-11 – 2022 Baseline VISSIM Results - Maximum Queue Length (m) Record during the AM Peak

Junction	Arm	Am Peak		Pm Peak	
		Max Queue (m)	Approx No. of Vehicles	Max Queue (m)	Approx No. of Vehicles
Junction 4 - Grove Hill signalised junction	41 - J4 - Lower Street LT	33	6	13	2
	42 - J4 - Lower Street RT	36	6	16	3
	43 - J4 - B1051 (N) RT	6	1	3	0
	44 - J4 - B1051 (S) Signal Stopline	49	8	52	9
	45 - J4 - B1051 (N) Signal Stopline	30	5	26	4
	46 - Grove Hill (2nd queue)	110	18	114	19
Junction 5 - Chapel Hill roundabout	51 - J5 - B1051 (N)	55	9	29	5
	52 - J5 - Castle	2	0	6	1
	53 - J5 - Church Road	52	9	42	7
	54 - J5 - Station Road LT	2	0	14	2
	55 - J5 - Station Road RT	1	0	5	1
	56 - J5 - Chapel Hill	59	10	66	11
Junction 10 - Cambridge Road / Chapel Hill / Silver Street	101 - J10 - Cambridge Road (N) RT	11	2	22	4
	102 - J10 - Chapel Hill LT	58	10	19	3
	103 - J10 - Chapel Hill RT	25	4	35	6
	104 - J10 - Silver Street RT	60	10	142	24
	105 - J10 Bentfield Road LT	13	2	15	3
	106 - J10 Bentfield Road RT	14	2	16	3
Chapel Hill	991 - Chapel Hill (E)	74	12	60	10
	992 - Chapel Hill (W)	89	15	76	13

4.8.10. **Table 4-11** shows that in the AM peak period, the maximum queue lengths occur at Junction 4, Grove Hill approach to the signalised junction, 18 vehicles. The second longest maximum queue occurred on both the eastern and western approaches of Chapel Hill, at 12 and 15 vehicles respectively. The third longest maximum queue occurred at Junction 5, Chapel Hill approach to the roundabout, 10 vehicles. A maximum queue of 9 vehicle queues was also recorded on the B1051

(N) and Church Road approaches. A maximum queue of 10 vehicles also occurred at Junction 10 on the Chapel Hill and Silver Street approaches.

4.8.11. **Table 4-11** shows that in the PM peak period, the maximum queue lengths occur at Junction 10 with a 34 vehicle queue on the Silver Street approach. The second largest queue was recorded at Junction 4, Grove Hill approach to signalised junction (19 vehicles). The third longest maximum queue occurred on both the eastern and western approaches of Chapel Hill, at 10 and 13 vehicles respectively. Relatively long queues were also recorded at Junction 5 with a maximum queue of 11 vehicles on the Chapel Hill approach to the roundabout, a queue of 5 vehicles on the B1051 (N) and queue of 7 vehicles on the Church Road approaches.

4.8.12. Overall, the maximum queue lengths at the junctions within the network do not result in blocking back between the main junctions. The maximum queue lengths are not considered to be severe in the AM and PM peak travel periods.

Average Journey Times

4.8.13. The average journey times have been collated and averaged over the model runs. **Table 4-12** summarises the 2022 base model results. The location of the journey time sections is shown in the VISSIM model Technical Note provided in **Appendix N**.

Table 4-12 – 2022 Baseline VISSIM Results - Average Journey Times Record in Seconds

Route	AM Peak	PM Peak
101 - B1051 (SB): Farm to Lower Road turning	88	172
102 - B1051 (SB): Lower Rd turning to Chapel Hill Rdbt	20	17
103 - B1051 (WB): Chapel Hill Rdbt to Crafton Green	87	86
104 - Silver Street (SB): Crafton Green to Blythwood Gardens	30	30
105 - Silver Street (NB): Blythwood Gardens to Crafton Green	43	47
106 - B1051 (EB): Crafton Green to Chapel Hill Rdbt	95	81
107 - B1051 (NB): Chapel Hill Rdbt to Lower Rd turning	32	27
108 - B1051 (NB): Lower Rd turning to Farm	29	30
200 - Elsenham to Stansted Mountfitchet	123	126

4.8.14. **Table 4-12** shows local journey times through the VISSIM model network. The results show generally consistent route journey times in both the AM and PM peak periods suggesting that the levels of delay and congestion on the local network are similar in both peak travel periods. The exception to this is along route 101 (Farm to the Lower Road turning) where there is an 84 second difference.

4.8.15. An average journey time of under 3 minutes demonstrates that Stansted Mountfitchet does not currently suffer from substantial levels of congestion and delay in the peak travel periods.

4.9 PERSONAL INJURY ACCIDENT DATA

OVERVIEW

4.9.1. The most recently available 5-year accident data has been obtained from ECC (July 2017 to June 2022) for Elsenham, Stansted Mountfitchet and Hall Road leading to Stansted Airport and the A120 (the highway network assessment area).

4.9.2. This section provides a summary of the number of accidents by severity within the study area. The locations of the accidents are shown on the plan provided in **Appendix O**.

ELSENHAM

4.9.3. A summary of the number and severity of personal injury accidents recorded on the local highway network in Elsenham summarised in **Table 4-13**.

Table 4-13 – Personal Injury Accident Summary - Elsenham

Road	Slight	Serious	Fatal	Total
Station Road	0	1	0	1
Stansted Road (east of M11)	1	0	0	1
Henham Road	0	0	0	0
Hall Road (west of Elsenham Golf & Leisure)	3	0	0	3
Total	**4**	**1**	**0**	**5**

4.9.4. **Table 4-13** shows that there have been 4 slight, 1 serious and no fatal accidents recorded within the village.

4.9.5. There is only one location within Elsenham where there has been more than one accident recorded at the same location. The location is Hall Road west of Elsenham Golf & Leisure where there have been a cluster of three slight severity accidents in the past 5 years. Two out of the three accidents at this location were caused because of vehicles approaching in opposing direction.

4.9.6. No accidents have been recorded near the proposed primary access on Henham Road, or along the B1051 High Street.

4.9.7. The dispersed location of the accidents suggests that there are no significant highway safety concerns with the operation of the existing local junctions and road network and the slight accidents at Hall Road west of Elsenham Golf & Leisure are likely to be due to driver error rather.Stansted Mountfitchet

4.9.8. A summary of the number and severity of personal injury accidents recorded on the local highway network in Stansted Mount summarised in **Table 4-14**.

Table 4-14 – Personal Injury Accident Summary – Stansted Mountfitchet

Road	Slight	Serious	Fatal	Total
B1051 Stansted Road (west of M11)	1	2	0	3
Grove Hill	0	1	0	1
Lower Street	0	1	0	1
Chapel Hill	1	0	0	1
B1383 Cambridge Road	2	0	0	2
Church Road	4	2	0	6
Silver Street	1	0	0	1
Total	**9**	**6**	**0**	**15**

4.9.9. Within Stansted Mountfitchet there have been 9 accidents of slight severity, 6 accidents of serious severity and no fatal accidents.

4.9.10. The highest number of accidents were recorded along Stansted Road, Church Road and the B1383 Cambridge Road, with a total of eleven accidents in five years. The slight severity accidents recorded along the B1383 Cambridge Road are relatively close to each other. Both these accidents are recoded 215m apart with one recorded near the junction with Norman's Way and another being recorded at the junction with Clarence Road.

4.9.11. On Church Road, two serious severity accidents occurred within the last 5 years. One serious accident is recorded near the junction with Park Road, while another serious accident is recorded about 130m from the junction with Forest Hall Road towards Forest Hall School. Traffic calming measures have already been installed along this route, as such there is likely to be limited opportunity to improve road user safety along this route.

4.9.12. On Stansted Road, 2 serious accidents and 1 slight occurred within the last 5 years. One serious accident is reported near the junction with The old Brick yard, while the other serious accident is reported almost 150m south of junction with The old Brick yard. A slight severity accident occurred on Stanstead Road near Gorsefield Rural studies centre.

4.9.13. Very few accidents were recorded within Stansted Mountfitchet in the 5-year period, with one slight severity accident recorded on the B1051 Chapel Hill and one slight severity accident recorded along Silver Street.

HALL ROAD / PARSONAGE ROAD / A120

4.9.14. A summary of the number and severity of personal injury accidents recorded on the local highway network in Stansted Mount summarised in **Table 4-15**.

Table 4-15 – Personal Injury Accident Summary – Hall Road/Parsonage Road/Thremhall Avenue/A120

Road	Slight	Serious	Fatal	Total
Elsenham Road and Waltham Hall Road (outside of Elsenham)	3	2	0	5
Parsonage Road and Terminal Road South (between Hall Road and A120)	8	0	0	8
A120	3	3	0	6
M11(Between Stanstead Road and Birchanger Green Roundabout)	6	1	0	7
Total	**20**	**6**	**0**	**26**

4.9.15. **Table 4-15** shows the number and severity of recorded accidents along Hall Road, Parsonage Road and the A120.

4.9.16. There have been five recorded accidents on Elsenham Road and Waltham Hall Road (outside of Elsenham) within the last five years.

4.9.17. Six accidents of slight severity were recorded on Parsonage Road and Terminal Road South (between Hall Road and A120).

4.9.18. On approach to the Molehill Green T-Junction there are Junction Warning Signs in both directions on Hall Road. On approach to the series of bends to the south of the Bamber's Green T-Junction there are 'Slow' road markings, tight bend warning signs and black and white chevron sharp bend warning signage. Both these locations therefore benefit from existing warning signage for exiting road users.

4.9.19. On the A120 at the Stansted Airport Junction there have been six recorded accidents, three serious and three slight severe accidents. The accidents are dispersed along this section of the A120. The number and severity of accidents recorded along the A120 are typical of junctions on the strategic road network.

4.9.20. No accident data is available from ECC for Thremhall Avenue, Bassingbourn Roundabout or Coopers End Roundabout as this section is formed of private roads operated by Stansted Airport.

4.10 SUMMARY

4.10.1. Most recently available 5-year accident data has been obtained from ECC (July 2017 to June 2022) for Elsenham, Stansted Mountfitchet and Hall Road and the A120 (the highway network assessment area).

4.10.2. In total, 33 accidents have been recorded with slight severity and 13 accidents with serious severity. The accident data shows that the local road network has a good safety record with no fatal severity accidents recorded. The majority of accidents dispersed across the local road network within the study area.

4.10.3. On this basis there does not appear to be any accident trends or significant concentrations within vicinity of the Proposed Development that would be significantly affected by an increase in local vehicle movements.

5 FUTURE BASELINE TRANSPORT CONDITIONS

5.1 OVERVIEW

5.1.1. This section of the TA sets out the main committed transport improvements in the vicinity of Elsenham and the predicted baseline transport conditions on the local road network in the 2027 future assessment year. A future year of 2027 has been selected as it is 5 years after submission of the planning application and by which time the development is expected to be fully built out.

5.2 TRANSPORT IMPROVEMENT SCHEMES

5.2.1. Two transport improvement schemes are planned on the local and strategic highway network surrounding the Site.

5.2.2. The first is a transport improvement scheme that is currently being delivered at M11 Junction 8 (as discussed in **Section 4.7**) and the second is planned improvements to the Grove Hill Signals.

5.2.3. The improvements to Grove Hill signals will be delivered as a planning condition by the developer of the Land to the West of Isabel Drive prior to first occupation (REF UTT/19/2470/OP). The improvement scheme will include additional wireless vehicle detection and adjustment of signal times as necessary. This scheme will provide additional capacity at Grove Hill and mitigate the impact of the traffic generated by the development at the Land to the West of Isabel Drive.

5.2.4. It is anticipated that this scheme will be delivered prior to first occupation of the Proposed Development. However should this not be delivered, this scheme would be delivered by Bloor Homes Ltd and Gillian Smith, John Robert Carmichael Smith, Robert Giles Russell Smith and Andrew James Smith.

5.3 COMMITTED DEVELOPMENT

5.3.1. There are a number of committed developments within Elsenham, Stansted Mountfitchet and Tateley that are due to be completed by 2027 and will therefore increase vehicle movement within the study area. The predicted vehicle movements generated by the committed developments (extracted from their respective Transport Assessment / Statement) have been added to the 2022 baseline flows to derive the 2027 baseline flows.

5.3.2. The committed developments which have been included in the 2027 baseline are summarised in **Table 5-1**.

Table 5-1 – Committed Developments included in the 2027 Baseline

Development	Location	Development	Planning Ref.	Status
Land To The Northwest Of Henham Road Elsenham	East Elsenham	350 dwellings and . primary school that includes early years and childcare setting for up to 56 places	UTT/17/3573/OP	Approved - Appeal Allowed
Land West of Hall Road	Southeast Elsenham	130 dwellings	UTT/19/0462/FUL	Approved
Land to the West of Isabel Drive	West Elsenham	99 dwellings	UTT/19/2470/OP	Approved - Appeal Allowed
Land South of Rush Lane	South Elsenham	40 dwellings	UTT/19/0437/OP	Approved - Appeal Allowed
West of Parsonage Road	North Takeley	120 dwellings	UTT/19/0393	Approved - Appeal Allowed
Land East of Parsonage Road	North Takeley	Care home (66 beds)	UTT/19/0394	Approved - Appeal Allowed
Garnetts (west of)	Northwest Takeley	155 dwellings	UTT/21/3311	Awaiting Decision
Land East of Parsonage Road Takeley	North Takeley	88 dwellings	UTT/21/2488/	Awaiting Decision

5.3.3. Traffic flows associated with Stansted Northside, a redevelopment that will provide 195,100 sqm of commercial / employment development (REF: UTT/22/0434/OP), has not been included in the future baseline scenario as the number of trips that will arrive from / depart towards Stansted Mountfitchet will be negligible. The Transport Assessment forecast 11 two-way vehicle trips along Church Road, to the west of Stansted Mountfithcet, in the AM Peak and 13 two-way vehicle trips along Church Road in the PM Peak.

5.3.4. Traffic flows associated with the Land South of Vernon's Close in Henham (REF: UTT/20/0604), a residential development that will provide 45 dwellings, has also not been included in the future baseline scenario as the number of trips that will arrive from / depart towards Stansted Mountfitchet and Stansted Airport will be negligible. The Transport Assessment forecasts the development to generate 24 vehicle trips in the AM Peak and 25 vehicle trips in the PM Peak, of which 13 vehicle trips in the AM Peak and 15 trips in the PM Peak are expected to arrive from / depart towards Stanstead Mountfitchet and Stanstead Airport.

5.3.5. It has been agreed with ECC that no additional traffic flows should be added to the future baseline scenario to account for the Trisail development to southeast of Elsenham (REF: UTT/11/1473).

VEHICULAR TRIP GENERATION

5.3.6. **Table 5-2** summarises the predicted AM and PM peak hour vehicle trip generation of each of the committed developments which has been assigned to the local highway network.

Table 5-2 – Committed Development Generated Vehicle Flows

Development	AM Peak Hour		PM Peak Hour	
	Arrival	Departure	Arrival	Departure
Land To The North West Of Henham Road Elsenham	36	137	119	68
Land West of Hall Road	12	40	40	20
Land to the West of Isabel Drive	12	36	36	18
Land South of Rush Lane	5	15	15	7
Land West of Parsonage Road	13	45	38	17
Land East of Parsonage Road	7	3	3	9
Garnetts (West Of)	17	58	49	22
Land East of Parsonage Road Takeley	10	33	28	12
TOTAL	**112**	**367**	**328**	**173**

5.3.7. The distribution and assignment of vehicle trips was based on the network flow diagrams contained within each committed development's Transport Assessment / Statement. It should be noted that no distribution and assignment details were provided for vehicle trips generated by the Land South of Rush Lane, as such a proportion of the trips generated by the Land to the West of Isabel Drive were assigned to the network instead.

5.3.8. In total an additional 479 vehicles have been added to the highway network in the AM peak and a further 501 vehicles have been added to the highway network in the PM peak.

ADDITIONAL BACKGROUND TRAFFIC GROWTH

5.3.9. It is considered that the committed developments listed in **Table 5-2** account for all of the forecast traffic growth over the next 5 years. On this basis it is not considered appropriate to uplift traffic flows using TEMPro derived car driver growth factors. This is because applying both TEMPro growth factors and committed development flows will result in the double counting of vehicle trips generated by committed development generated and result in a significant overestimation of the 2027 baseline conditions.

5.3.10. To confirm that this is approapriate, TEMPro growth rates for Uttlesford 005 and Uttlesford 006 between 2022 and 2027 have been calculated using alternative assumptions. The adjustment involved reducing the 2027 future household number by the number of households that will be delivered by the commtted development sites listed in **Table 5-1** (619 households in Uttlesford 005 and 429 in Uttlesford 006).

5.3.11. Detail on the alternative assumptions calculations is provided in **Table 5-4.** Please note that the employment growth assumptions were unchanged, this ensured growth associated with employment sites, specifically Stansted Airport, was included.

Table 5-3 – TEMPro Alternative Assumptions

Scenario	Households	
	Uttlesford 005	Uttlesford 006
2022 Base (unadjusted)	5594	3514
2027 Future (unadjusted)	5852	3675

Scenario	Households	
	Uttlesford 005	Uttlesford 006
Difference (2022 Base (unadjusted) minus 2022 Future (unadjusted))	*258*	*161*
Committed Developments	*619*	*429*
2027 Future with Adjusted Assumptions (2027 Future (unadjusted) minus Committed Development)	**5233**	**3246**

5.3.12. TEMPro growth rates were then calculated using the alternative assumptions set out in **Table 5-4** and adjusted for NTM assumptions. The AM and PM growth factors calculated for all roads are shown in **Table 5-4** below.

Table 5-4 – TEMPro Alternative Adjustment Growth Factors

AM Peak		PM Peak	
Area	**Local Growth Figure**	**Area**	**Local Growth Figure**
Uttlesford 005	0.9896	Uttlesford 005	0.98031
Uttlesford 006	1.0049	Uttlesford 006	1.00719
Average	**0.99729**	**Average**	**0.99375**

5.3.13. **Table 5-4** above shows reasonably flat growth in the 5-year period in Uttlesford 006 (0.4% growth) and slight reduction in Uttlesford 006 (0.2% reduction). The low levels of growth is mainly due to the removal of a large amount of committed development housing that has already already been considered, however in Uttlesford 006 this is slightly offset by employment growth.

5.3.14. On average across both areas, TEMPro forecasts a slight reduction in traffic if alternative assumptions are applied (0.3% reduction). As such for a robust assessment the TEMPro growth factors will not be applied and the committed development flows in **Table 5-2** will be added directly onto the 2022 baseline flows.

LINK FLOW IMPACT

5.3.15. **Table 5-5** sets out the predicted increase in link flows on the local road network as a result of the committed developments.

Table 5-5 – Committed Development Two-Way Flows – Local Link Impact

Location	Road	AM Peak Hour			PM Peak Hour		
		2022	2027	% Change	2022	2027	% Change
Elsenham	Old Mead Road	388	411	6%	355	383	8%
	Henham Road (east of site access)	430	444	3%	308	322	5%
	Hall Road	413	517	25%	393	514	31%
	B1051 Stansted Road	551	692	26%	540	701	30%
Stansted Mountfitchet	High Lane	439	440	0%	359	363	1%
	Lower Street	897	1041	16%	845	1009	19%
	Church Road	807	844	5%	751	792	5%
	Chapel Hill	616	720	17%	663	780	18%
	Bentfield Road	264	269	2%	271	275	1%
	B1383 Silver Street	1,453	1,553	7%	1,533	1,646	7%
Stansted Airport	Hall Road	666	787	18%	641	767	20%
	Parsonage Road	471	607	29%	436	564	29%
	Link to / from Coopers End Roundabout	758	973	28%	719	935	30%

5.3.16. **Table 5-5** demonstrates that the inclusion of the committed development traffic results in a considerable increase in vehicle flows across the local road network, with link flows increasing by between 0% and 31% in Elsenham and Stansted Mountfitchet.

5.3.17. In Elsenham, the highest percentage change is forecast on Hall Road (25% in the AM peak and 31% PM peak) and B1051 Stansted Road (26% in the AM peak and 30% PM peak). In Stansted Mountfitchet, the highest percentage change is forecast on Lower Street (16% in the AM peak and 19% PM peak) and Chapel Hill (17% in the AM peak and 18% in the PM peak).

5.3.18. In Stansted Airport, the highest percentage change is forecast on the Link to / from Coopers End Roundabout (28% in the AM and 30% in the PM) and the Parsonage Road (29% in AM and 29% in PM peak)

5.4 2027 BASELINE

5.4.1. As discussed above the committed development vehicle flows have been added to the 2022 base flows to generate the 2027 baseline network flows. Flow diagrams showing the 2027 baseline flows are provided in **Appendix O**.

5.4.2. This scenario represents a reference case against which the impact of the Proposed Development can be compared. Standalone modelling assessments have also been undertaken at four key junctions where the impact of the development is expected to have a significant impact.

HIGHWAY OPERATION

5.4.3. The performance of the highway network in the 2027 baseline has been assessed using Junctions 10 and the Stansted Mountfitchet VISSIM micro-simulation model.

STANDALONE JUNCTION MODELLING

5.4.4. The operation of the junction listed below have been assessed using the 2027 baseline data to estimate the capacity at these junctions:

- Site Access Priority Junction
- High Street Double Mini Roundabout;
- Hall Road / Henham Road junction; and
- Coopers End Mini Roundabout.

5.4.5. The assessment of the junctions listed above has been undertaken using Junctions 10.

5.4.6. The results of the Junctions 10 capacity assessment provide an RFC figure, junction delay and a queue length. The RFC model output is typically used to assess the performance of each arm. The DMRB industry-standard 0.85 RFC threshold is generally accepted for new junctions, with an RFC of up to 1.00 generally accepted for the operation of existing junctions in peak periods. The RFC determines how a particular arm of the junction is operating, thus:

- An RFC of 0.85 or less - the relevant arm of the junction is considered to be operating within its design capacity with minimal delay.
- An RFC greater than 0.85 and less than 1.0 - the junction is operating close to its design capacity, and as such, some queues and delays may start to occur.
- An RFC greater than 1.0 - the arm of the junction is operating at or exceeding its design capacity and is likely to result in longer delays, and queues will start to form.

5.4.7. The results of the standalone junction modelling are summarised below. The full capacity assessment results are attached in **Appendix M.**

5.4.8. The change in the performance of the junction between the 2022 baseline and 2027 baseline is shown in brackets.

Site Access Priority Junction

5.4.9. The primary vehicular access into the Phase 2 development will be via a new priority junction on Henham Road. This junction is being delivered as a part of the consented Phase 1 development to the south of the Site. In the 2027 baseline scenario it will serve vehicular trips generated by the consented Phase 1 development. A plan showing the proposed layout of this junction is attached in **Appendix B.2**.

5.4.10. The results of the Site Access capacity assessment using Junctions 10 is summarised in **Table 5-6**.

Table 5-6 – 2027 Baseline Junction Capacity Assessment Results - Site Access

Stream	Description	AM Peak Hour			PM Peak Hour		
		Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Stream B-C	Site Access - Head Road East	0.01	7.31	0.00	0.00	6.78	0.00
Stream B-A	Site Access - Head Road North	0.33	11.77	0.50	0.16	9.13	0.20
Stream C-AB	Head Road East - Site Access	0.00	5.56	0.00	0.01	5.75	0.00

5.4.11. As illustrated in **Table 5-6** above, the Site Access is predicted to operate within its theoretical design capacity in both the AM and PM peaks, with minimal delays and insignificant queues.

5.4.12. In the AM peak hour, the junction is predicted to operate with a maximum RFC of 0.33 and queue of less than 1 PCU. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.16 and queue of less than 1 PCU.

High Street Double Mini Roundabout

5.4.13. The results of the High Street Double Mini Roundabout capacity assessment using Junctions 10 is summarised in **Table 5-7**.

Table 5-7 – 2027 Baseline Junction Capacity Assessment Results - High Street Double Mini Roundabout

Junction	Stream	Description	AM Peak Hour			PM Peak Hour		
			Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Roundabout 1	Arm 1	High Street (Entry)	0.40 (+0.06)	6.75 (+0.61)	0.70 (+0.20)	0.48 (+0.13)	7.82 (+1.52)	0.90 (+0.40)
	Arm 2	Robinhood Road	0.07 (+0.02)	5.46 (+0.25)	0.10 (+0.00)	0.05 (+0.01)	5.26 (+0.47)	0.10 (+0.10)
	Arm 3	Stansted Road (Entry)	0.47 (+0.11)	7.54 (+1.32)	0.00 (+0.00)	0.43 (+0.08)	6.89 (+0.84)	0.00 (+0.00)
Roundabout 2	Arm 1	Stansted Road	0.36 (+0.04)	9.03 (+1.16)	0.60 (+0.10)	0.31 (+0.05)	7.94 (+0.95)	0.40 (+0.10)
	Arm 2	High Street	0.48 (+0.10)	6.45 (+1.06)	0.90 (+0.30)	0.40 (+0.07)	5.65 (+0.62)	0.70 (+0.20)
	Arm 3	Station Road	0.40 (+0.10)	5.71 (+0.85)	0.00 (+0.00)	0.33 (+0.07)	5.03 (+0.46)	0.00 (+0.00)

5.4.14. As illustrated in **Table 5-7** above, the High Street Double Mini Roundabout is predicted to continue to operate within its theoretical design capacity in the 2027 baseline in both the AM and PM peaks, with minimal delays and insignificant queues.

5.4.15. In the AM peak hour, the junction is predicted to operate with a maximum RFC of 0.48 and queue of less than 1 PCU. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.43 with a maximum queue of less than 1 PCU.

5.4.16. In the AM peak the committed development is expected to result in a maximum increase in RFC of 0.11 and less than 1 PCU increase in queue length. In the PM peak, the committed development is expected to result in a maximum increase in RFC of 0.13 and less than 1 PCU increase in queueing.

Hall Road / Henham Road Priority Junction

5.4.17. The results of the Hall Road / Henham Road junction capacity assessment using Junctions 10 is summarised in **Table 5-8**. As the junction is not a standard T-junction, it has been modelled as three separate T-junctions to provide the best estimation of the junction's operation and capacity.

Table 5-8 – 2027 Baseline Junction Capacity Assessment Results - Hall Road / Henham Road junction

Junction	Stream	Description	AM Peak Hour			PM Peak Hour		
			Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Hall Road - High Street - Henham Road	B-AC	Hall Road - High Street	0.29 (+0.04)	9.68 (+0.86)	0.40 (+0.10)	0.41 (+0.06)	10.65 (+1.05)	0.70 (+0.20)
	C-AB	High Street - Hall Road	0.40 (+0.06)	9.24 (+0.88)	0.80 (+0.20)	0.27 (+0.06)	7.34 (+0.33)	0.40 (+0.10)
Hall Road Slip - Hall Road	B-AC	Hall Road Slip - Hall Road South	0.21 (+0.09)	7.80 (+0.84)	0.30 (+0.20)	0.11 (+0.05)	6.68 (+0.46)	0.10 (+0.00)
	C-AB	Hall Road South - Hall Road Slip	0.11 (+0.04)	6.61 (+0.14)	0.10 (+0.00)	0.17 (+0.08)	6.52 (+0.37)	0.20 (+0.10)
Hall Road Slip - High Street - Henham Road	B-AC	Hall Road Slip - High Street	0.16 (+0.06)	10.96 (+1.30)	0.20 (+0.10)	0.24 (+0.11)	10.91 (+1.87)	0.30 (+0.20)
	C-AB	High Street - Hall Road Slip	0.00 (+0.00)	0.00 (+0.00)	0.00 (+0.00)	0.00 (+0.00)	0.00 (+0.00)	0.00 (+0.00)

5.4.18. As illustrated in **Table 5-8** above, the Hall Road / Henham Road junction is predicted to continue to operate within its theoretical design capacity in the 2027 baseline in both the AM and PM peaks, with minimal delays and insignificant queues.

5.4.19. In the AM peak hour, the junction is predicted to operate with a maximum RFC of 0.40 and queue of less than 1 PCU. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.41 and queue of less than 1 PCU.

5.4.20. In the AM peak the committed development is expected to result in a maximum increase in RFC of 0.09 and less than 1 PCU increase in queue length. In the PM peak, the committed development is expected to result in a maximum increase in RFC of 0.11 and less than 1 PCU increase in queueing.

Coopers End Mini Roundabout.

5.4.21. The results of the Coopers End Mini Roundabout capacity assessment using Junctions 10 is summarised in **Table 5-9**.

Table 5-9 – 2027 Baseline Junction Capacity Assessment Results - Coopers End Mini Roundabout

Stream	Description	AM Peak Hour			PM Peak Hour		
		Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Arm A	Hall Road	0.87 (+0.17)	42.80 (+23.97)	5.90 (+3.70)	0.66 (+0.14)	17.62 (+5.88)	1.90 (+0.80)
Arm B	Parsonage Road	0.46 (+0.15)	7.99 (+2.04)	0.80 (+0.30)	0.36 (+0.06)	6.23 (+0.69)	0.60 (+0.20)
Arm C	Coopers End Roundabout Access	0.54 (+0.07)	11.13 (+1.56)	1.20 (+0.30)	0.73 (+0.22)	18.15 (+7.97)	2.60 (+1.60)

5.4.22. As illustrated in **Table 5-9** above, the Coopers End Mini Roundabout is predicted to continue to operate within its theoretical design capacity in the 2027 sensitivity test baseline in both the AM and PM peaks. With the exception of Hall Road (Arm A) in the AM peak, minimal delays and insignificant queues are forecast on all arms.

5.4.23. In the AM peak Hall Road (Arm A) is forecast to operate close to its design capacity with an RFC 0.87 and queue of 6 PCUs. The maximum delay per PCU is also forecast to increase by 24 seconds (43 seconds).

5.4.24. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.73 and queue of close to 3 PCUs.

5.4.25. In the AM peak the committed development is expected to result in a maximum increase in RFC of 0.17 and 4 PCU increase in queue length. In the PM peak, the committed development is expected to result in a maximum increase in RFC of 0.22 and less than 2 PCU increase in queueing.

Summary

5.4.26. The results of the standalone junction modelling demonstrate that with committed development traffic flows all of the assessed junctions are predicted to continue to operate within capacity with low levels of delay and queuing. The only exception is at Coopers End Mini-roundabout in the AM peak, where there is expected to be a small increase in queuing (+4 PCUs) and delay (+24 seconds per vehicle) on the Hall Road Arm.

VISSIM MICRO-SIMULATION MODEL – STANSTED MOUNTFITCHET

5.4.27. The 2027 committed development trips were loaded into the micro-simulation model in addition to the 2022 base flows. This scenario represents a reference case against which the impact of the Proposed Development can be compared. The baseline scenarios are shown in **Table 5-10**.

Table 5-10 – Baseline Models

Model Name	Code (Graph Legend)	Description
2022 Base	2022	2022 validated base model
2027 Reference Case	2027+C	2022 base model + committed developments

Network Performance

5.4.28. The average time a vehicle spends in the network, average time per mile, average speed and average delay per vehicle has been obtained from the model. The results are shown in **Table 5-11** based on the modelling scenarios shown in **Table 5-10**.

Table 5-11 – Network Performance Indicators (Base and Reference Case)

Network Statisitic	AM Peak			AM Peak		
	2022	2027+C	Change	2022	2027+C	Change
Average Time (s) / Vehicle	130	140	+10	128	129	+1
Average Time (s) / Mile	190	190	0	204	196	-8
Average Speed (mph)	19	19	0	18	18	0
Average Delay / Vehicle (s)	44	49	+5	47	45	-2

5.4.29. The above tables show that there is an increase in travel time and delay and reduction in speed forecast in Stansted Mountfitchet in 2027 as a result of committed developments. However, the modelling indicates that, even with the committed development, the section through Stansted Mountfitchet continues to operate within overall capacity, with minimal increase in average journey time and delay per vehicle.

Maximum Queue Lengths

5.4.30. The maximum queue lengths recorded by the 2027 reference case model have been logged and are summarised in **Table 5-12** and **Table 5-13** for the AM and PM peaks respectively. The 2027 reference case maximum queues have been compared to the 2022 base model results to identify the impact of the additional committed development vehicle demands.

Table 5-12 – 2027 Baseline VISSIM Results - Maximum Queue Length (m) Record during the AM Peak

Junction	Arm	2022	2027+C	Change (m)	Change (Veh)
Junction 4 - Grove Hill signalised junction	41 - J4 - Lower Street LT	33.3	33.7	+0.4	0
	42 - J4 - Lower Street RT	36.3	35.8	-0.5	0
	43 - J4 - B1051 (N) RT	5.6	14.6	+9	+2
	44 - J4 - B1051 (S) Signal Stopline	48.5	64.0	+15.5	+3
	45 - J4 - B1051 (N) Signal Stopline	29.6	23.3	-6.3	0
	46 - Grove Hill (2nd queue)	109.7	92.8	-16.9	0
Junction 5 - Chapel Hill roundabout	51 - J5 - B1051 (N)	54.8	60.8	+6	+1
	52 - J5 - Castle	1.6	2.1	+0.5	0
	53 - J5 - Church Road	51.7	70.4	+18.7	+3
	54 - J5 - Station Road LT	2.0	3.4	+1.4	0
	55 - J5 - Station Road RT	1.1	1.7	+0.6	0
	56 - J5 - Chapel Hill	58.5	69.0	+10.5	+2
Junction 10- Cambridge Road / Chapel Hill	101 - J10 - Cambridge Road (N) RT	10.9	17.8	+6.9	+1
	102 - J10 - Chapel Hill LT	58.3	87.3	+29	+5
	103 - J10 - Chapel Hill RT	24.5	29.1	+4.6	+1
	104 - J10 - Silver Street RT	59.6	79.8	+20.2	+4
	105 - J10 Bentfield Road LT	12.7	12.9	+0.2	0
	106 - J10 Bentfield Road RT	14.3	13.9	-0.4	0
Chapel Hill	991 - Chapel Hill (E)	74.0	96.1	+22.1	+4
	992 - Chapel Hill (W)	89.3	110.6	+21.3	+4

5.4.31. **Table 5-12** shows that in the AM peak hour, the additional committed development trips are predicted to result in a maximum increase of 30 metres (+ 5 vehicles). The locations where the impact of the additional development generated vehicle trips is predicted to be greatest are:

- Junction 5 - Chapel Hill roundabout – AM queue increases by 30m (+ 5 vehicles). And
- Chapel Hill eastern and western approach to the on-street parked vehicles section – AM queue increases by 22m (+ 4 vehicles).

5.4.32. Overall, the results show that in the AM weekday period the committed development vehicle trips will not have a severe impact on the operation of the local highway network through Stansted Mountfitchet.

Table 5-13 – 2027 Baseline VISSIM Results - Maximum Queue Length (m) Record during the PM Peak

Junction	Arm	2022	2027+C	Change (m)	Change (Veh)
Junction 4 - Grove Hill signalised junction	41 - J4 - Lower Street LT	12.9	13.1	+0.2	0
	42 - J4 - Lower Street RT	15.5	16.0	+0.5	0
	43 - J4 - B1051 (N) RT	2.8	2.8	0	0
	44 - J4 - B1051 (S) Signal Stopline	51.6	65.5	+13.9	+2
	45 - J4 - B1051 (N) Signal Stopline	25.9	23.3	-2.6	0
	46 - Grove Hill (2nd queue)	114.2	57.7	-56.5	0
Junction 5 - Chapel Hill roundabout	51 - J5 - B1051 (N)	29.1	42.1	+13	+2
	52 - J5 - Castle	6.4	8.6	+2.2	0
	53 - J5 - Church Road	42.0	46.7	+4.7	+1
	54 - J5 - Station Road LT	14.0	13.6	-0.4	0
	55 - J5 - Station Road RT	5.3	5.2	-0.1	0
	56 - J5 - Chapel Hill	65.5	82.0	+16.5	+3
Junction 10- Cambridge Road / Chapel Hill	101 - J10 - Cambridge Road (N) RT	21.5	17.7	-3.8	0
	102 - J10 - Chapel Hill LT	18.9	35.6	+16.7	+3
	103 - J10 - Chapel Hill RT	35.2	39.6	+4.4	+1
	104 - J10 - Silver Street RT	141.5	150.3	+8.8	+2
	105 - J10 Bentfield Road LT	15.4	15.1	-0.3	0
	106 - J10 Bentfield Road RT	16.0	16.0	0	0
Chapel Hill	991 - Chapel Hill (E)	60.3	85.4	+25.1	+4
	992 - Chapel Hill (W)	75.6	103.4	+27.8	+5

5.4.33. **Table 5-13** shows that in the PM peak, the committed development results in maximum recorded queue length up 5 vehicles (30 metres). The most significant increases in maximum queue length between the with and without committed development scenarios occurred at:

- Chapel Hill eastern and western approach to the on-street parked vehicles section – queue increases by 4 vehicles (25 meters) on the eastern arm and 5 vehicles (28 meters) on the western arm.

5.4.34. Overall, the results show that in the PM weekday period the committed development vehicle trips are predicted to have a minor impact on additional queue lengths, this will not have a severe impact on the operation of the local highway network through Stansted Mountfitchet.

Average Journey Times

5.4.35. The 2027 baseline average journey times over the modelled network have been collated and averaged over multiple model runs. **Table 5-14** compare the 2027 baseline model results with the 2022 base model results.

Table 5-14 – 2027 Baseline VISSIM Results - Average Journey Times Recorded in Seconds

Route	AM Peak		Change	PM Peak		Change
	2022	2027+C		2022	2027+C	
101 - B1051 (SB): Farm to Lower Road turning	88	50	-38	172	58	-114
102 - B1051 (SB): Lower Rd turning to Chapel Hill Rdbt	20	23	+3	17	19	+2
103 - B1051 (WB): Chapel Hill Rdbt to Crafton Green	87	92	+5	86	92	+6
104 - Silver Street (SB): Crafton Green to Blythwood Gardens	30	30	0	30	30	0
105 - Silver Street (NB): Blythwood Gardens to Crafton Green	43	48	+5	47	51	+4
106 - B1051 (EB): Crafton Green to Chapel Hill Rdbt	95	126	+31	81	99	+18
107 - B1051 (NB): Chapel Hill Rdbt to Lower Rd turning	32	39	+7	27	30	+3
108 - B1051 (NB): Lower Rd turning to Farm	29	30	+1	30	31	+1
200 - Elsenham to Stansted Mountfitchet	123	125	+2	126	118	-8

5.4.36. **Table 5-14** shows that in the AM peak, the additional committed development generated trips are predicted to result in up to 31 second increase in average journey times along Crafton Green to Chapel Hill Roundabout (route 106). From Chapel Hill Roundabout to Lower Road turning, the average increase in journey times is 7 seconds (route 107). Along Chapel Hill to Crafton Green and Blythwood Gardens to Crafton Green, the average journey times are predicted to increase by 5 seconds (routes 103 and 105).

5.4.37. **Table 5-14** shows that in the PM peak, the additional committed development generated trips are predicted to result in up to 18 seconds increase in average journey times along Crafton Green to Chapel Hill Roundabout (route 106). From Chapel Hill Roundabout to Lower Road turning, the average increase in journey times is 3 seconds (route 107). Along Chapel Hill to Crafton Green and Blythwood Gardens to Crafton Green, the average journey times are predicted to increase by 6 and 4 seconds (routes 103 and 105) respectively.

5.4.38. In journey time section 101, due to the planned signal improvements on Grove Hill, there is a significant decrease in average journey time between the 2022 base year and 2027 forecast year scenarios. Further detail on the proposed improvements is provided in **Section 5.2**.

5.4.39. The results presented in **Table 5-14** show that the additional committed development vehicle trips are predicted to result in a small increase in journey times through Stansted Mountfitchet in the AM peak period. The scale of the increase is likely to be within the daily variation in journey times through the village. There is no change in journey times through Stansted Mountfitchet in the PM peak.

Summary

5.4.40. The VISSIM modelling shows that overall, the committed development vehicle trips are predicted to have small negative impacts on the operation of the B1051 through Stansted Mountfitchet in the AM and PM peak periods. Within the peak hours the maximum queue increases by 5 vehicles between the base and forecast year scenarios (i.e., the PM max queue increases from 13 to 18 vehicles). This is not expected to result in any significant operational issues.

5.5 SENSITIVITY TEST

5.5.1. On 24 August 2022 a Section 62A Planning Application was submitted for 130 dwellings at the Land to the South of Henham Road in Elsenham (REF: S62A/22/0007).

5.5.2. The development is forecast to generate 62 vehicle trips in the AM peak and 61 vehicle trips in the PM peak.

5.5.3. This application has not yet been determined, as such it has not been included in the 2027 baseline scenario. However, given the proximity of this development to the Land East of Station Road and the potential impact on the highway network, particularly through Stansted Mountfitchet, a sensitivity test has been undertaken.

5.5.4. The sensitivity test adds traffic generated by this development to the 2027 baseline flows described above.

5.5.5. Two additional scenarios have been assessed as a part of this sensitivity test. These are:

- 2027 Baseline (Sensitivity Test) (2027 baseline flows + traffic generated by the Land to the South of Henham Road); and
- 2027 Baseline with Development (Sensitivity Test) (2027 baseline flows + traffic generated by the Land to the South of Henham Road + development flows).

5.5.6. The results of the sensitivity test are attached in **Appendix P** and a summary is provided below. It should be noted that this sensitivity test only assesses the impact on the operation of the local highway network.

STANDALONE JUNCTION MODELLING SUMMARY

5.5.7. The results of the standalone modelling assessment predicted that all the junctions will continue to operate within theoretical design capacity in the 2027 sensitivity test baseline in both the AM and PM peaks, with minimal delays and insignificant queues. The exception is in the AM peak at the Coopers End Mini Roundabout where the junction is predicted to operate close to its design capacity (RFC 0.91) as such some queueing could be expected. A queue of up to 8 PCUs is predicted. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.75 and queue of close to 3 PCUs.

VISSIM MODELLING SUMMARY

5.5.8. The VISSIM modelling shows that overall, the committed development sensitivity test vehicle trips are predicted to have small negative impacts on the operation of the B1051 through Stansted Mountfitchet in the AM and PM peak periods. Within the peak hours the maximum queue increases by 9 vehicles between the base and forecast year scenarios (the AM maximum queue increases from 10 to 19 vehicles). This would not result in significant operational issues.

6 MULTI-MODAL TRAVEL DEMAND

6.1 INTRODUCTION

6.1.1. This section of the TA sets out the predicted multi-modal trip generation of the Proposed Development. This section then distributes and assigns the additional development generated trips to the local transport networks.

6.2 TRIP GENERATION

VEHICULAR TRIP GENERATION

6.2.1. To predict the vehicle trip generation of the Proposed Development the TRICS derived vehicular trip rates from the Transport Assessment for the Land to the Northwest of Henham Road, Elsenham (the consented Phase 1 development) (dated December 2017) have been adopted (Ref: outline planning UTT/17/3573/OP and appeal APP/C1570/W/19/3243744).

6.2.2. The vehicular trip rates adopted in the December 2017 TA were accepted previously by ECC and are therefore considered to provide a robust estimate of the likely vehicle trip generation from the development.

6.2.3. **Table 6-1** summarises the previously agreed and adopted AM and PM peak hour vehicular trip rates (trips per dwelling) as well as the number of vehicular trips expected to be generated by the Proposed Development.

Table 6-1 – Predicted AM (0800-0900) and PM (1700-1800) Peak Hour Vehicle Trip Generation

	AM Peak Hour			PM Peak Hour		
	Arrive	Depart	Total	Arrive	Depart	Total
Trip Rate per dwelling	0.104	0.392	0.496	0.341	0.194	0.535
Vehicle Trips (200 dwellings)	21	78	99	68	39	107

Source: Land to The North West Of Henham Road, Elsenham Transport Assessment dated December 2017

6.2.4. **Table 6-1** shows that the Proposed Development is predicted to generate 99 and 107 two-way vehicle movements in the AM and PM peak hours respectively.

MULTI-MODAL TRIP GENERATION

6.2.5. The 2011 Census Travel to Work mode share data for Elsenham has been used to derive the number of additional non-vehicular trips generated by the Proposed Development in the AM and PM peak hours.

6.2.6. Using the observed 2011 Census Travel to Work data is considered to provide a conservative estimate of the number of non-car trips generated by the Proposed Development as it does not take into account the impact of a Residential Travel Plan (RTP) on encouraging sustainable travel, or the fact that non-work related trips such as education and leisure journeys typically generate a higher proportion of walk, cycle and public transport use compared to work related journeys.

6.2.7. **Table 6-2** summaries the predicted number of trips generated by the Proposed Development by mode in the AM and PM peak hours.

Table 6-2 – Predicted AM (0800-0900) and PM (1700-1800) Peak Hour Trip Generation by Mode

Mode	2011 Census Mode Split	AM Peak Hour			PM peak Hour		
		Arrive	Depart	Total	Arrive	Depart	Total
Train	13%	4	13	17	12	7	18
Bus	1%	0	1	1	1	1	1
Taxi	0%	0	0	0	0	0	0
Motorcycle/Scooter	1%	21	78	99	68	39	107
Car/Van driver	76%						
Car/Van Passenger	5%	1	5	6	4	3	7
Bicycle	1%	0	1	1	1	1	1
Walk	3%	1	3	4	3	2	4
Total	**100%**	**27**	**102**	**129**	**89**	**50**	**139**

6.2.8. **Table 6.2** shows that the Proposed Development is predicted to generate an additional 18 two-way public transport trips in the AM peak and 19 two-way public transport trips in the PM peak. Of these the mahority are rail journeys, 17 in the AM peak and 18 in the PM peak. All other public transport trips will be undertaken by bus, 1 in the AM peak and 1 in the PM peak.

6.2.9. The Proposed Development is expected to generate a relatively low number of trips by active travel modes (4 trips on foot in the AM and PM peaks and 1 trip by cycle in the AM and PM peaks). However, as noted above, this is likely to be an underestimation as it is based on travel to work data and the opportunity for residents to walk to local facilities and services within Elsenham for non-work related journeys (e.g. to the primary school and early years facility that is being provided to the south of the Site as a part of the consented Phase 1 development).

TRIP DISTRIBUTION AND ASSIGNMENT

Vehicular Trip Assignment

6.2.10. The following approach has been adopted to distribute and assign vehicle trips to the local road network:

- **Step 1 Vehicle Trip Distribution** – Vehicle trips were distributed based on the 2011 Census Car Driver Travel to Work Destination Data from the Uttlesford 005 MSOA (which contains Elsenham and the surrounding villages). Vehicle trips have been distributed to MSOA's and smaller Output Areas for locations in close proximity to the Site; and
- **Step 2 Vehicle Trip Assignment** – Vehicle routes were identified from Elsenham to each of the MSOA's and Output Area destinations. Where multiple route options were available, vehicles were distributed between each route based on the following routing assumptions:
  - **Access to M11 Junction 8**: All vehicle trips will route from Elsenham via Hall Road-Thremhall Avenue or B1051-Church Road-Bury Loge Lane based on a 50/50 split;
  - **Access to Bishop Stortford**: All vehicle trips will route via Stansted Mountfitchet and the B1383 Pines Hill; and

- **Longer distance commuting**: Assumption majority of vehicles will use the strategic road network as an alternative to local routes.

6.2.11. The proportional splits between each available route to a destination have been informed by Google Map travel times in the AM peak hour. The routing to the M11 Junction 8 is assumed to use routes via Hall Road-Thremhall Avenue or B1051-Church Road-Bury Lodge Lane for the following reasons:

- The Hall Road - Thremhall Avenue - M11 route avoids routing through Stansted Mountfitchet and also provides direct access to the south facing free flow on-off slips at Junction 8 of the M11.
- The B1051 - Church Road - Bury Lodge Lane - M11 route also provides direct access to the free flow M11 south facing slips at Junction 8 of the M11, although routes via Grove Hill and the Lower Street / Church Road / Chapel Hill mini-roundabout in Stansted Mountfitchet.

6.2.12. Based on the above, it is considered that vehicles routing to Junction 8 of the M11 will use Bury Lodge Lane and Hall Road to access the M11 as both routes provide similar journey times. Both these routes provide direct access to the free flow south facing slips at Junction 8 of the M11, therefore avoiding queuing and delays associated with routes through the junction. These two routes are also considered to be the most attractive route for Elsenham residents to access the strategic motorway network as they avoid the need to route along Chapel Hill in Stansted Mountfitchet (west of the Lower Street / Church Road mini roundabout), the B1383 and A120 north of Bishop's Stortford.

6.2.13. All vehicle trips towards Bishop's Stortford and the surrounding area have been assigned to route through Stansted Mountfitchet via the B1051 and B1383 as this provides the most direct route. The adopted assignment approach therefore provides a robust highway impact assessment of the Proposed Development on central Stansted Mountfitchet.

6.2.14. Stansted Mountfitchet and the B1383 also provide the most direct and quickest route towards the A120 west.

6.2.15. This approach is consistent with the distribution and assignment of residential trips generated by the committed development at the Land to the Northwest of Henham Road, Elsenham (dated December 2017, reference UTT/17/3573/OP approved under appeal reference APP/C1570/W/19/3243744).

6.2.16. The distribution and assignment spreadsheet model along with development generated network assignment flow diagrams are provided in **Appendix Q**. A summary of the assigned AM and PM peak development generated vehicles trips on the local road is provided in **Table 6.3**.

Table 6-3 – Road Network Assignment Summary of Additional two-way vehicle movements

Location	Road	AM Peak Hour	PM Peak Hour
Elsenham	Old Mead Road	8	9
	New Road	1	1
	Henham Road (east of site access)	3	3
	Hall Road	34	36
	B1051 Stansted Road	54	58
Stansted Mountfitchet	High Lane	1	1
	Lower Car Park	3	2
	Church Road	13	14
	Chapel Hill	38	41
	Bentfield Road	2	2
Bishop's Stortford	B1383 Silver Street	36	39
	Bury Lodge Lane	13	13
	B1383 Stansted Road (approach to A120)	24	26
	A120 West (from B1383 roundabout)	14	15
	B1383 Stansted Road (into Bishop's Stortford)	10	11
Prior Wood Roundabout	Round Coppice Road	12	13
	A120 Westbound Off-slip	2	1
	M11 Junction 8 Eastbound Off-slip	2	6
	Dunmow Road	1	0
M11 Junction 8	M11 North On-slip	3	2
	M11 North Off-slip	1	3
	M11 South Free Flow Slip (Northbound)	4	13
	M11 South Free Flow Slip (Southbound)	15	7
	A120 (east of Stansted Airport)	5	6

6.2.17. **Table 6.3** shows that the main locations where the Proposed Development is predicted to increase network flows are:

- Elsenham – Hall Road and the B1051 Stansted Road;
- Stansted Mountfitchet – Church Road, Chapel Hill and B1383 Silver Street; and
- Bishop's Stortford – B1383 Stansted Road.

Public Transport Trip Assignment

6.2.18. All rail trips generated by the Proposed Development have been assigned to Elsenham Railway Station. This is because the railway station will be easily accessible on foot and by bicycle from the Proposed Development. It will therefore provide the most convenient location to access the rail network.

6.2.19. All bus trips generated by the Proposed Development are assumed to use the existing 7/7A service because it is the closest bus service to the Site and is the main bus route serving Elsenham, providing a direct connection to Bishops Stortford and Stansted Airport.

WALKING AND CYCLING TRIP ASSIGNMENT

6.2.20. The main local walking destinations are likely to be within Elsenham, including the shops and railway station. Given the relatively low number of additional pedestrian trips forecast to be generated by the Proposed Development a detailed route assignment has not been undertaken. However, the pedestrian impact assessment provided in **Section 7** considers whether safe pedestrian routes are available to and from the Proposed Development.

6.2.21. The main local cycling destinations are likely to be within Elsenham and the surrounding villages of Stansted Mountfitchet, Henham and Stansted Airport. Given the relatively low number of additional cycle trips forecast to be generated by the Proposed Development a detailed route assignment has not been undertaken. However, the cycle impact assessment provided in **Section 7** considers cycle routes are available to and from the Proposed Development.

6.3 SUMMARY

6.3.1. The adopted assignment approach for vehicular trips utilises 2011 Census Journey to Work Data, Google Maps peak period routing times at both local and strategic spatial levels to produce a robust assignment of vehicular trips on the local highway network.

6.3.2. A sense check has been carried out on the adopted assignment results by comparing the assignment from Elsenham with an assignment based on observed link flow data. A comparative analysis is provided in **Table 6-4** and provides a useful indication as to whether the adopted assignment approach is robust.

Table 6-4 – Assignment Sense Check

Origin	Direction	Adopted Assignment	2022 2-Way Link Flow	Diff
Henham Road	East	2%	30%	-28%
Hall Road	South	34%	19%	15%
Station Road	North/Northwest	10%	20%	-10%
B1051 Stansted Road	West/South	54%	31%	23%
Total		100%	100%	100%

6.3.3. **Table 6-4** compares the adopted assignment for routes from Elsenham to an assignment calculated based on observed AM peak hour outbound traffic flows at each of the roads listed above. The comparative analysis shows that the adopted assignment results in a higher proportion of trips being assigned to routes through Stansted Mountfitchet compared to an approach using existing traffic flow proportions. The adopted assignment will therefore provide a robust impact assessment of the additional development generated trips on the highway network within central Stansted Mountfitchet.

6.3.4. The adopted approach also results in a higher proportion of trips being assigned south via Hall Road compared to an approach using the 2022 traffic flow data. It is considered that the adopted approach is robust given that Hall Road provides a good quality route to the M11, A120 and Stansted Airport. A low number of trips have been assigned to Henham Road as it provides the main route to a number of small villages to the east and northeast of Elsenham which are not key destinations for peak hour trips.

7 TRANSPORT IMPACTS AND MITIGATION

7.1 INTRODUCTION

7.1.1. This section of the TA discusses the predicted transport impacts of the Proposed Development in the AM and PM peak hours. This section also identifies any mitigation required to mitigate the transport impacts of the Proposed Development.

7.2 PEDESTRIAN NETWORK

IMPACT

7.2.1. **Table 7-1** shows the number of additional pedestrian trips predicted to be generated by the Proposed Development in the AM and PM peak hours based on the application of the 2011 Census Travel to Work mode share. It should be noted that the trips shown in **Table 7-1** do not take into account Travel Plan targets or the potential for a higher proportion of journeys to be undertaken on foot given the good accessibility of everyday services and facilities in Elsenham.

Table 7-1 – Predicted AM (0800-0900) and PM (1700-1800) Peak Hour Pedestrian Trip Generation

Mode	2011 Census Mode Split	AM Peak Hour			PM peak Hour		
		Arrive	Depart	Total	Arrive	Depart	Total
Walk	3%	1	3	4	3	2	4

7.2.2. **Table 7-1** shows that the Proposed Development is predicted to generate 4 additional pedestrian trips in the AM and PM peaks.

7.2.3. The Proposed Development site will be well integrated with Elsenham with pedestrian access provided into the village via a pedestrian and cycle connection to Elsenham Railway Station. This will be delivered as a part of the consented Phase 1 development along Henham Road.

7.2.4. **Section 4** of the TA identified that a good network of footways are provided within Elsenham. It is therefore considered that future residents of the Proposed Development will have good access to existing local facilities and services within Elsenham including the local shops (High Street), recreation ground, doctors surgery and Elsenham Railway Station on foot.

7.2.5. The existing and proposed footways that provide access to / from the Site will be able to accommodate the additional pedestrian demand generate by the Proposed Development and offer a very comfortable level of service where pedestrians are able to walk at their own pace. Internally, the residential development will provide a pedestrian friendly and highly permeable layout, providing easy access to the Elsenham Railway Station to the west open space within the Site.

MITIGATION

7.2.6. Future residents will be encouraged to access local facilities and services on foot through the implementation of a RTP. A resident's welcome pack will be provided that shows local pedestrian routes, public rights of way and the local facilities within reasonable walking distance of the Site.

7.2.7. This will be supported further through the implementation of mitigation measures being delivered by the consented Phase 1 development, specifically:

- **Pedestrian improvements scheme along Henham Road between the primary access junction and existing primary school:** This scheme includes improvements to the existing pedestrian facilities, including a new pedestrian crossing on Henham Road at the primary access junction and a new 2.0 metre wide footway on the northern side of Henham Road between the Site's primary access and existing footway. This scheme will provide a safe pedestrian route from the Proposed Development main access towards Elsenham. This proposed pedestrian facility will benefit existing local residents in Elsenham who use the cricket field to the west of the primary access. A potential pedestrian and cycle access via Hailes Wood will provide an additional connection in the Proposed Development.
- **A direct walk and cycle connection between the Phase 1 Site and Elsenham Railway Station (noting that the Phase 2 development connects with this route):**This scheme will encourage future residents to use existing rail services.

7.3 CYCLE NETWORK

IMPACT

7.3.1. **Section 6** of the TA calculated the number of additional cycle trips predicted to be generated by the Proposed Development in the AM and PM peak hours. A summary of these trips is set out in **Table 7-2** below. The trips shown in **Table 7-2** do not take into account Travel Plan targets or the potential for a higher proportion of journeys to be undertaken by cycle given the good accessibility of everyday services and facilities in Elsenham.

Table 7-2 – Predicted AM (0800-0900) and PM (1700-1800) Peak Hour Cycle Trip Generation

Mode	2011 Census	AM Peak Hour			PM peak Hour		
		Arrive	Depart	Total	Arrive	Depart	Total
Cycle	1%	0	1	1	1	1	1

7.3.2. **Table 7-2** or the potential for a higher proportion of journeys to be undertaken by cycle given the good accessibility of everyday services and facilities in Elsenham.

7.3.3. Table 7-2shows that the Proposed Development is predicted to generate 1 additional cycle trip in the AM and PM peak hours. This level of increase will not result in a significant impact on the existing local road network.

MITIGATION

7.3.4. Future residents will be encouraged to access local destinations by cycle through the implementation of an RTP. A resident's welcome pack will be provided that shows local cycle routes and the local destinations within reasonable cycling distance of the Site.

7.3.5. This will be supported further through the implementation of mitigation measures being delivered by the consented Phase 1 development, specifically:

- The potential extension of the existing 30mph speed limit to a location east of the primary access junction.
- Introduction of a gateway traffic calming measure on Henham Road.

7.3.6. The improvement scheme being delivered by the consented Phase 1 development will reduce traffic speeds on Henham Road and create a safer cycling environment for cyclists travelling towards

Elsenham. In addition to the improvement scheme, a direct cycle connection will also be provided from the Proposed Development to Elsenham Railway Station.

7.4 PUBLIC TRANSPORT

IMPACT

7.4.1. **Section 6** of the TA calculated the number of additional bus and train trips predicted to be generated by the Proposed Development in the AM and PM peak hours. A summary of these trips is set out in **Table 7-3** below. The trips shown in **Table 7-3** do not take into account Travel Plan targets.

Table 7-3 – Predicted AM (0800-0900) and PM (1700-1800) Peak Hour Public Transport Trip Generation

Mode	2011 Census	AM Peak Hour			PM peak Hour		
		Arrive	Depart	Total	Arrive	Depart	Total
Train	12%	4	13	17	12	7	18
Bus	1%	0	1	1	1	1	1

7.4.2. The Proposed Development is predicted to generate an additional 17 and18 rail trips in the AM and PM peak hours respectivly. The Proposed Developmpent is also expected to generate a single bus trip in the AM and PM Peaks.

7.4.3. **Section 4** of the TA identified that Elsenham is currently served by route 7/7A that typically provides 1 bus per hour. Based on the additional patronage forecast shown in **Table 7-3**, it is likely that the additional generated bus trips will be able to be accommodated on the existing service.

7.4.4. No information is available on the existing capacity of rail services at Elsenham Railway Station. However it is anticipated that rail passenger trips generated by the Proposed Developmet can be accommodated by existing services and the additional demand will not have a severe impact on existing users.

MITIGATION

7.4.5. To maximise the attractiveness of Elsenham Railway Station to future residents a direct walk and cycle connection will be provided between the Proposed Development and Elsenham Railway Station (via the consented Phase 1 development). This will provide a high quality, segregated connection between Elsenham Railway Station and the Proposed Development.

7.4.6. The proposed connection will provide a direct link to the railway station, encouraging future rail users to access the station on foot and by bicycle rather than by private car.

7.4.7. Future residents will be encouraged to access local destinations by rail and bus through the implementation of an RTP. A resident's welcome pack will be provided that shows the walk and cycle access to the station and bus stops along with details on the locations that can be accessed by rail and bus and where timetable information can be obtained.

7.4.8. The developer will also provide a contribution to ECC via a S106 Planning Obligation to fund the improvement of local bus services in Elsenham.

7.4.9. This will be supported further through the implementation of mitigation measures being delivered by the consented Phase 1 development, specifically:

- **Delivery of two new bus stops on Henham Road, in close proximity to the primary access junction**: This scheme will improve the accessibility of existing bus services in Elsenham. This will support the RTP measure to encourage more bus patronage.

7.5 HIGHWAY NETWORK

7.5.1. The impact of the vehicle trips generated by the Proposed Development on the operation of the local highway network has been assessed for a 2027 future year. The assigned development generated vehicle trips have been combined with the 2027 baseline and are shown on the network flow diagram provided in **Appendix L**.

NETWORK LINK FLOW IMPACT

7.5.2. The impact on link flows of vehicle trips generated by the Proposed Development is summarised in **Table 7-4.**

Table 7-4 – AM and PM Peak Hour Two-Way Elsenham Link Flow Comparative Assessment

Location	Road	AM Peak Hour			PM Peak Hour		
		2027 Base	2027 + Development	% Change	2027 Base	2027 + Development	% Change
Elsenham	Old Mead Road	411	420	2%	383	392	2%
	Henham Road (east of site access)	444	446	0%	322	324	1%
	Hall Road	517	551	7%	514	551	7%
	B1051 Stansted Road	692	746	8%	701	759	8%
Stansted Mountfitchet	High Lane	440	441	0%	363	364	0%
	Lower Street	1041	1093	5%	1009	1066	6%
	Church Road	844	856	1%	792	806	2%
	Chapel Hill	720	758	5%	780	821	5%
	Bentfield Road	269	271	1%	275	277	1%
	B1383 Silver Street	1553	1589	2%	1646	1685	2%
Stansted Airport	Hall Road	787	821	4%	767	804	5%
	Parsonage Road	607	610	0%	564	567	1%
	Link to / from Coopers End Roundabout	973	1004	3%	935	968	4%

7.5.3. **Table 7-4** shows that in Elsenham, the Proposed Development will have the largest impact on link flows along Hall Road and B1051 Stansted Road in both the AM and PM peaks. It also shows that in Stansted Mountfitchet, the Proposed Development will result in a 5% to 6% increase in two-way link flows on Chapel Hill and Lower Street in the AM and PM peak hour. At Stansted Airport, the Proposed Development will result in a 4% to 5% increase in two-way link flows on the link to/from Coopers End Roundabout and Hall Road. On the rest of the network the development will result in a 0% to 2% increase in link flows.

7.5.4. In summary, **Table 7-4** shows that the main traffic impacts of the Proposed Development to be at junctions along B1051 in Elsenham, on Lower Street and Chapel Hill in Stansted Mountfitchet and at the Coopers End Mini Roundabout at Stansted Airport.

7.6 2027 BASELINE WITH DEVELOPMENT

7.6.1. The performance of the highway network with the Proposed Development has been assessed using Junctions 10 and the Stansted Mountfitchet VISSIM micro-simulation model.

STANDALONE JUNCTION MODELLING

7.6.2. The operation of the junction listed below have been assessed using the 2027 baseline data to estimate the capacity at these junctions:

- Site Access Priority Junction.
- High Street Double Mini Roundabout.
- Hall Road / Henham Road Priority Junction.
- Coopers End Mini Roundabout.

7.6.3. The ARCADY and PICADY modules of Junctions 10 were used to assess the junctions listed above.

7.6.4. The results of the Junctions 10 capacity assessment provide an RFC figure, junction delay and a queue length. The RFC model output is typically used to assess the performance of each arm. The DMRB industry-standard 0.85 RFC threshold is generally accepted for new junctions, with an RFC of up to 1.00 generally accepted for the operation of existing junctions in peak periods. The RFC determines how a particular arm of the junction is operating:

- An RFC of 0.85 or less - the relevant arm of the junction is considered to be operating within its design capacity with minimal delay.
- An RFC greater than 0.85 and less than 1.0 - the junction is operating close to its design capacity, and as such, some queues and delays may start to occur.
- An RFC greater than 1.0 - the arm of the junction is operating at or exceeding its design capacity and is likely to result in longer delays, and queues will start to form.

7.6.5. The results of the standalone junction modelling are summarised below. The change from the 2027 baseline is shown in brackets. The full capacity assessment results are attached in **Appendix M.**

Site Access Priority Junction

7.6.6. The results of the Site access capacity assessment using Junctions 10 is summarised in **Table 7-5**.

Table 7-5 – Site Access

Stream	Description	AM Peak Hour			PM Peak Hour		
		Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Stream B-C	Site Access - Head Road East	0.01 (+0.00)	8.74 (+1.43)	0.00 (+0.00)	0.01 (+0.01)	7.14 (+0.36)	0.00 (+0.00)
Stream B-A	Site Access - Head Road North	0.51 (+0.18)	16.41 (+4.64)	1.00 (+0.50)	0.25 (+0.09)	10.44 (+1.31)	0.30 (+0.10)
Stream C-AB	Head Road East - Site Access	0.00 (+0.00)	5.62 (+0.06)	0.00 (+0.00)	0.01 (+0.00)	5.95 (+0.20)	0.00 (+0.00)

7.6.7. As illustrated in **Table 7-5** above, the Site Access is predicted to operate within its theoretical design capacity in the 2027 with development scenario in both the AM and PM peaks, with minimal delays and insignificant queues.

7.6.8. In the AM peak hour, the junction is predicted to operate with a maximum RFC of 0.51 with queue of 1 PCU predicted. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.25 with queue of less than 1 PCU.

7.6.9. In the AM peak the Proposed Development is expected to result in a maximum increase in RFC of 0.18 and less than 1 PCU increase in queue length. In the PM peak, the Proposed Development is expected to result in a maximum increase in RFC of 0.09 and less than 1 PCU increase in queueing.

7.6.10. The change in the levels of queuing and delay with the Proposed Development in the AM and PM peak is small and will have an imperceptible impact on existing road users.

High Street Double Mini Roundabout

7.6.11. The results of the High Street Double Mini Roundabout capacity assessment using Junctions 10 is summarised in **Table 7-6.**

Table 7-6 – High Street Double Mini Roundabout

Junction	Stream	Description	AM Peak Hour			PM Peak Hour		
			Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Roundabout 1	Arm 1	High Street (Entry)	0.41 (+0.01)	6.89 (+0.14)	0.70 (+0.00)	0.52 (+0.04)	8.58 (+0.76)	1.10 (+0.20)
	Arm 2	Robinhood Road	0.08 (+0.01)	5.52 (+0.06)	0.10 (+0.00)	0.05 (+0.00)	5.46 (+0.20)	0.10 (+0.00)
	Arm 3	Stansted Road (Entry)	0.53 (+0.06)	8.31 (+0.77)	0.00 (+0.00)	0.46 (+0.03)	7.19 (+0.30)	0.00 (+0.00)
Roundabout 2	Arm 1	Stansted Road	0.38 (+0.02)	9.65 (+0.62)	0.60 (+0.00)	0.32 (+0.01)	8.34 (+0.40)	0.50 (+0.10)
	Arm 2	High Street	0.53 (+0.05)	7.13 (+0.68)	1.10 (+0.20)	0.43 (+0.03)	5.90 (+0.25)	0.70 (+0.00)
	Arm 3	Station Road	0.45 (+0.05)	6.20 (+0.49)	0.00 (+0.00)	0.35 (+0.02)	5.21 (+0.18)	0.00 (+0.00)

7.6.12. As illustrated in **Table 7-6** above, the High Street Double Mini Roundabout is predicted to continue to operate within its theoretical design capacity in the 2027 with development scenario in both the AM and PM peaks, with minimal delays and insignificant queues.

7.6.13. In the AM peak hour, the junction is predicted to operate with a maximum RFC of 0.53 with a maximum queue of 1 PCU. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.46 with a maximum queue of 1 PCU.

7.6.14. In the AM peak the Proposed Development is expected to result in a maximum increase in RFC of 0.06 and less than 1 PCU increase in queueing. In the PM peak, the Proposed Development is expected to result in a maximum increase in RFC of 0.04 and less than 1 PCU increase in queueing.

7.6.15. The change in the levels of queuing and delay with the Proposed Development in the AM and PM peak is small and will have an imperceptible impact on existing road users.

Hall Road / Henham Road Priority Junction

7.6.16. The results of the Hall Road / Henham Road Priority Junction capacity assessment using Junctions 10 is summarised in **Table 7-7.** As the junction is not a standard T-junction, it has been modelled as three separate T-junctions to provide the best estimation of the junction's operation and capacity.

Table 7-7 – Hall Road / Henham Road Priority Junction

Junction	Stream	Description	AM Peak Hour			PM Peak Hour		
			Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Hall Road - High Street - Henham Road	B-AC	Hall Road - High Street	0.30 (+0.01)	10.02 (+0.34)	0.40 (+0.00)	0.41 (+0.00)	10.86 (+0.21)	0.70 (+0.00)
	C-AB	High Street - Hall Road	0.41 (+0.01)	9.48 (+0.24)	0.80 (+0.00)	0.27 (+0.00)	7.29 (--0.05)	0.40 (+0.00)
Hall Road Slip - Hall Road	B-AC	Hall Road Slip - Hall Road South	0.26 (+0.05)	8.32 (+0.52)	0.40 (+0.10)	0.14 (+0.03)	6.86 (+0.18)	0.20 (+0.10)
	C-AB	Hall Road South - Hall Road Slip	0.12 (+0.01)	6.66 (+0.05)	0.10 (+0.00)	0.21 (+0.04)	6.75 (+0.23)	0.30 (+0.10)
Hall Road Slip - High Street - Henham Road	B-AC	Hall Road Slip - High Street	0.19 (+0.03)	11.81 (+0.85)	0.20 (+0.00)	0.31 (+0.07)	12.40 (+1.49)	0.40 (+0.10)
	C-AB	High Street - Hall Road Slip	0.00 (+0.00)	0.00 (+0.00)	0.00 (+0.00)	0.00 (+0.00)	0.00 (+0.00)	0.00 (+0.00)

7.6.17. As illustrated in **Table 7-7** above, the Hall Road / Henham Road Priority Junction is predicted to operate within its theoretical design capacity in the 2027 with development scenario in both the AM and PM peaks, with minimal delays and insignificant queues.

7.6.18. In the AM peak hour, the junction is predicted to operate with a maximum RFC of 0.40 with queue of less than 1 PCU predicted. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.41 with queue of less than 1 PCU.

7.6.19. In the AM peak the Proposed Development is expected to result in a maximum increase in RFC of 0.05 and less than 1 PCU increase in queue length. In the PM peak, the Proposed Development is expected to result in a maximum increase in RFC of 0.07 and less than 1 PCU increase in queueing.

7.6.20. The change in the levels of queuing and delay with the Proposed Development in the AM and PM peak is small and will have an imperceptible impact on existing road users.

Coopers End Mini Roundabout

7.6.21. The results of the Coopers End Mini Roundabout capacity assessment using Junctions 10 is summarised in **Table 7-8**.

Table 7-8 – Coopers End Mini Roundabout

Stream	Description	AM Peak Hour			PM Peak Hour		
		Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)	Max RfC	Max Delay (PCU/Secs)	Max Queue (PCU)
Arm A	Hall Road	0.92 (+0.05)	58.28 (+15.48)	8.50 (+2.60)	0.68 (+0.02)	18.92 (+1.30)	2.10 (+0.20)
Arm B	Parsonage Road	0.47 (+0.01)	8.28 (+0.29)	0.90 (+0.10)	0.37 (+0.01)	6.34 (+0.11)	0.60 (+0.00)
Arm C	Coopers End Roundabout Access	0.55 (+0.01)	11.37 (+0.24)	1.20 (+0.00)	0.76 (+0.03)	20.65 (+2.50)	3.00 (+0.40)

7.6.22. As illustrated in **Table 7-8** above, the Coopers End Mini Roundabout is predicted to continue to operate within its theoretical design capacity in the 2027 sensitivity test with development scenario in both the AM and PM peaks.

7.6.23. With the exception of Hall Road (Arm A) in the AM peak, minimal delays and insignificant queues are forecast on all arms.

7.6.24. In the AM peak Hall Road (Arm A) is forecast to operate close to its design capacity with an RFC 0.92 and queue of 9 PCUs. The maximum delay per PCU is also forecast to increase by 16 seconds (58 seconds).

7.6.25. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.76 and queue of 3 PCUs.

7.6.26. In the AM peak the Proposed Development is expected to result in a maximum increase in RFC of 0.05 and 3 PCU increase in queue length. In the PM peak, the Proposed Development is expected to result in a maximum increase in RFC of 0.03 and less than 1 PCU increase in queueing.

7.6.27. Whilst the Proposed Development does result in a small increase in the level of delay on Hall Road in the AM peak (16 seconds), this is likely to be within normally experienced daily variation. As such it is considered that the Proposed Development will have an imperceptible impact on existing road users in the AM and PM peaks.

Summary

7.6.28. The results of the standalone junction modelling demonstrate that the existing junctions can accommodate the additional AM and PM peak hour development generated vehicle trips. All the assessed junctions are predicted to continue to operate within capacity with low levels of delay and queuing. As such no junction capacity improvements are required at these junctions to mitigate the impact of the Proposed Development.

VISSIM MICRO-SIMULATION MODEL – STANSTED MOUNTFITCHET

7.6.29. The development trips were test trips were loaded into the micro-simulation model in addition to the 2027 base flows. The three model scenarios set up for both the AM and PM peaks are summarised in **Table 7-9**.

Table 7-9 – Forecast Models

Model Name	Code (Graph Legend)	Description
2022 Base	2022	2022 validated base model
2027 Reference Case	2027+C	2022 base model + committed developments
2027 With Development	2027+C+D	2022 base model + committed developments + trips associated with 200-unit Proposed Development

OVERALL NETWORK PERFORMANCE

7.6.30. The average time a vehicle spends in the network, average time per mile, average speed and average delay per vehicle has been obtained for each model scenario. The results are shown in **Table 7-9** for the AM and PM peaks respectively.

7.6.31. The Proposed Development trips were loaded into the VISSIM micro-simulation model in addition to the committed development flows. The with development model results (2027+C+D) have been compared to the 2027 reference case (2027+C) to identify the network performance impact of the Proposed Development as shown in **Table 7-10.**

Table 7-10 – Network Performance Indicators

Network Statisitic	AM Peak				PM Peak			
	2022	2027+C	2027+C +D	Change	2022	2027+C	2027+C +D	Change
Average Time (s) / Vehicle	130	140	147	+7	128	129	133	+4
Average Time (s) / Mile	190	190	196	+6	204	196	200	+4
Average Speed (mph)	19	19	18	-1	18	18	18	0
Average Delay / Vehicle (s)	44	49	56	+7	47	45	48	+3

7.6.32. The development is forecast to increase the average journey time per vehicle in the AM peak by an extra 7 seconds, from an average journey time of 147 seconds in the 2027 with development scenario to 140 seconds in the 2027 reference case scenario.

7.6.33. In the PM peak, the increase in average journey time per vehicle is 4 seconds, from an average journey time of 129 seconds in the 2027 reference case to 133 seconds in the 2027 with development scenario.

7.6.34. The impacts are considered minimal and unlikely to be noticeable from the variation inherent in day-to-day traffic flows and journey times.

MAXIMUM QUEUE LENGTHS

7.6.35. The maximum queue lengths recorded for each model scenario have been logged and are summarised in **Table 7-11** and **Table 7-12** for the AM and PM peaks respectively. The maximum queue lengths compare the worst-case queues recorded across the three assessment scenarios. It should be recognised that the maximum queues are not necessarily a common occurrence and may feature for a short period in a single iteration, and for this reason they do not represent the typical queue, but a worst case. The maximum queue length is given in metres and vehicles. An average vehicle is often considered to be approximately 6 metres in length so a 60 metre queue represents in the region of 10 vehicles.

Table 7-11 – Maximum Queue Length (m) Record during the AM Peak

Junction	Arm	2022	2027+C	2027+C+D	Change (m)	Change (Veh)
Junction 4 - Grove Hill signalised junction	41 - J4 - Lower Street LT	33.3	33.7	43.7	+10	+2
	42 - J4 - Lower Street RT	36.3	35.8	45.8	+10	+2
	43 - J4 - B1051 (N) RT	5.6	14.6	14.1	-0.5	0
	44 - J4 - B1051 (S) Signal Stopline	48.5	64.0	60.4	-3.6	0
	45 - J4 - B1051 (N) Signal Stopline	29.6	23.3	31.5	+8.2	+1
	46 - Grove Hill (2nd queue)	109.7	92.8	108.5	+15.7	+3
Chapel Hill / Church Road roundabout Junction 5 - Chapel Hill roundabout	51 - J5 - B1051 (N)	54.8	60.8	69.8	+9	+2
	52 - J5 - Castle	1.6	2.1	2.1	0	0
	53 - J5 - Church Road	51.7	70.4	65.3	-5.1	0
	54 - J5 - Station Road LT	2.0	3.4	4.4	+1	0
	55 - J5 - Station Road RT	1.1	1.7	2.2	+0.5	0
	56 - J5 - Chapel Hill	58.5	69.0	78.5	+9.5	+2
Cambridge Road / Chapel Hill	101 - J10 - Cambridge Road (N) RT	10.9	17.8	43.1	+25.3	+4
	102 - J10 - Chapel Hill LT	58.3	87.3	106.0	+18.7	+3
	103 - J10 - Chapel Hill RT	24.5	29.1	25.9	-3.2	0
	104 - J10 - Silver Street RT	59.6	79.8	118.7	+38.9	+7
	105 - J10 Bentfield Road LT	12.7	12.9	19.1	+6.2	+1
	106 - J10 Bentfield Road RT	14.3	13.9	20.1	+6.2	+1
Chapel Hill	991 - Chapel Hill (E)	74.0	96.1	99.8	+3.7	+1
	992 - Chapel Hill (W)	89.3	110.6	161.1	+50.5	+9

7.6.36. **Table 7-11** shows that in the AM peak hour, the maximum recorded queue length for each junction within the VISSIM model network does not increase by more than 51 metres (9 vehicles). The locations where the impact of the additional development generated vehicle trips is predicted to be greatest are:

- Chapel Hill western approach to the on-street parked vehicles section – AM queue increases by 51m (+ 9 vehicles) and
- Silver Street right turn onto Chapel Hill – AM queue increases by 39m (+ 7 vehicles).

7.6.37. In these locations the maximum queue lengths in the reference case scenario are expected to be amongst the longest in the network – 111m (19 vehicles) on Chapel Hill westbound and 80m (13 vehicles) at the Silver Street right turn – so these increases in maximum queue length are not considered significant in comparison to the maximum queue recorded in the reference case scenario. It should also be noted that these queues tend to quickly dissipate and therefore result in limited increase in journey times and delays, as discussed in the sections below.

7.6.38. Elsewhere in the network the results show that in the AM weekday period the additional development generated vehicle trips is expected to cause either very small or no increases to the

maximum queue lengths which would not result in a severe impact on the operation of the local highway network.

Table 7-12 – Maximum Queue Length Record during the PM Peak

Junction	Arm	2022	2027+C	2027+C+D	Change (m)	Change (Veh)
Junction 4 - Grove Hill Signalised Junction	41 - J4 - Lower Street LT	12.9	13.1	16.1	+3	+1
	42 - J4 - Lower Street RT	15.5	16.0	19.2	+3.2	+1
	43 - J4 - B1051 (N) RT	2.8	2.8	3.9	+1.1	0
	44 - J4 - B1051 (S) Signal Stopline	51.6	65.5	66.7	+1.2	0
	45 - J4 - B1051 (N) Signal Stopline	25.9	23.3	25.0	+1.7	0
	46 - Grove Hill (2nd queue)	114.2	57.7	60.2	+2.5	0
Junction 5 - Chapel Hill Roundabout	51 - J5 - B1051 (N)	29.1	42.1	42.4	+0.3	0
	52 - J5 - Castle	6.4	8.6	9.6	+1	0
	53 - J5 - Church Road	42.0	46.7	51.5	+4.8	+1
	54 - J5 - Station Road LT	14.0	13.6	19.6	+6	+1
	55 - J5 - Station Road RT	5.3	5.2	5.2	0	0
	56 - J5 - Chapel Hill	65.5	82.0	81.5	-0.5	0
Junction 10 - Cambridge Road / Chapel Hill Priority Junction	101 - J10 - Cambridge Road (N) RT	21.5	17.7	29.3	+11.6	+2
	102 - J10 - Chapel Hill LT	18.9	35.6	31.0	-4.6	0
	103 - J10 - Chapel Hill RT	35.2	39.6	50.1	+10.5	+2
	104 - J10 - Silver Street RT	141.5	150.3	169.6	+19.3	+4
	105 - J10 Bentfield Road LT	15.4	15.1	18.1	+3	+1
	106 - J10 Bentfield Road RT	16.0	16.0	18.8	+2.8	0
Chapel Hill	991 - Chapel Hill (E)	60.3	85.4	97.8	+12.4	+2
	992 - Chapel Hill (W)	75.6	103.4	118.0	+14.6	+3

7.6.39. **Table 7-12** shows that in the PM peak, the maximum recorded queue length for each location does not increase by more than 15 metres (3 vehicles). The most significant increases in maximum queue length between the with and without Proposed Development scenarios occurred in these locations:

- Chapel Hill western approach to the on-street parked vehicles section – queue increases by 15m (+ 3 vehicles); and
- Silver Street right turn onto Chapel Hill – queue increases by 19m (+ 4 vehicles).

7.6.40. Similarly to the AM peak, the maximum queues expected in these locations in the reference case scenario are expected to be longer than elsewhere in the network – 118m (20 vehicles) on Chapel Hill westbound and 170m (29 vehicles) at the Silver Street right turn – so these increases in maximum queue length of 3 vehicles and 4 vehicles respectiviely are considered relatively small and lead to limited increases in journey times and delays, as discussed in the sections below.

7.6.41. The changes to maximum queue lengths expected at other locations on the local highway network in the PM peak from the additional development generated vehicle trips are either very small or does

not change. As such the change in maximum queue lengths in the PM peak period will not result in a severe impact on the operation of the local highway network.

AVERAGE JOURNEY TIMES

7.6.42. **Table 7-13** shows the average journey time between Grove Hill (at Gorsefield school) and the Silver Street / Mill Side junction via Chapel Hill. For the westbound direction, the Grove Hill end of the section has been extended up to the M11 bridge to capture the additional delay caused by queuing vehicles on Grove Hill.

7.6.43. The journey times for this route through Stanstead Mountfitchet have been collated for each model scenario and are presented in **Table 7-13**. It shows a breakdown of the average journey time in each of the sections through this route for the AM and PM peaks, as well as the addition of journey time associated with the Proposed Development.

Table 7-13 – Average Journey Times Record in Seconds

Route	AM Peak				PM Peak			
	2022	2027 +C	2027 +C+D	Change (2027+C +D minus 2027+C)	2022	2027 +C	2027 +C+D	Change (2027+C +D minus 2027+C)
101 - B1051 (SB): Farm to Lower Road turning	88	50	54	**+4**	172	58	61	**+3**
102 - B1051 (SB): Lower Rd turning to Chapel Hill Rdbt	20	23	25	**+2**	17	19	20	**+1**
103 - B1051 (WB): Chapel Hill Rdbt to Crafton Green	87	92	96	**+4**	86	92	95	**+3**
104 - Silver Street (SB): Crafton Green to Blythwood Gardens	30	30	30	**0**	30	30	30	**0**
105 - Silver Street (NB): Blythwood Gardens to Crafton Green	43	48	54	**+6**	47	51	54	**+3**
106 - B1051 (EB): Crafton Green to Chapel Hill Rdbt	95	126	138	**+12**	81	99	104	**+5**
107 - B1051 (NB): Chapel Hill Rdbt to Lower Rd turning	32	39	39	**0**	27	30	31	**+1**
108 - B1051 (NB): Lower Rd turning to Farm	29	30	30	**0**	30	31	31	**0**
200 - Elsenham to Stansted Mountfitchet	123	125	127	**+2**	126	118	119	**+1**

7.6.44. The most significant increase in average journey time in the AM peak along this route is concentrated on Chapel Hill eastbound (journey time section 106), mostly due to the existing on-

street parking. The additional traffic from the Proposed Development would result in an increase in average journey time of 12 seconds in this location. This is higher than the increase in average journey time of 7 seconds per vehicles which is expected across the whole network in the AM peak (average journey time increase of vehicles travelling through the network by all routes), as shown in **Table 7-10**, but nevertheless is unlikely to be perceptible to the average driver.

7.6.45. Elsewhere along this route in the AM peak the increases in journey times are not expected to be greater than 6 seconds, which is less than the network average, and is not likely to be perceptible to the average driver.

7.6.46. The most significant increase in average journey time in the PM peak along this route is also concentrated on Chapel Hill eastbound (journey time section 106). The additional traffic from the Proposed Development is expected to result in an increase in average journey time of 5 seconds in this location. This is only 1 second longer than the increase in average journey time of 4 seconds per vehicle which is expected across the whole network in the PM peak, as shown in **Table 7-10**, and is a relatively small increase which is not likely to be perceptible to the average driver.

7.6.47. Along the other sections of this route in the PM peak the increases in journey time between the reference case scenario and the Proposed Development scenario are not expected to be greater than 3 seconds which is not likely to be perceptible to the average driver.

7.6.48. A significant decrease in average journey time is expected for journey time section 101 between the base year scenario and the reference case scenario in both the AM and PM peak. This change is associated with the improvements to the operation of the signals on Grove Hill which is expected to result in the improvement to the performance of the network in this location. Further detail on this improvement scheme is provided in **Section 5.2**.

7.6.49. Overall the effect of the additional traffic from the Proposed Development is not expected to cause a significant increase in journey time in either the westbound or eastbound direction in either the AM or PM peak and would not result in a perceptible impact on drivers travelling between Elsenham and Bishops Stortford.

AVERAGE DELAY

7.6.50. **Table 7-14** shows the average delay per approach by scenario. The delay shown in the table is the average delay recorded every 15-minute interval weighted by turning proportion and averaged over all simulation runs.

Table 7-14 – Average delay (s) per approach

Junction	Arm	AM Peak				PM Peak			
		2022	2027+C	2027+C+D	Change (2027+C+D minus 2027+C)	2022	2027+C	2027+C+D	Change (2027+C+D minus 2027+C)
Junction 4 - Grove Hill Signalised Junction	Grove Hill	85.8	48.4	53.9	+6	170.2	50.9	54.5	+4
	Lower Street (S)	21.4	28.8	29.3	+1	16.5	20.8	21.3	+1
	Lower Street (N)	13.4	17.1	20.7	+4	6.6	8	8.4	0
Junction 5 - Chapel Hill Roundabout	Lower Street	12.3	15.4	16.9	+2	10.6	13.5	15.6	+2
	Station Car Park	15.9	20.3	22.3	+2	15	20.9	22.9	+2
	Church Road	15.7	20.4	24.2	+4	29.1	33.1	44.3	+11
	Station Road	10.9	12.5	13.5	+1	9.7	11.7	11.6	0
	Chapel Hill	8.2	10.6	12.4	+2	5.4	7.7	8.3	+1
Junction 10 - Cambridge Road / Chapel Hill / Silver Street / Bentfield Road Priority Junction	Cambridge Road	15.5	15.7	17.2	+2	13.2	13.3	13.8	+1
	Chapel Hill	12.3	16.1	17	+1	8.5	9.5	10.5	+1
	Silver Street	14.5	17.9	23.9	+6	19.8	24.7	26.9	+2
	Bentfield Road	8.9	10.2	13.4	+3	10.6	11.5	13.6	+2
Chapel Hill	Westbound	29	31	33.1	+2	33.7	38.3	40.4	+2
	Eastbound	43.6	69.4	80.1	+11	30.8	43.1	46.6	+4

7.6.51. **Table 7-14** demonstrates that the level of delay experienced at most of the approaches to the junctions remains similar between the reference case and with development scenarios in the AM and PM peak.

7.6.52. The most significant increase occurs at Chapel Hill eastbound in the AM peak, where the average delay is also expected to increase by 11 seconds and at Junction 5 Church Road Roundabout where average delay is expected to increase by 11 seconds on the Church Road arm in the PM Peak.

7.6.53. Generally, delay across the network is not significant post development, as such the impact of the development proposals on the highway network will not be severe.

Summary

7.6.54. The results of the VISSIM micro-simulation model demonstrate that the additional development generated trips are predicted to result in minor increases in queuing and delay on the main route through Stansted Mountfitchet when compared to the 2022 baseline and 2027 baseline conditions. Therefore overall, the impact of the development traffic on the B1051 through Stansted Mountfitchet

is considered to be minimal, and as such so no mitigation in the form of highway capacity enhancements are proposed in Stansted Mountfitchet.

7.7 SENSITIVITY TEST

7.7.1. As noted in Section 5.5, a sensitivity test has been undertaken that adds committed development vehicle trips generated by the Land to the South of Henham Road in Elsenham to the 2027 baseline flows. The results of this sensitivity test are provided within **Appendix P** with a summary of the results provided below.

STANDALONE MODELLING ASSESSMENT

7.7.2. The results of the standalone modelling assessment predicted that all the junctions will continue to operate within theoretical design capacity in the 2027 sensitivity test baseline in both the AM and PM peaks, with minimal delays and insignificant queues. The exception is in the AM peak at the Coopers End Mini Roundabout where the junction is predicted to operate close to its design capacity (RFC 0.95) with a queue of up to 11 PCUs forecast. In the PM peak hour, the junction is predicted to operate with a maximum RFC of 0.79 and queue of close to 4 PCUs.

VISSIM MODELLING RESULTS

7.7.3. The results of the Stansted Mountfitchet VISSIM micro-simulation model show that the assessed network can accommodate the additional development generated vehicle trips without resulting in significant increases in congestion or delay. As such no physical highway improvement works are required to mitigate the impact of the additional vehicle movements through Stansted Mountfitchet.

8 CONCLUSION

8.1.1. This TA has been prepared to accompany an outline planning application for up to 200 dwellings on Land east of Station Road, Elsenham in Essex.

8.1.2. The scope of this TA has been discussed and agreed with officers of Essex County Council (ECC).

8.1.3. The primary access to the site is via a new priority junction on Henham Road that will be delivered as a part of the consented Phase 1 development to the south of the site. This will provide access to the Site for all modes of transport.

8.1.4. A pedestrian and cycle connection will also be provided between the Site and Elsenham Railway Station. This connection will also be delivered as part of the consented Phase 1 devleopment

8.1.5. The location of the Site provides plenty of opportunities for future residents to undertake local trips on foot and by cycle with local shops, Elsenham Church of England Primary School and Elsenham Railway Station all within a reasonable walking and cycling distance of the Site. The Site is also well connected to the primary school and early years education facility that will be delivered as a part of the consented Phase 1 development.

8.1.6. The consented Phase 1 development will deliver a pedestrian improvement scheme along Henham Road and provide two new bus stops close to the Site's primary access on Henham Road. This will enable local trips to be made on foot and by cycle and improve the accessibility of local bus services. However to further support and improve public transport services in Elsenham, Bloor Homes Ltd and Gillian Smith, John Robert Carmichael Smith, Robert Giles Russell Smith and Andrew James Smith will provide a contribution to ECC, via a S106 planning obligation, to the improvement of local bus services in Elsenham.

8.1.7. The Proposed Development is situated a short distance from Elsenham Railway Station which provides a viable and attractive travel option for destinations towards Cambridge and south towards London.

8.1.8. The existing local road network is relatively lightly trafficked with a good safety record. A robust highway impact assessment of the Proposed Development has been undertaken which includes detailed consideration of committed development trips on the local road network.

8.1.9. The 2027 standalone junction capacity assessments and Stansted Mountfitchet VISSIM models highway impact assessments show that the existing local road network can accommodate the additional vehicle trip generation from the Proposed Development without resulting in significant increases in congestion, delays and journey times for all the with development scenarios, including the sensitivity test with the additional flows from the Land to the South of Henham Road.

8.1.10. The assessment provided in this TA shows that the Proposed Development trips will not have a severe impact on the operation of the existing local pedestrian, cycle, public transport and road networks.

8.1.11. A Framework Residential Travel Plan has also been prepared for the Proposed Development and should be read in conjunction with this TA. This includes measures to further encourage sustainable travel to and from the Proposed Development by residents and visitors.

8.1.12. In conclusion, this TA demonstrates that the Proposed Development conforms to the requirements of national and local transport related planning policies. As such there should be no reason on grounds of highways and transportation that the Proposed Development is refused permission.

Appendix A

SCOPING CORRESPONDENCE

AGENDA & MEETING NOTES

PROJECT NUMBER	Project number: 70084697	**MEETING DATE**	11 November 2021
PROJECT NAME	Project name: Elsenham 2	**VENUE**	Teams virtual meeting
CLIENT	Client: Bloor Homes	**RECORDED BY**	GC
MEETING SUBJECT	Meeting subject: Transport scoping		

PRESENT	Attendees: [redacted] – ECC [redacted] Bloor Homes [redacted] – Bloor Homes [redacted] Carter Jonas [redacted] – WSP [redacted] - WSP
	Apologies: None
DISTRIBUTION	As above
CONFIDENTIALITY	**Internal**

ITEM	DISCUSSION	ACTION	DUE
1	The meeting was arranged to discuss the transport matters associated with proposals for an additional 200 units at Henham Road, Elsenham.		
2	It was noted that the proposed development site had been submitted to Uttlesford as part of their Call for Sites process.		
3	Bloor Homes has yet to decide on the timing of a planning application. That decision would largely depend on the outcome of modelling Grove Hill.		
4	ECC confirmed that the Grove Hill mitigation measures required to be provided by the developers of the Isobel Drive site had yet to be installed.		
5	There was discussion about the extent that the information contained in the 2017 Transport Assessment could be used for a TA to support the 200 units' application. Also, whether traffic levels generally had recovered to pre-covid levels. It was agreed that some new traffic surveys would be required to correlate current traffic levels with those described in the 2017 TA.		

6	It was agreed that WSP would submit a suggested list of junctions to be surveyed for ECC consideration (post meeting note: a list of six suggested junctions, including Grove Hill, was emailed to ECC on 16th November).	WSP	
7	WSP advised that the Vissim model used for Grove Hill would be re-visited once updated survey information was available. WSP noted that an initial consideration of Grove Hill using the current Vissum model indicated that the proposed 200 units together with other recently consented sites could be accommodated at Grove Hill.	WSP	
8	ECC suggested that proposals for the expansion of Stansted Airport and the nearby North Side commercial area should be considered as part of the Transport Assessment process.		
9	It was agreed that WSP and Carter Jonas would submit a list of committed developments to ECC for approval prior to beginning further modelling.	WSP/ CJ	
10	ECC advised that a fee would be required for the checking of the Vissum model by ECC's consultants.		
11	ECC confirmed that a contribution will be sought towards the establishment of an improved bus service for Elsenham.		
12	ECC confirmed that the Travel Plan produced for the consented 350 units could be expanded to include the proposed 200 units. It was agreed that the provision of car club vehicles within the development would be investigated. It was also agreed to investigate whether the provision of a secondary access to the site would the development to be better served by public transport.	Bloor/ WSP	

NEXT MEETING

An invitation will be issued if an additional meeting is required.

Shortridge, Edward

From: Kirby, Lee
Sent: 15 August 2022 14:01
To: Shortridge, Edward
Subject: FW: Elsenham Surveys SD11091

From: Katherine Wilkinson - Strategic Development Engineer <[redacted]
Sent: 21 December 2021 10:42
To: Kirby, Lee[redacted]
Subject: FW: Elsenham Surveys SD11091

Just adding to the below – as you suggest checks should be made against previous surveys to see if the new surveys are representative. UDC undertook some surveys in mid-November 2021 in Stansted which may also provide a useful check, if they will allow you access to them.

Kind regards

Katherine
Katherine Wilkinson | Strategic Development Engineer
Strategic Development

Essex Highways

SAFER/GREENER/HEALTHIER

T:[redacted]
E:[redacted]
W:[redacted]
Please note I work Tuesday - Thursday

From: Katherine Wilkinson - Strategic Development Engineer
Sent: 21 December 2021 10:36
To: Kirby, Lee[redacted]
Subject: RE: Elsenham Surveys SD11091

Hi Kirby,
Sorry for the delay in getting back to you. I am happy with the survey sites. You have identified the need for a camera to capture the full length of the queue on Grove Hill additional cameras will definitely be necessary to see around the bend.

Obviously we are entering another uncertain period with people currently advised to work at home. We will have to see what the new year brings and if the situation is still likely to impact on the traffic flows we will have to discuss again.

Please consult National Highways on the impact on the M11 J8.

Have a happy Christmas

Katherine

Katherine Wilkinson | Strategic Development Engineer
Strategic Development

Essex Highways

SAFER GREENER HEALTHIER

T: [redacted]
E: [redacted]
W: [redacted]
Please note I work Tuesday - Thursday

From: Kirby, Lee [redacted]
Sent: 20 December 2021 15:37
To: Katherine Wilkinson - Strategic Development Engineer <[redacted]
Subject: FW: Elsenham Surveys

CAUTION: This is an external email.

Hi Katherine – hope you are well? I was just wondering if you've had a chance to review the e-mail I sent last week? If you could please get back to me when you have a chance that would be very much appreciated.

Kind regards.

Lee.

From: Kirby, Lee
Sent: 15 December 2021 13:56
To: Katherine Wilkinson [redacted]
Subject: Elsenham Surveys

Hi Katherine

Hope you are well? Following on from the scoping meeting we had back in November where we discussed traffic survey locations I have prepared a traffic survey scoping note (see attached Elsenham 2 – Traffic Survey Scope – Final – 08.12.21.pdf). The proposed surveys locations are similar to those that were previously undertaken with a few additional locations as per our discussions in the scoping meeting. If you could please let me know that you are happy with these surveys locations that would be very much appreciated.

In relation to a potential survey date following the re-introduction of advice from the government this week to 'working from home' I just wanted to get your views in relation to collecting traffic data as there is likely to be a significant change to travel patterns particularly in the AM and PM peak periods as a result of this? It may be that we will have to use traffic data that was previously collected to undertake a comparison to see how the traffic flows have changed and then factor up the collected data so that if reflects the 'normal' travel patterns in the peak periods.

If you could please get back to me in relation to the above that would be very much appreciated.

Any queries please let me know.

Kind regards.

Lee.

Lee Kirby
Associate
BSc (Hons) CTPP MCIHT MTPS
Pronouns he/him

T+ 44 01223 342122
M+ [redacted]

WSP
62-64 Hills Road
Cambridge
CB2 1LA

Please note that my normal working days are Tuesday, Wednesday and Friday

Please note that my last working day before Christmas is Friday 17th December 2021

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Traffic Surveys Scoping Note

TO	Survey Companies	**FROM**	Lee Kirby, Associate Transport Planner, WSP
DATE	**08 December 2021**	**CONFIDENTIALITY**	**Confidential**
SUBJECT	**Elsenham 2 – Traffic Surveys Scoping Note**		

Introduction

This traffic survey scoping note provides details of the traffic surveys that we are proposing to undertake to support a planning application of a residential proposed development of up to 200 dwellings on Henham Road in Elsenham. The survey data collected from these traffic surveys will be used to determine the traffic flows, queue lengths and car parking within the vicinity of the proposed development in Elsenham and Stansted Mountfitchet. They will also be used in the traffic junction modelling that will need to be undertaken in order to determine the likely vehicular impact on the surrounding highway network as well as any mitigation that may be required.

Traffic Surveys

It is proposed to undertake the following traffic surveys as outlined below:

Manual Classified Counts

Manual Classified Counts (MCC) will be undertaken during the AM peak period (07:00 – 10:00) and the PM peak period (16:00 – 19:00) on one neutral weekday (date to be agreed with Essex County Council) at the following junctions / locations within the vicinity of the proposed development in Elsenham and Stansted Mountfitchet as shown in Figures 1 and 2 below and described as follows:

- Site 1 – Junction of the B1383 Cambridge Road / B1051 Chapel Hill / Bentfield Road;
- Site 2 – Junction of the B1051 Chapel Hill / Lower Street / Mountfitchet Castle Street / Church Road (mini-roundabout);
- Site 3 – Junction of the B1051 Grove Hill / Lower Street (traffic signals);
- Site 4 – Junction of the B1051 Stansted Road / High Street / Station Road / Robin Hood Road (double mini-roundabout);
- Site 5 – Junction of the B1051 High Street / Henham Road / Hall Road; and
- Site 6 – Junction of Hall Road / Parsonage Road / Access Road (adjacent to Coopers End roundabout at Stansted Airport)

It should be noted that these surveys will need to capture all vehicular movements (including cyclists) at all of the above junctions / locations during the times outlined above, and the video footage will need to be provided in order verify the survey data collected.

Queue Length Surveys

Queue Length Surveys will need to be undertaken at the same time as the above manual classified surveys (date to be agreed with Essex County Council) on each arm of the surveyed junctions / locations with the maximum queue length being recorded every 5 minutes during the survey period. It should be noted that the queue on Grove Hill can extend a considerable distance along the road (during peak times) so additional cameras may be required to capture the full extent of the queues along the road.

Automatic Traffic Counts

Automatic Traffic Counts (ATC) will be undertaken for a two-week period covering the day that the manual classified surveys and queue length surveys will be undertaken (date to be agreed with Essex County Council) at the following locations within the vicinity of the proposed development in Elsenham and Stansted Mountfitchet as shown in Figures 1 and 2 below and described as follows:

- Site A – B1383 Cambridge Road (between Clarence Road and St John's Road)
- Site B – B1383 Cambridge Road (between Chapel Hill / Bentfield Road and Sanders Close);
- Site C – B1051 Chapel Hill (between Woodfield Terrace / Woodfields);
- Site D – Church Road (between Station Road and Dairy Lane);
- Site E – Lower Street (between Chapel Hill / Church Road and Grove Hill);
- Site F – High Lane (between Brewery Lane and Gall End Lane;
- Site G – B1051 Grove Hill (approximately 300m east of the junction of Lower Street);
- Site H – Station Road (between Stansted Road / High Street and The Croft);
- Site I – High Street (between Station Road / Robin Hood Road and Hall Road);
- Site J – Henham Road (approximately 200m east of the junction of Hall Road);
- Site K – Parsonage Road (approximately 100m south of the junction of Hall Road / Access Road

Summary

WSP welcome comments and feedback on the details of traffic surveys outlined above that we are planning to undertake to support a planning application of a residential proposed development of up to 200 dwellings on Henham Road in Elsenham.

.

Figure 1 – Proposed Traffic Survey Location Plan

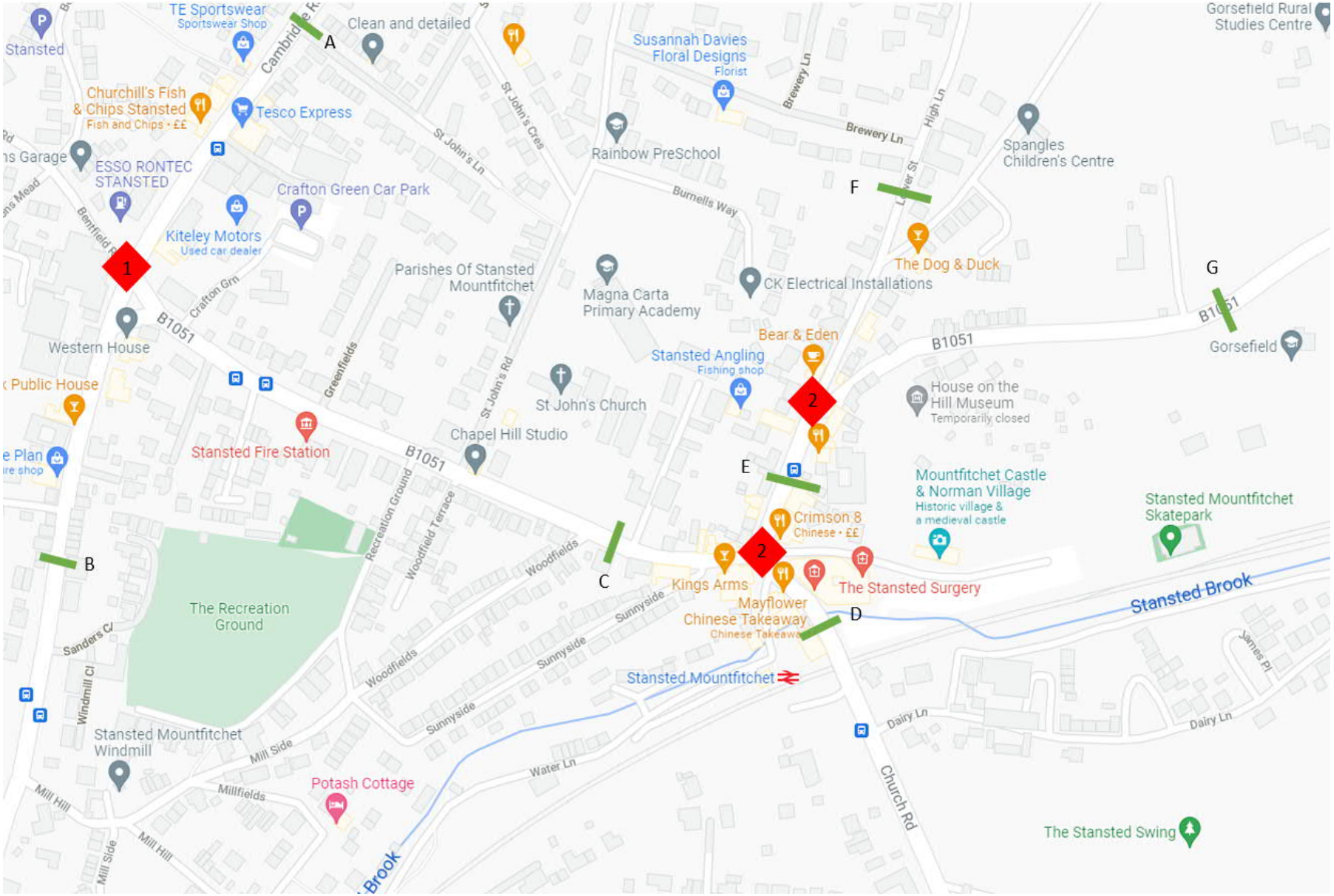

Figure 1 – Proposed Traffic Survey Location Plan (continued)

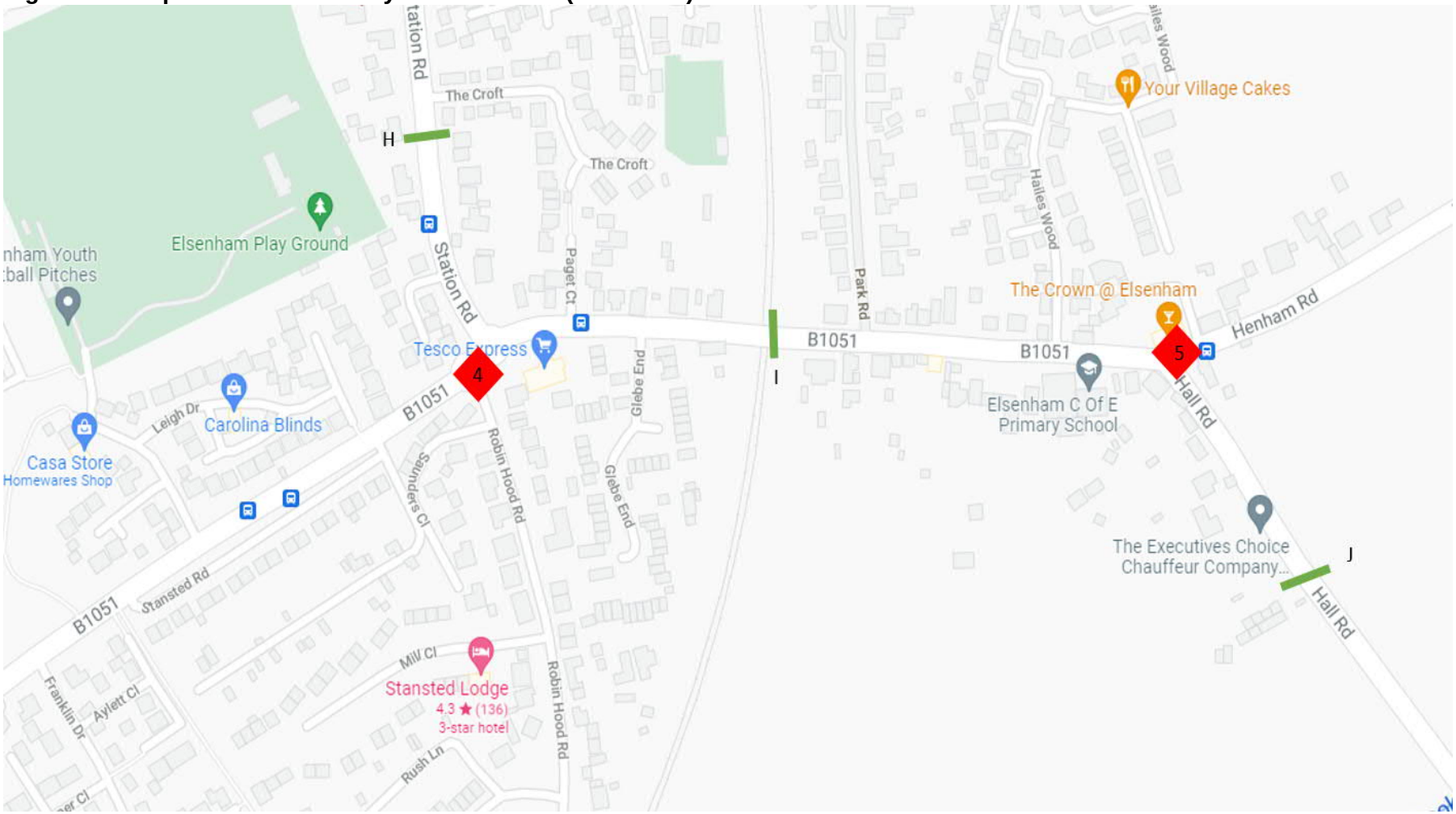

Figure 1 – Proposed Traffic Survey Location Plan (continued)

Shortridge, Edward

Subject: RE: Elsenham Stage 2

From: Katherine Wilkinson - Strategic Development Engineer [redacted]
Sent: 02 September 2022 13:04
To: Corrance, Gerry <[redacted]
Cc: McKeown, Peter [redacted]
Subject: RE: Elsenham Stage 2

Hi Gerry
Thank you for your e-mail and call.
Bus - as none of the application have got to the point of first occupation we do not have any contributions to start an enhanced service with, we are aiming for July if things start to get off the ground contribution wise.
Yes contributions to the bus service and, as discussed, you are in the position to provide a bus service through the site up to the station, to serve your site and provide flexibility for the bus service.

A strong travel plan would also be required – with elements that would be conditioned in the S106 as we discussed previously
The site should be well connected by walking and cycling links.

Yes we would need the model assessed, I would have to check when I know the extent of it but I recall it was 6k – 8k last time.

The agree list of junctions is below.

1. Cambridge Road/ Chapel Hill crossroads (Stansted Mountitchet)
2. Chapel Hill/ Lower Street mini roundabout (Stansted Mountfitchet)
3. Grove Hill/ Lower Street traffic signals (Stansted Mountfitchet)
4. Stansted Road/ station Road/ High Street double mini roundabouts (Elsenham)
5. High Street/ Henham Road/ Hall Road priority junction
6. Hall Road/ Stansted Airport access “Coopers End” roundabout (Stansted Airport)

Committed development
I would want a sensitivity test with the new application as they are so close together, unless you wait to see if that that has been approved or not?

As well as those stated below
South of Vernon’s Close, Henham UTT/20/0604
There are also a number in Takeley that will impact on the Stansted access.
West of Parsonage Road UTT/19/0393
Land East of Parsonage Road UTT/19/0394
Garnetts (west of) - UTT/21/3311
Land East Of Parsonage Road Takeley UTT/21/2488/
Trisail is still committed

I am of course very concerned about Grove Hill and the cumulative impact there and I cannot, obviously, agree at this time that the site would be acceptable.

Kind regards

Katherine

Katherine Wilkinson | Strategic Development Engineer
Strategic Development

Essex Highways

SAFER/GREENER/HEALTHIER

T: [redacted]
E: [redacted]
W: [redacted]
Please note I work Tuesday - Thursday

From: Corrance, Gerry [redacted]
Sent: 01 September 2022 14:44
To: Katherine Wilkinson - Strategic Development Engineer [redacted]
Cc: McKeown, Peter [redacted]
Subject: Elsenham Stage 2

Katherine,

I've left a message on your mobile following up on our previous discussions regarding 200 units for Bloor Homes at Elsenham. It would also be helpful to have your response to my questions below regarding public transport proposals and the validation of our traffic model.

Bloor Homes's planning application is likely to be a s62A application to PINS. I 'd like to establish an agreed position with you regarding transport in order that we can inform PINS – I'm thinking particularly about agreeing transport mitigation (which I anticipate would be a financial contribution towards the enhanced bus service).

I'm aware of the recent planning application submitted by Countryside for 130 units south of Henham Road. The Transport Assessment submitted by Ardent alludes to transport matters being established/ agreed with ECC. However I note that their transport mitigation package is minimal, with no reference to public transport enhancement.

Gerry

wsp

Gerry Corrance
Technical Director

T 01223 558 067
M [redacted]

wsp.com

Annual Leave
5th – 16th September

From: Corrance, Gerry
Sent: 01 August 2022 16:16
To: Katherine. Wilkinson [redacted]
Subject: Elsenham Stage 2

Katherine,

Please be aware that Bloor Homes are intending to submit a planning application for a second stage of development at Henham Road, Elsenham in September. The application will be for up to 200 dwellings.

WSP is appointed to prepare a Transport Assessment and Travel Plan. As part of the TA process we will be updating our Vissum model for Grove Hill to reflect up to date traffic survey information. The model will include the following four committed development sites;

- Henham Road Stage 1 (350 units)
- West of Hall Road (160 units)
- Isabel Drive (99 units)
- Rush Lane (40 units)

With respect to public transport, the developments listed above are all due to make substantial financial contributions towards an upgraded bus service for Elsenham. Can you please advise whether ECC has established timetable and route details of the upgraded service and has a programme for its implementation?

I recall that you required the Vissum model for the previous Henham Road application to be checked by ECC's consultants. Are you likely to require such a check for this application and, if so, can you please advise on likely cost?

Many thanks

Gerry

Gerry Corrance
Technical Director

T 01223 558 067
M [redacted]

wsp.com

Annual Leave
5th – 16th September

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MEETING NOTES

PROJECT NUMBER	70084697	**MEETING DATE**	21 September 2022
PROJECT NAME	Land to the East of Elsenham Phase 2	**VENUE**	Teams - Online
CLIENT	Bloor Homes Ltd	**RECORDED BY**	GG
MEETING SUBJECT	Transport and Highway Matters		

PRESENT	Edward Shortridge (ES), Corrance Gerry (GC), Gasinu Gideon (GG), Katherine Wilkinson (KW), Peter McKeown (PM), Rachael Morey (RM)
APOLOGIES	
DISTRIBUTION	As above:
CONFIDENTIALITY	**Confidential**

ITEM	SUBJECT	ACTION	DUE
1	**Development Proposals**		
1.1	**ES** discussed the proposed development including the quantum proposed and how it connects with existing active travel infrastructure within the area, Elsenham Railway Station and the Phase 1 development.		
2	**Access Arrangements**		
2.1	Access to the site by all modes of transport was discussed by **ES** and agreed as suitable. Including all modes connection to the Phase 1 development, primary access through the consented Phase 1 access via Henham Road, western active travel connection to Elsenham Railway Station and a potential northern connection to the existing PROW following an east-west alignment north of the site.		
2.2	**KW** requested that an additional access is provided along the north western edge of the site between the Elsenham Railway Station Carpark and Elsenham Railway Station (Southbound Platform) to provide a bus route through the development via the primary access on Henham Road. **RM** pointed out that the spine road though Phase 1 might not be wide enough to support two-way bus movement. **KW** said it's likely to be a Type D feeder road and that this route is wide enough for a bus.		

ITEM	SUBJECT	ACTION	DUE
2.3	**CG** pointed out that the area near Elsenham Railway Station where the bus access was requested is very constrained and that there would be poor visibility and a complex interaction between non-motorised users accessing the railway station, vehicles travelling along Old Mead Lane and buses using the access. **RM** also pointed out that land ownership could be an issue. **PM** agreed that the location is not suitable. **KW** asked that the opportunity to provide an access at this location is investigated further before it is ruled out. **GC** agreed that WSP will design the access and prepare a constraint plan highlighting any potential issues.	**WSP** to investigate feasibility of providing a second vehicular access point on Old Mead Road.	30/09/2022
3	**Traffic Surveys**		
3.1	**ES** discussed the survey scope (i.e., 11 ATCs and 6 MCCs). **KW** agreed that this was acceptable as is in line with what was pre-agreed at the pre-planning stage.		
4	**Transport Assessment Methodology**		
4.1	**ES** discussed the TA methodology including the various modelling scenarios (i.e., standalone assessments at 4 key junctions to assess the localised impact of the development on the immediate network and a VISSIM model which looks at the impact of the proposed development in Stansted Mountfitchet). The 4 junctions assessed are: • Henham Road / Site Access Priority Junction (future baseline scenarios only) • High Street Double Mini Roundabout • Hall Road / Henham Road Priority Junction • Coopers End Mini Roundabout **ES** provided further details on the committed developments considered within the 2027 future year scenarios. These are: • Land To The Northwest Of Henham Road, Elsenham (350 dwellings, primary school and early years childcare facility) (UTT/17/3573/OP) • Land West of Hall Road, Elsenham (130 dwellings) (UTT/19/0462/FUL) • Land to the West of Isabel Drive, Elsenham (99 dwellings) (UTT/19/2470/OP) • Land South of Rush Lane, Elsenham (40 dwellings) (UTT/19/0437/OP)	**WSP** to update assessment methodology to include TEMPro growth with alternative assumptions applied.	

ITEM	SUBJECT	ACTION	DUE
	• West of Parsonage Road, Takeley (120 dwellings) (UTT/19/0393) • Land East of Parsonage Road, Takeley (66 bed care home) (UTT/19/0394) • Garnetts (west of), Takeley (155 dwellings) (UTT/21/3311) • Land East of Parsonage Road, Takeley (88 dwellings) (UTT/21/2488/) **ES** explained that this reflected the additional committed development sites identified by **KW** in her email to **GC** on 2 September 2022. **ES** noted that committed development trips associated with the development at Land South of Vernon's Close, Henham (UTT/22/0434/OP) had not been included as the number of trips that will arrive from / depart towards Stansted Mountfitchet will be negligible. **ES** also explained that we would also undertake a sensitivity test which includes flows from the Land to the South of Henham Road, Elsenham (130 dwellings) (S62A/22/0007). **GC** said that TriSail was not being included as a committed development. **KW** agreed this was acceptable. **ES** explained that the above committed development is assumed to account for all background growth on the local highway network between 2022 and 2027 and as such no TEMPro will be applied. **KW** disagreed with this approach and said that the Countryside development (Land to the South of Henham Road, Elsenham) included TEMPro background growth and as such the same methodology should be adopted for this application. **CG** advised that this would result in double counting of trips as the number of committed development sites represents a reasonable level of growth in the area, **ES** seconded. **KW** stated that this approach did not account for growth in employment at Stanstead Airport as this will attract trips through the area. **KW** asked that WSP apply TEMPro growth to the 2022 baseline traffic flows with alternative assumptions applied (i.e., with housing numbers reduced to account for the addition of traffic from specific committed development sites). **KW** said this approach would ensure employment growth is accounted for in the assessment methodology. **ES** and **CG** said that the assessment approach would be revised		

ITEM	SUBJECT	ACTION	DUE
	and TEMPro growth applied with alternative assumptions.		
5	**Planning Conditions / Obligations**		
5.1	**ES** discussed the proposed planning conditions and obligations. **KW** confirmed ECC would request a per unit contribution to local bus service improvements in Elsenham.		

Appendix B

PROPOSED LAYOUT

Appendix B.1

MASTERPLAN

LEGEND

- Site boundary (9.80 Ha)
- Adjacent site boundary
- Vehicular access
- Pedestrian/cycle access
- Pedestrian access
- Strategic boundary planting
- Pumping station location (to be located within open space)
- Developable area including services and utilities (7.10 Ha)
- Open space (2.70 Ha)

BLOOR HOMES

Carter Jonas

PROJECT TITLE

BLOOR HOMES
LAND EAST OF STATION ROAD, ELSENHAM

DRAWING TITLE

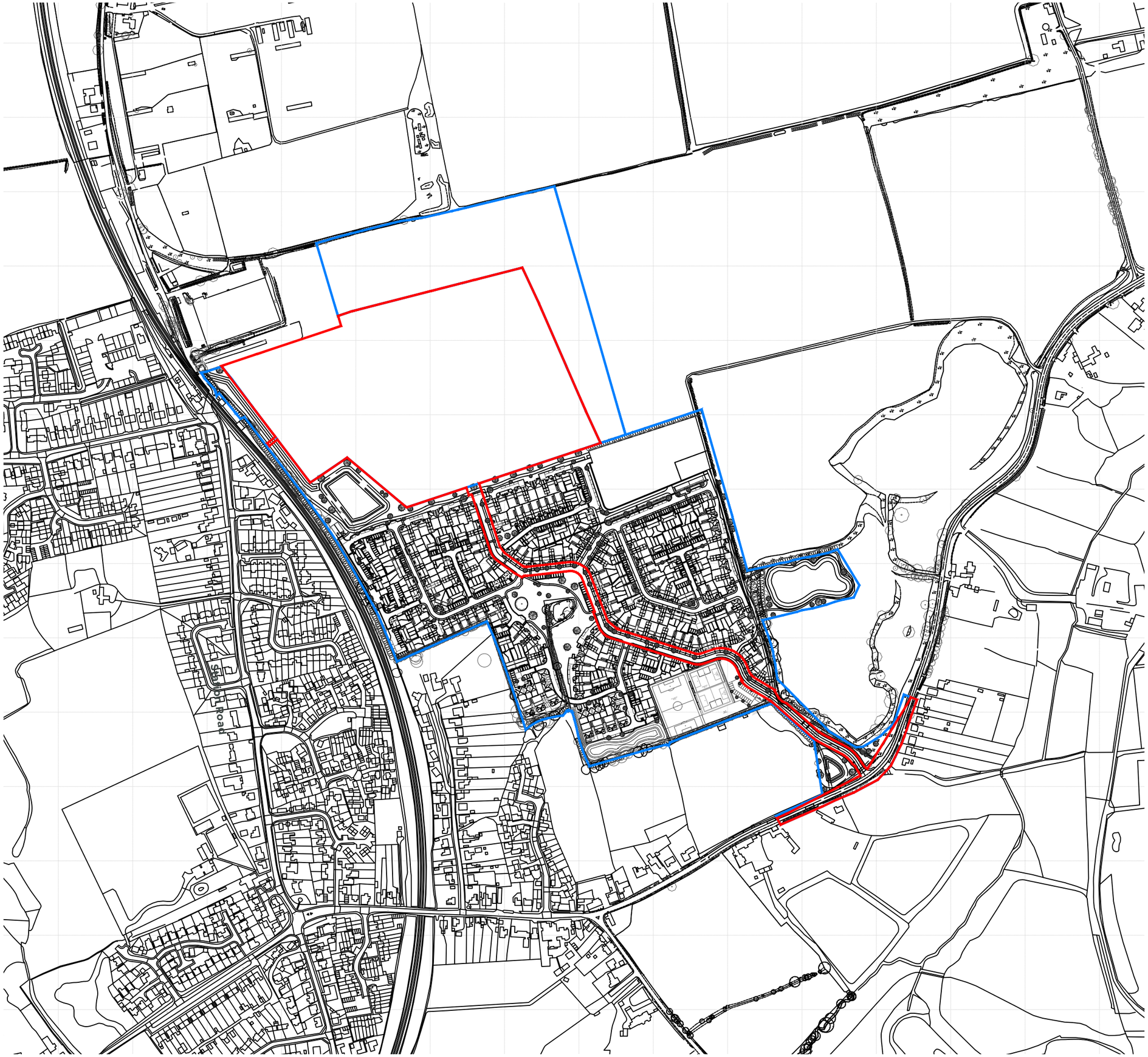
PARAMETER PLAN:
LAND USE, OPEN SPACE & ACCESS

ISSUED BY	London	T: 020 7016 0720	
DATE	20.09.22	**DRAWN**	MH
SCALE@A3	1:2500	**CHECKED**	JC
STATUS	Draft	**APPROVED**	JC

DWG. NO. J0045323_004 V2

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

Source: Ordnance Survey



LEGEND

Application boundary

0 200m

North

Carter Jonas

PROJECT TITLE

BLOOR HOMES
LAND EAST OF STATION ROAD, ELSENHAM

DRAWING TITLE

RED LINE BOUNDARY PLAN

ISSUED BY	London	T: 020 7016 0720	
DATE	22.09.22	**DRAWN**	MH
SCALE@A3	1:5000	**CHECKED**	JC
STATUS	Draft	**APPROVED**	JC

DWG. NO. J0045323_006 V2

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Source: Ordnance Survey